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Bureau of Land Management

Final Environmental Assessment
DOI-BLM-CO-S000-2013-0001

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Tri-State Montrose-Nucla-Cahone Transmission Line Improvement Project

Location: Montrose, CO to Cahone, CO

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LIST OF ACRONYMS

ACRONYMS	
4WD	Four-Wheel Drive
AADTC	Average Annual Daily Traffic Counts
A.D.	Anno Domini
ACEC	Area of Critical Environmental Concern
ACSR	Aluminum Conductor Steel Reinforced
AF	Acre-Feet
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ATV	All-Terrain vehicle
B.P.	Before Present
BA	Biological Assessment
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BMP	Best Management Practices
CDA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDRMS	Colorado Division of Reclamation, Mining, and Safety
CEA	Cumulative Effect Areas
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	Critical Habitat
CNHP	Colorado Natural Heritage Program
COGCC	Colorado Oil and Gas Conservation Commission
CPCN	Certificate of Public Convenience and Necessity
CPUC	Colorado Public Utilities Commission
CPW	Colorado Parks and Wildlife
CR	County Road
dBA	Decibels
DBH	Diameter at Breast Height
DN	Decision Notice
DOE	Department of Energy
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electro-Magnetic Field
EO	Executive Orders
EPA	Environmental Protection Agency
EPM	Environmental Protection Measures

ACRONYMS

4WD	Four-Wheel Drive
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAQ	Frequently Asked Question
FEA	Final Environmental Assessment
FERC	Federal Energy Regulatory Commission
FR	Federal Register
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of no Significant Impact
FS	Forest Service
GMU	Game Management Unit
GMUG NF	Grand Mesa, Uncompahgre, and Gunnison National Forest
GuSG	Gunnison Sage-Grouse
HRFA	High-Return Forest Activities
HE	Habitat Effectiveness
IDT	Interdisciplinary Team
ILBT	Interagency Lynx Biology Team
IM	Instructional Memorandum
kcmil	Thousands of circular mils
KOP	Key Observation Point
kV	Kilovolt
LAU	Lynx Analysis Unit
LCAS	Lynx Conservation Assessment and Strategy
LMP	Land Management Plan
LRMP	Land and Resource Management Plan
LUC	Land Use Code
LUP	Land Use Plan
LWC	Lands with Wilderness Characteristics
MBTA	Migratory Bird Treaty Act
MIS	Management Indicator Species
MNC	Montrose-Nucla-Cahone
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NERC	North American Energy Reliability Council
NESC	National Electrical Safety Code
NF	National Forest
NFS	National Forest System
NFSR	National Forest System Road
NHPA	National Historic Preservation Act

ACRONYMS

4WD	Four-Wheel Drive
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NTP	Notice to Proceed
NWI	National Wetlands Inventory
NWP	Nationwide Permits
OHV	Off-Highway Vehicle
OPGW	Optical Ground Wire
ORV	Outstandingly Remarkable Values
OSHA	Occupational Safety and Health Administration
PBA	Programmatic Biological Assessment
PBO	Programmatic Biological Opinion
PEA	Preliminary Environmental Assessment
PFYC	Potential Fossil Yield Classification
POD	Plan of Development
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/ Quality Control
RCP	Rangewide Conservation Plan
RCRA	Resource Conservation Recovery Act
RD	Ranger District
RFA	Reasonably Foreseeable Action
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
RSC	Rangewide Steering Committee
SMPA	San Miguel Power Administration
SH	State Highway
SHPO	State Historic Preservation Office
SIO	Scenic Integrity Objective
SJNF	San Juan National Forest
SMS	Scenery Management System
SOC	State Species of Concern
SOPA	Schedule of Proposed Action
SRMA	Special Recreation Management Area
SS	Sensitive Species
ST	State Threatened
SUA	Special Use Authorization
SUP	Special Use Permits
SWA	State Wildlife Area

ACRONYMS

4WD	Four-Wheel Drive
SWDO	Southwest District Office
SWMP	Storm Water Management Plan
TVMP	Transmission Vegetation Management Plan
TRFO	Tres Rio Field Office
UFO	Uncompahgre Field Office
USACE	United States Army Corps of Engineers
USAID	United States Agency for International Development
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resource Management
WECC	Western Electricity Coordinating Council
WWEC	Westwide Energy Corridor
WSRA	Wild and Scenic River Act
WSA	Wilderness Study Area

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1 PURPOSE AND NEED

1.1 Introduction

This Final Environmental Assessment (EA) has been prepared to disclose and analyze the potential environmental effects of the Tri-State Montrose-Nucla-Cahone (MNC) Transmission Line Improvement Project (proposed project) to replace an existing 115- kilovolt [kV] transmission line, as proposed by Tri-State Generation and Transmission Association, Inc. (Tri-State; Applicant). The proposed project is for a right-of-way (ROW) grant amendment to existing Bureau of Land Management (BLM) ROW grants COC-66840 (existing 115-kV) transmission line) and COC-63427 (existing optical ground wire for 911, cable and internet services, and Tri-State communications), and for a new special use authorization (SUA) from the United States Forest Service (USFS). The proposal is to improve the existing MNC 115-kV transmission line to operate at 230-kV. The EA is a site-specific analysis of potential effects that could result with the implementation the Proposed Action, Alternatives to the Proposed Action, or No Action. The project includes 251 miles of road use (including existing authorized, maintained access roads and other roads such as county roads and about 3.4 miles of new access road) and 80 miles of transmission line crossing both public and National Forest System (NFS) land and state, county, and private lands. BLM is the lead agency and is preparing the document with the following cooperating agencies: USFS; Colorado Energy Office; and Montrose, San Miguel, and Dolores counties. The EA assists the BLM and cooperating agencies in project planning, in ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" effects could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker (BLM/USFS) determines that this project has "significant" effects following the analysis in the EA, then an EIS will be prepared for the project. Alternatively, a "mitigated Finding of No Significant Impact" may follow an EA. With a "mitigated FONSI," agencies may rely on mitigation to reduce a proposal's environmental effects and avoid preparation of a more detailed EIS. If no significant effects are identified, a BLM Decision Record (DR) and a USFS Decision Notice (DN) will be signed for the EA describing the decision. The decision can be an alternative as described or a combination of alternatives. A BLM DR and the USFS DN, including a FONSI, document the rationale for why implementation of the selected alternative would not result in "significant" environmental effects beyond those already addressed in the Land and Resource Management Plan (LRMP) EISs:

- Bureau of Land Management (BLM). 1985. San Juan-San Miguel Resource Management Plan and Final Environmental Impact Statement (December 1984). Montrose District, CO.
- Bureau of Land Management (BLM). 1989. Uncompahgre Basin Resource Management Plan and Record of Decision. Montrose District, CO. Uncompahgre Basin Resource Areas. (Uncompahgre Basin Resource Management Plan EIS, September 1988).
- Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG NF). 1991. Final Environmental Impact Statement for Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan, Amended 1991 (GMUG LRMP, as Amended, 1991). Delta, Colorado (USFS 1991).
- USFS and BLM. 2013, 2014. Final San Juan National Forest (SJNF) and Tres Rios Field Office (TRFO) Land and Resource Management Plan/Final EIS (USFS and BLM 2013; USFS 2013; BLM 2015).

In addition, actions analyzed in this EA are tiered to EA, "115-kV Transmission Line Montrose Substation to Cahone Substation Federal Access Right-of-Way and Transmission Line Maintenance Environmental Assessment" (CO-800-2006-087) (BLM 2006), completed as part of the existing 115-kV ROW grant. The 2006 EA addressed ongoing maintenance and improvements to existing transmission line access roads, most of which would be used for construction of new transmission lines under the Action Alternatives. Continued maintenance and repairs of the existing access roads would also be needed under the No Action Alternative for maintenance of the transmission line. Tri-State is authorized under the 2006 EA to maintain about 127 miles of administrative access roads, for maintaining the existing line. The current EA includes the additional access roads that would be needed to implement alternative actions.

This section presents the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that addresses the identified issues, the agencies developed and considered a range of Action Alternatives. These alternatives are presented in Chapter 2. The potential environmental effects resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

1.2 Background

Tri-State is a wholesale electric power producer/supplier that serves 44 rural electric cooperatives and public power districts in Colorado, New Mexico, Wyoming, and Nebraska. Tri-State's transmission system in southwestern Colorado relies on a number of 115-kV circuits, including the existing MNC transmission line. Tri-State has submitted applications to the BLM and the USFS (collectively referred to as the agencies), for authorizations to improve the existing MNC 115-kV transmission line to a 230-kV transmission line, and to operate and maintain the new 230-kV transmission line and optical ground wire, referred to as "fiber optic cable" throughout the EA (BLM ROW grant COC-63427; see Section 2.3.7.3).

The existing 115-kV system extends approximately 80 miles from the Montrose substation west of Montrose, Colorado, to the Nucla substation at the Nucla Power Plant, to the Cahone substation near Dove Creek, Colorado (see Figure 1). The existing line crosses 35.7 miles of

BLM-managed land (19.1 miles on Uncompahgre Field Office [UFO]-managed lands and 16.6 miles on TRFO-managed lands) and 22.1 miles of NFS land (14.5 miles on GMUG NF and 7.6 miles on SJNF), with the balance (22.6 miles) on state and private land. Tri-State proposes to use the existing 115-kV 100-foot ROW for the upgrade to the greatest extent possible. The new 230-kV transmission line would require an additional 50 feet of ROW clearing (in forested areas) for a total ROW corridor width of 150 feet.

Tri-State currently uses about 251 miles of existing access roads, not counting state highways, for periodic maintenance and inspection of the existing 115-kV transmission line. About 127 miles are administrative and are Tri-State's responsibility to maintain; about 71 miles of administrative roads are down-line access roads located within the existing 100-foot ROW, and under the existing 115-kV line that Tri-State maintains.

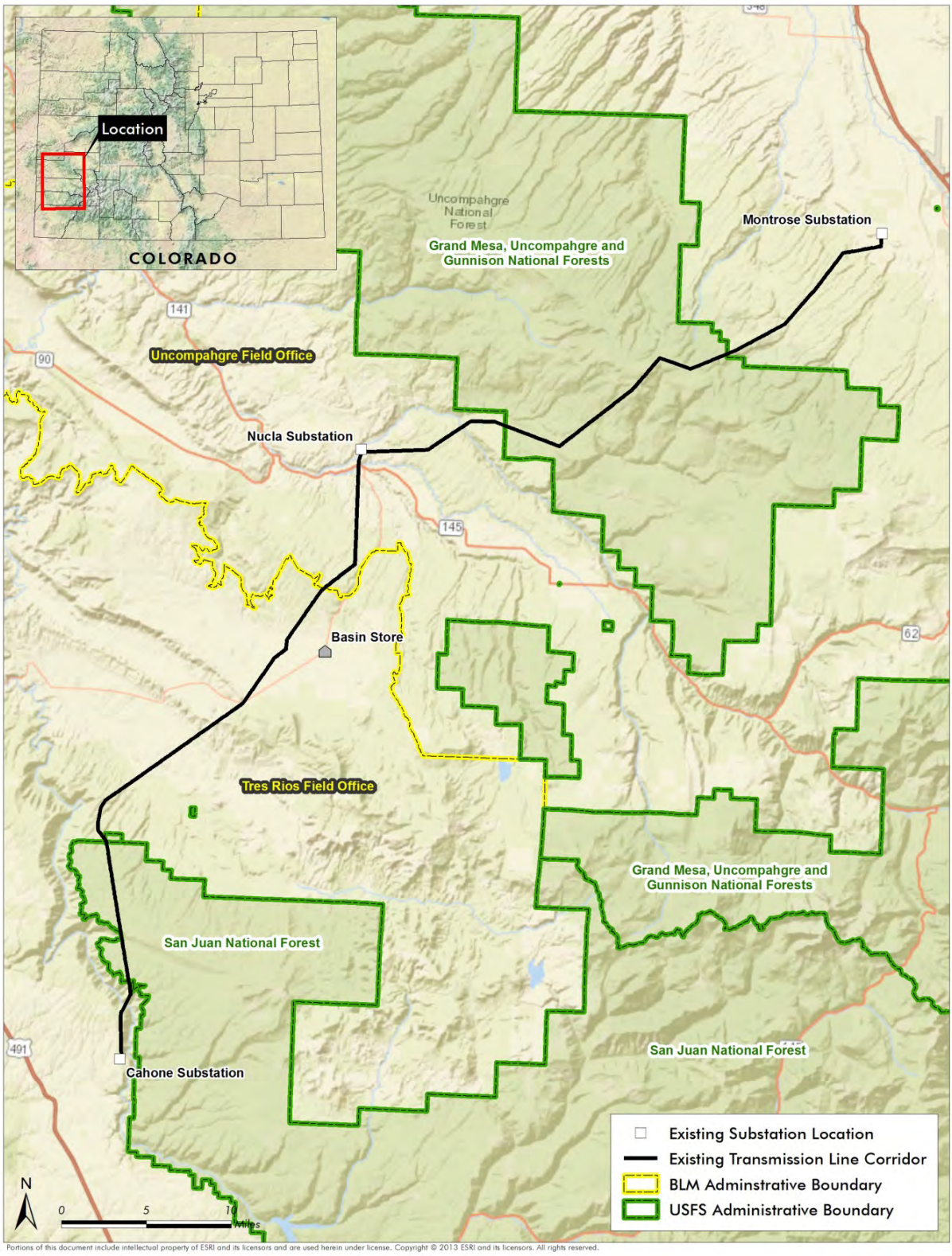

Figure 1. Overview of Existing Transmission Line Corridor

Tri-State is proposing the upgrade project to address aging infrastructure and system deficiencies as discussed below.

- Improved Transmission Line Efficiency: Energy lost as heat, known as I^2R losses, can reduce transmission line efficiency. By updating the line and increasing the voltage, Tri-State's proposed project can reduce line losses and improve transmission system efficiency.
- Aging Infrastructure: The line, constructed with wooden poles in 1958, has exceeded its expected lifespan of 50 years. The aging infrastructure has required frequent and substantial maintenance and repair costs. Many of the wood pole structures have rot, woodpecker and insect damage, and large cracks. Many insulators and conductors have been damaged from vandalism (gunshot).
- Thermal Design Constraints: The existing transmission line was constructed to 115-kV with a 122 degree Fahrenheit ([F]; 50 degree Celsius[C]) design rating. Under certain system conditions, Tri-State is not able to utilize and dispatch existing generation resources because overloading conditions are occurring on the 115-kV system. In addition, the limited rating of the line due to its 122 degree F thermal design affects Tri-State's ability to serve future load growth for its cooperative members in southwestern Colorado. The North American Energy Reliability Corporation (NERC) and the Western Electricity Coordinating Council (WECC) define a *constraint* as a limitation on one or more transmission elements that may be reached during contingency, emergency, or normal operating conditions. Generally, these limits occur when transmission equipment reaches its thermal rating or when voltage levels at substations served from the transmission equipment decline below minimum accepted levels. Loadings on the existing MNC 115-kV transmission line are now reaching the maximum thermal rating, or constraint, of the line.

  If Tri-State were to lose a line or major transformer in the southwestern portion of the state due to mechanical failure or an unexpected natural event, it could drastically reduce Tri-State's load-serving capability in southwestern Colorado. Tri-State plans for these types of events as part of their process to ensure reliable electric service to the local area and the region. In addition, any failure of infrastructure in Durango would affect Tri-State's ability to serve loads in southwestern Colorado.

  NERC's mission is to ensure the reliability of the North American bulk power system. NERC is the electric reliability organization certified by the Federal Energy Regulatory Commission to establish and enforce reliability standards for the bulk power system. NERC's responsibility is to enforce reliability standards; assess adequacy annually via a 10-year forecast, and summer and winter forecasts; monitor the bulk power system and educate, train, and certify industry personnel.

  WECC is the Regional Entity responsible for coordinating and promoting Bulk Electric System reliability in the Western Interconnection.

- Uncertainty with Nucla Generating Station (Nucla station): The future of the Nucla station is uncertain. Tri-State evaluated and planned the proposed project under two

scenarios: the station remaining in operation and the station eventually being taken out of service. If the Nucla station remains in service, the proposed project is needed for the reasons listed above and would not change in scope. Should the Nucla station be retired, construction of the proposed project will be critical to the reliable operation of Tri-State's transmission system.

The proposed project has been designed to address contingencies and system constraints associated with both outcomes. The existing electricity generation resources throughout the region are adequate to meet near-term moderate increases in demand; however, improvements of transmission facilities such as MNC are required in southwestern Colorado to ensure those resources can be reliably delivered as loads increase.

- Ability to Serve Future Load Growth: *Load* is defined as the sum of power that a group of customers demand on the network. Loads in southwestern Colorado are projected to increase in the future. In order to accommodate future load growth in the region, Tri-State has incorporated future needs into the design of this proposed project. The existing system is incapable of serving future loads, because of its 122 degree F line limitation. Studies of the performance, reliability, and load-serving capabilities of the line and the overall performance of the electrical grid in southwestern Colorado resulted in Tri-State's conclusion that improving the MNC line to 230-kV would address existing system constraints and future power needs in the region.
- Regional Transmission Benefits (TOT 2A): The load levels in southwestern Colorado have a substantial effect on the transfer capability of a regional transmission path known as TOT 2A. TOT 2A is a high voltage transmission path that runs from Colorado to northern New Mexico. TOT 2A is a WECC-recognized path with a defined transfer limit. The allocation of the limited transfer capability of TOT 2A is divided between Western Area Power Administration, Xcel Energy, and Tri-State. According to NERC/WECC standards, fines may apply if operating limits for TOT 2A are violated. By increasing the load-serving capability of the transmission system in southwestern Colorado, the proposed project helps mitigate the negative effects of increasing load on the transfer capability of TOT 2A.

The 230-kV improvement has been proposed by Tri-State to address the needs described above. Tri-State prepared a Plan of Development (POD), referred to hereafter as the Draft POD until final design is complete, describing detailed plans (Preferred Alternative) for upgrading the existing transmission line (See Appendix D: Draft Plan of Development). The POD is Tri-State's detailed description of the process for constructing, maintaining, and operating the line. The POD would be updated and finalized in a Final POD during the NEPA process. Improving the MNC line supports larger regional goals within the overall system in southwestern Colorado. Strengthening the electrical grid would require system improvements, and the MNC improvement is a piece of this greater objective. It is not feasible for utilities operating in southwestern Colorado to improve and build multiple lines at one time in one region due to operational constraints, costs, and schedule.

1.3 Need for the Proposed Action

Tri-State holds a valid BLM ROW grant for the entire existing transmission line on both BLM and USFS land, issued in 2007 under the "Service First" initiative (BLM 2007a). While Service First encourages the sharing of resources, each agency must issue their own authorization for the Proposed Action. The BLM's need for the Proposed Action is to respond to a request from Tri-State, as required under Title V of the Federal Land Policy and Management Act (FLPMA) of 1976, (43 USC 1761), as amended, to amend their ROW for this proposed project on public land. The USFS is responding to a request for a new SUA. An SUA allows occupancy, use, rights, or privileges on NFS lands for a specific use of land for a specific period of time.

The BLM is authorized to consider granting a ROW, and the USFS is authorized to issue permits, leases or easements to occupy, use, or traverse NFS lands for the proposed project, under Title V section 501 [43 USC 1761] of the FLPMA as amended. The Secretary of the Interior, with respect to public lands, and the Secretary of Agriculture, with respect to lands within the NFS (except in each case land designated as wilderness), "are authorized to grant, issue, or renew ROWs over, upon, under, or through such lands for systems for…generation, transmission, and distribution of electric energy, except that the applicant shall also comply with all applicable requirements of the Federal Energy Regulatory Commission under the Federal Power Act, including part I thereof." (41 Stat. 1063, 16 USC 791a-825r).

1.4 Purposes of the Proposed Action

As the designated lead federal agency, BLM Southwest District Office (SWDO) has determined that an EA is required before the agencies can render decisions on the proposed project. The USFS is a cooperating agency in the EA and would issue a separate decision to authorize work on NFS lands. The agencies' purpose of the action is to respond to Tri-State's applications for major utilities in a timely manner, in accordance with valid land and resource management plans allowing for such development (see Section 1.6), and to identify any permit conditions necessary for resource protection and public safety. The agencies' purpose is to respond in accordance with the following laws, Memorandum(s) of Understanding (MOU), and Executive Orders (EO):

- Title V of the Federal Land Policy Management Act of 1976, as amended (43 United States Code [USC] 1761), gives authority to both agencies to grant, amend, or renew authorizations for ROWs for electrical transmission lines.
- WWEC MOU, dated October 2009 and created under authority of the Energy Policy Act of 2005, requires federal agencies including the Department of Energy, Department of Agriculture, and Department of Interior, among others, to coordinate efforts in the siting and permitting process of electric transmission facilities on federal land.
- Section Two of EO 13212 requires agencies to expedite their review of energy-related permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. Agencies shall take such action to the extent permitted by law and regulation, and where appropriate.

1.5 Decision to be Made

The BLM will decide whether to amend the existing ROWs, and the USFS will decide whether to issue a SUA, to 1) approve the proposed upgrade project, 2) not approve the proposed upgrade

project, or 3) approve the proposed upgrade project with modification and, if approved, under what terms and conditions.

If an Action Alternative is selected, the BLM and USFS would authorize the selected alternative with a ROW grant and SUA, respectively, for the construction, operation, and maintenance of the line, with conditions to include in the authorizations, and conditions to include in the Final POD.

The existing line crosses 35.7 miles of BLM-managed land, 22.1 miles of NFS land and 22.6 miles on state and private land. Therefore, portions of the transmission line corridor and access roads for the project on BLM lands require ROW approval from the BLM and SUA on the USFS. Easements would be required over private lands for the remaining portion of the transmission line and access roads. The Proposed Action includes a 150-foot wide ROW from the Montrose substation west of Montrose, Colorado to the Nucla substation at the Nucla Power Plant, to the Cahone substation near Dove Creek, Colorado in order to accommodate the construction and maintenance of the transmission line corridor. In addition, temporary construction activities of pull sites and temporary crossing structure construction sites would occur outside of this ROW within BLM and NFS lands.

To obtain the ROW approval, Tri-State submitted a "Standard Form 299 Application for Transmission and Utility Systems and Facilities on Federal Lands" to BLM and USFS for the transmission corridor on July 2, 2013. The BLM and USFS decisions are specific to public land.

1.6 Conformance with BLM and USFS Land Use Plan(s)

The following lists of plans manage the public lands for the following jurisdictions: SJNF, GMUG NF, BLM UFO, and BLM TRFO.

1.6.1 BLM San Juan / San Miguel Planning Area Resource Management Plan and Uncompahgre Basin Resource Management Plan

The BLM UFO is managed by both the 1985 San Juan/San Miguel Planning Area Resource Management Plan (RMP) and the Uncompahgre Basin RMP completed in 1989 (BLM 1985 and 1989). A revised Uncompahgre Basin RMP is currently underway.

The 1989 RMP includes the following language pertaining to the project area and potentially relevant to the transmission line project (BLM 1989; p. 11):

- Major Utilities – Public lands will be open to development of major utilities. Stipulations and mitigating measures will be developed on a case-by-case basis.

The 1985 BLM San Juan/San Miguel Planning Area RMP includes the following Lands Program objective pertaining to the project area and potentially relevant to the transmission line project (BLM 1985; p. 20):

> *"In general, public land is available for utility and transportation corridor development, however, applicants will be encouraged to locate new facilities within existing corridors to the greatest extent possible. Public land within areas identified as unsuitable will not*

> *be available for utility and transportation corridors. Deviations from existing corridors may be permitted based on considering: types of and needs for the proposed facilities; conflicts with other resource values and uses, including potential values and uses; and availability of alternative routes and (or) mitigation measures." (BLM 1985)*

1.6.2 USFS Grand Mesa, Uncompahgre, and Gunnison National Forest Land and Resource Management Plan

The GMUG LRMP, as Amended, 1991, allocates 4,535 acres to utility corridors and electronic sites, and stipulates the following (USFS 1991; page II-92):

> *"The designation of new utility corridors will be studied on a case-by-case basis, but will be consistent with the plans and programs of other agencies… Expanding compatible uses in existing corridors is emphasized over new corridor development."*

Changes in the GMUG LRMP, as Amended, 1991, were primarily related to timber management.

1.6.3 USFS San Juan National Forest Land Management Plan

The September 2013 Land Management Plan (LMP) for the SJNF includes the following general guidance pertaining to the existing transmission line and proposed project area: Existing utility corridors would not change (USFS 2013; Volume I page 20). The LMP describes the existing Tri-State transmission line as a designated utility corridor (USFS 2013; Volume II page 146). Areas designated as utility corridors would be designed to be compatible with the management goals of the areas through which they pass (USFS 2013; Volume I page 471). Expansion, as well as other actions, would not be approved if they did not meet these requirements (USFS 2013; Volume I page 475).

1.6.4 BLM Tres Rios Field Office Resource Management Plan

The action is in conformance with the 2015 RMP for the Tres Rios Field Office and Record of Decision (BLM 2015).

As described on page II-139 of the RMP, energy transmission projects would be an appropriate use of land allocated to designated energy corridors and project applicants would be encouraged to locate facilities in these corridors. The existing transmission line (Tri-State Generation and Transmission Association, Inc. – Nucla to Cahone) is listed in Table 2.18.1 of the RMP as a designated corridor. Potential uses including upgrade of existing facilities; and additional facility construction would be considered on a case-by-case basis (BLM 2015).

Part of this project goes through an area that is managed to protect lands with wilderness characteristics. While lands managed for wilderness characteristics are excluded from location of new ROWs, modifications of existing authorizations or ROWs that would reduce or eliminate effects to wilderness characteristics would be allowed (BLM 2015 page II-133). This action and alternatives would address these potential effects (see analysis in Section 3.5.10).

1.7 Relationship to Statutes, Regulations, or Other Plans

The EA must comply with NEPA, 1969 as amended, the Environmental Quality Improvement Act of 1970, and all other applicable laws, EOs, regulations, and direction. An EA for Tri-State's access ROW and transmission line maintenance for the existing 115 kV transmission line was completed and a FONSI signed in 2007 (BLM 2007b).

The following permits, approvals, or consultations would be required.

Table 1. Required Agency Permit, Approval, or Consultation for the Proposed Project

Regulatory Agency	Required Permit, Approval, or Consultation	Agency Action
Federal		
Advisory Council on Historic Preservation	National Historic Preservation Act (NHPA), Section 106 Consultation	Determination of effects to listed or eligible historic properties and cultural resources
USFS	Temporary Special Use Authorization (SUA)	For temporary uses of NFS lands during construction. Includes a Surface Reclamation Bond
USFS	Special Use Authorization (SUA)	Authorization of NFS lands for operation and maintenance of the transmission line, including use of National Forest System Roads (NFSRs) open to the public, administrative NFSRs closed to the public, and special use routes
USFS	Road Use Permit	Authorization of use of NFSRs during construction of the transmission line. Includes a Performance Bond and Surface Rock Replacement
USFS	Notice to Proceed (NTP)	Allows proposed project to proceed to construction
USFS	Plan of Development (POD)	Consider approval of a detailed Final POD for proposed project construction, operation, and maintenance; meets the need for an SF-299
United States Department of Defense, Army Corps of Engineers (USACE)	Section 404, Clean Water Act Permit	Consider issuance of a Section 404 permit for fill in wetlands or other waters of the U.S. for upgrading access roads
BLM	Short and Long-term ROW Grant(s)	Consider issuance of short-(construction related) and long-term ROW grants
BLM	Plan of Development (POD)	Consider approval of a detailed Final POD for proposed project construction, operation, and maintenance
BLM	Notice to Proceed (NTP)	Allows proposed project to proceed to construction

Regulatory Agency	Required Permit, Approval, or Consultation	Agency Action
United States Department of the Interior U.S. Fish and Wildlife Service (USFWS), Mountain Prairie Region, Colorado Field Office	Section 7 Consultation (Endangered Species Act [ESA])	Consider the findings (biological assessment) of the lead agency; provide a biological opinion if adverse effects to federal listed species or habitats would occur
State		
Colorado Parks and Wildlife (CPW)	Long-term and temporary ROW Grant(s)	Consider issuance of both long-term and temporary (construction-related) ROW grants across CPW lands
Colorado State Land Board	Long-term and temporary ROW Grant(s)	Consider issuance of both long-term and temporary (construction-related) ROW grants across State Land Board lands
Colorado Department of Public Health and Environment (CDPHE)	National Pollutant Discharge Elimination System (NPDES) Construction Stormwater; Construction dewatering	Consider issuance of permits
Colorado Public Utilities Commission (PUC)	Certificate of Public Convenience and Necessity	Consider new transmission facilities designed at 230 kV or above for public benefit; issue CPCN
Colorado Department of Transportation (CDOT)	Encroachment Permit	Consider issuance of permit for transmission line crossing of State Highway (SH) 141 and 145
Colorado Public Utilities Commission (CPUC)	Certificate of Public Convenience and Necessity (CPCN)	Issued July 22, 2013 Proceeding No. 13A-0489E
Local		
Dolores County	Land Use Change permit for transmission line and Cahone substation expansion; Driveway permit for substation; Traffic Control; Contact for smoke notification	Consider issuance of permits (Proposed Action is consistent with the land use plan)
San Miguel County	Land Use Change for transmission line	Consider issuance of permits (Proposed Action is consistent with the land use plan)
Montrose County	Special Use permit for new 230-kV (Maverick) substation and Montrose substation expansion; ROW Use Permit(s) as applicable	Consider issuance of permits (Proposed Action is consistent with the land use plan)

1.7.1 Regulations and Guidance

Since the time when the line was constructed, new legislation, administrative actions, and MOUs have driven changes in the way federal land managers and utility companies manage transmission line ROWs. Most recently, transmission lines are being recognized and treated as an essential part of the nation's "critical infrastructure." Recent legislation and other actions designating energy infrastructure as critical infrastructure or otherwise requiring management and maintenance of such infrastructure include the National Fire Plan (USFS 2001); Healthy

Forests Initiative (USFS 2002); Healthy Forest Restoration Act (USFS 2003); Energy Policy Act (U.S. 2005); and MOU between Edison Electric Institute and Federal Agencies – USFS, BLM, National Park Service (NPS), USFWS, and the Environmental Protection Agency (EPA) (USFS 2006a).

1.7.1.1 Vegetation Management Requirements

It is Tri-State's policy to proactively mitigate vegetation hazards and threats to power system safety and reliability to the extent reasonable and practical within three main areas of concern:

- Vegetation and fuels on the ROW
- Vegetation and fuels adjacent to the ROW
- Prevention of wildfire on and off the ROW

The new MNC 230-kV transmission line would be regulated under NERC standards for reliability, which includes vegetation management. Tri-State's transmission Vegetation Management Program meets the requirements of NERC Standard FAC-003-1; see Appendix T (Operations, Maintenance, and Vegetation Management Plan). Violations of these standards can result in fines up to $1 million dollars per day in the event of a vegetation induced outage.

1.7.1.2 County Land Use Code

NEPA regulations require that an EIS or an EA must include a discussion of the following: 1) Conflicts with local plans (40 CFR 1502.16(b)); possible conflicts between theProposed Action and objectives of Federal, regional, State and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned; 2) Inconsistencies with local plans (40 CFR 1506.2(d)); where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its Proposed Action with the plan or law; 3) Local authorities' reservations (40 CFR 1503.3(d)); when a cooperating agency with jurisdiction by law objects to or expresses reservations about the proposal on grounds of environmental impacts, the agency expressing the objection or reservation shall specify the mitigation measures it considers necessary to allow the agency to grant or approve applicable permit, license or related requirements or concurrences. Sections below summarize applicable county regulations and disclose any known conflicts with the Proposed Action.

1.7.1.2.1 *Montrose County*

The Montrose County Master Plan (2010) does not address utility or transmission line corridors. Utility transmission, distribution, and service lines are considered a "use-by-right" in the Montrose County Zoning Resolution (2015). As noted in Table 1, the new Maverick Substation near Nucla would require county permitting. A preliminary consistency review did not expose any conflicts or inconsistencies between the Montrose County land use code (LUC) and implementation of the Proposed Action.

1.7.1.2.2 *San Miguel County*

San Miguel County has documented guidance in its Comprehensive Development Plan and multiple Land Use Code provisions that are relevant to proposed transmission line alternatives in the Dry Creek Basin (San Miguel County 2008, 2014). The following table (Table 2) summarizes important consistency verifications with the County's land use sections. The final determination of compliance would be made by the County government at the time of a land use

permit or authorization request. A preliminary consistency review did not expose any conflicts or inconsistencies between the San Miguel County LUC and implementation of the Proposed Action. San Miguel County concurs with preliminary consistency review. There are no apparent conflicts between San Miguel County LUC/Master Plan and the Proposed Action. San Miguel County has expressed concern about the consistency of the realignment in Dry Creek Basin with county land use code, particularly for the parameters identified in Table 2.

Table 2. Primary Parameters Identified for Evaluation of Utility Project Consistency with San Miguel County Land Use Regulations for Project Area

Comprehensive Development Plan
Try and locate utility lines on Class 5 priority lands (public and government lands)
LUC 5-709 H
I. Avoid paralleling major transportation routes
VIII. Avoid impact on wildlife and wildlife habitat
IX. Preserve as much as possible the natural landscape
LUC 5-320 - West End Zone District
Preserve historical, archeological and natural resources and landmarks, while allowing individual the right to farm and ranch… with as little intrusion as possible on property rights
LUC 5-320 K - Review Standards for WE Zone District Special Uses
I. Be consistent with County MP, Land Use Policies, and purpose of WE Zone District
IV. Minimize adverse effects, including scenic quality on surrounding properties
VI. Not substantially adversely affect agriculture or ranching operations and residences
VIII. Consistent with the historic rural and agricultural character
LUC 2-12 – Scenic Quality
2-1202: Minimize adverse effects of roads and facilities by regulating the location and use of future development
2-1203: Minimize adverse scenic effects of roads and other facilities by regulating their alignment, design, and construction so as to reduce their impact on visual quality… particularly public roads
LUC 2-16 – Wildlife Protection
2-1601: Protect, enhance and preserve Gunnison sage-grouse populations and their habitats…when considering land use activities and development

Source: San Miguel County 2008; San Miguel County 2014.

1.7.1.2.3 *Dolores County*

The Dolores County Development and Land Use Regulations (2012) identify public or private utilities, major facilities and utility lines as activities that are subject to prior review and approval of a site specific development plan. A preliminary consistency review did not expose any conflicts or inconsistencies between the Dolores County land use code and implementation of the Proposed Action.

1.7.1.3 Guidance and Regulations Specific to Gunnison Sage-grouse

During preliminary agency scoping, the Gunnison Sage-grouse (GuSG) was identified as an issue of concern for the EA analysis (see Section 1.8). The GuSG was listed as a threatened species in 2014 (see proposed and final listing rules in the Federal Register published January 11, 2013 (78 FR 2486) and November 20, 2014 (79 FR.69192), respectively). Because of the protection of this species under the Endangered Species Act of 1973, as amended (ESA; 16 USC

1531 et seq.), consultation with the USFWS must be undertaken to address potential project impacts on GuSG and, where applicable, their designated critical habitat. Although the final rule specifies that lands covered by buildings, pavement or other manmade structures are not included in critical habitat, it further clarifies that a road or powerline right-of-way that is not paved would be considered critical habitat (79 FR 69326).

In addition, as listed above (Table 2), San Miguel County LUC incorporates local protections for the GuSG.

The Gunnison sage-grouse Rangewide Conservation Plan (RCP) (GSRSC 2005) recommends that construction of structures and/or actions that may modify GuSG habitat, or that may increase mortality of GuSG, follow guidelines for avoiding or reducing disturbance to GuSG. The guidelines identify the following potential disturbances to GuSG: structures or actions that may modify habitat; structures that may affect the bird by potentially increasing collision risks and exposure to predation; and human activities that may cause disturbance to the bird themselves (i.e., anthropogenic noise or movement), especially during critical seasonal use periods.

The final TRFO Resource Management Plan (RMP) (BLM 2015) includes standards and guidelines pertaining to activities in GuSG habitat. Specifically, Guideline 2.4.60 states that "Projects in occupied Gunnison sage-grouse habitat should be designed to mitigate or avoid the direct or indirect loss of habitat necessary for maintenance of the local population or reduce to acceptable levels the direct or indirect loss of important habitat necessary for sustainable local populations. Projects will incorporate special reclamation measures or design features that accelerate recovery and/or reestablishment of affected sage-grouse habitat as much as possible." The TRFO RMP adopted most of the guidance provided in the RCP and BLM Instruction Memorandum (IM) No. 2014-100 (BLM 2014): Gunnison Sage-grouse Habitat Management Policy on Bureau of Land Management-Administered Lands in Colorado and Utah. Under the RMP (BLM 2015) the recommendations in the IM and RCP are now enforceable guidance for protecting important habitats across the range of the GuSG. In addition, the Biological Opinion on the RCP (Linner 2014) recommends full implementation of the conservation measures of the RCP. Guidance pertaining to power lines includes avoiding routing aboveground transmission or distribution lines within occupied habitat, ensuring no surface occupancy within 0.6 mile of an active lek, prohibiting surface-disturbing activities and disruptive activities within 4 miles of active leks from March 1 through June 30, and constructing structures that limit risk of collision and predation. The IM is expected to remain in effect until the Rangewide Gunnison Sage-Grouse RMP Amendment process is complete in 2016. While this IM is of short duration, the Service anticipates that its implementation would reduce threats to the GuSG on BLM lands (79 FR 69283).

The final TRFO RMP (BLM 2015) includes desired conditions, objectives, standards and guidance pertaining to activities in GuSG habitat. Portions of the plan that pertain to GuSG include the following:

Desired Conditions

- 2.4.15 "Areas identified as critical habitat or proposed critical habitat for special status wildlife species have the characteristics to support sustainable populations, promoting recovery of the species"
- 2.4.17 "Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species"

Objectives

- 2.4.20 "Gunnison Sage-Grouse (*Centrocercus minimus*): improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat"

Guidelines

- 2.4.60 "Projects in occupied Gunnison sage-grouse habitat should be designed to mitigate or avoid the direct or indirect loss of habitat necessary for maintenance of the local population or reduce to acceptable levels the direct or indirect loss of important habitat necessary for sustainable local populations. Projects will incorporate special reclamation measures or design features that accelerate recovery and/or re-establishment of affected sage-grouse habitat as much as possible".

The TRFO RMP adopted most of the guidance provided in the RCP and BLM IM No. 2014-100 (BLM 2014): Gunnison Sage-Grouse Habitat Management Policy on Bureau of Land Management-Administered Lands in Colorado and Utah. Under the RMP (BLM 2015), the recommendations in the IM and RCP are now guidance to be implemented for protecting important habitats across the range of the GuSG. Guidance pertaining to power lines includes no surface occupancy within 0.6 mile of an active lek ("Lek Habitat"), prohibiting surface disturbing activities and disruptive activities within 4 miles of active leks from March 1 through June 30, prohibiting surface disturbance and disruptive activities in winter habitat from December 1 to March 15, avoid routing above-ground transmission or distribution lines within occupied habitat, and constructing structures that limit risk of collision and predation. All habitat within the range of GuSG in the Dry Creek Basin is considered occupied habitat.

The Action Alternatives have implemented design features and EPMs that conform to policies and recommendations in the RCP and RMP. The RCP recommends that construction of structures and/or actions that may modify GuSG habitat, or that may increase mortality of GuSG, follow species-specific guidelines for avoiding or reducing disturbance. The guidelines identify disturbance to GuSG to include: structures or actions that may modify habitat; structures that may affect the bird by potentially increasing collision risks and exposure to predation; and human activities that may cause disturbance to the bird themselves (i.e., anthropogenic noise or movement), especially during critical seasonal use periods.

1.7.1.4 Supporting Documents and Reports

The following documents and reports have been prepared to support the EA and are relevant to the analysis:

- Certificate of Public Convenience and Necessity (CPCN) (Colorado Public Utilities Commission [CPUC] 2013)
- Tri-State's Plan of Development (Appendix D to the EA)
- Cultural Resource Reports, Amendments, and Section 106 Memorandum of Agreement ([MOA] Reed et al. 2014 in *progress*)
- Visual Resource Report (Holdeman Landscape Architects [HLA] 2015; edited 2016)
- Paleontological Resources Technical Report (Zubin-Stathopoulos, K.D., and Murphey, P.C. 2014)
- Montrose-Nucla-Cahone Underground Transmission Line Estimate (Kleinfelder 2014)

In addition, a Biological Assessment (BA) would be finalized and submitted to the USFWS following the selection of a Preferred Alternative and would document potential effects to any species listed as Threatened or Endangered under the ESA, as well as Candidate species and those proposed for listing (see Table 36 for preliminary informal consultation documentation).

1.8 Scoping and Identification of Issues

Scoping is an early and open process for identifying the key issues related to a Proposed Action. Information collected during scoping may also be used to develop the alternatives to be evaluated in detail in a NEPA document. The process has two components: internal scoping and external scoping. Internal scoping is conducted within an agency or cooperating agencies to determine preliminary and anticipated issues and concerns. External scoping is a process to notify and provide opportunities for involvement of other agencies, organizations, tribes, local governments, and the public. External scoping can identify coordination needs, and refine and identify issues. The BLM NEPA Handbook (Section 6.3.1) and USFS NEPA Handbook (Chapter 10) provide agency guidelines for scoping (BLM 2008; USFS 2012).

Public involvement is being conducted in the following phases for the Tri-State MNC Transmission Improvement Project environmental review process:

- Public scoping and public outreach, including news releases and newspaper advertisements, prior to NEPA analysis to determine the scope of issues and alternatives to be addressed (complete: May 5 to June 4, 2014 scoping period)
- Coordination with federal, state, local, and tribal governments, and cooperating agencies (ongoing)
- Public review of and comment on the Preliminary EA, which analyzes likely environmental effects of the Proposed Action and Action Alternatives (completed Fall 2015)

During scoping, various parties provided comments, and a total of 17 individual letters were received. The BLM used the issues and other information collected in the early planning and scoping phases to help formulate a reasonable range of alternatives to be analyzed during the EA process (see Chapter 2). See Chapter 6 for a more detailed discussion of public involvement and scoping.

1.8.1 Concerns Identified in Scoping

Preliminary resource concerns identified during scoping were researched, and an analysis was completed to determine if concerns were present, the potential effects, and if environmental protection measures (EPMs) proposed by Tri-State would avoid or minimize the effects. Resource concerns, potential effects, and applicable EPMs are summarized in Table 3. A complete list of proposed project EPMs are in Table 9 and Table 10.

Table 3. Preliminary Resource Concerns Identified during Scoping that did not Inform the Development of Alternatives and Rationale

Affected Resource	Concern	Potential Effects	Applicable Environmental Protection Measures
Wildlife	Construction noise and human activity may cause bald eagles to temporarily avoid portions of their habitat and could affect their foraging activities.	No bald eagle winter concentration areas, nests or roosts documented in the proposed project vicinity. Other effects on bald eagles would be avoided through implementation of EPMs.	BR-3, BR-4, BR-6
Wildlife	Surface and human disturbance from construction of the Dolores River crossing location may affect desert bighorn sheep.	Proposed project area not within desert bighorn sheep range. No analysis necessary.	N/A
Wildlife	Surface and human disturbance from construction of the Dolores River crossing location may affect terrestrial wildlife.	Effects on habitat would be negligible in comparison to the extent of habitat available within the proposed project area. Aboveground facilities would have a relatively small disturbance footprint, and direct, long-term effects on terrestrial wildlife habitat from constructing or upgrading substations, access roads, and other permanent facilities would be negligible. Less than 1 percent of the total big game habitat, including elk production, elk winter concentration, and deer winter concentration areas in the Game Management Units (GMUs) would be affected. Human disturbance effects would be primarily during construction and would be short-term.	BR-1 through BR-10, BR-12, VG-8 through VG-9
Wildlife	Construction activity could affect raptor nesting and roosting.	Implementation of EPMs would minimize effects on raptors.	BR-2, BR-4, BR-6
Invasive Species	New ground disturbance associated with the proposed project could result in the spread of noxious weeds.	Implementation of EPMs would minimize the spread of noxious weeds.	NW-1 through NW-8

Affected Resource	Concern	Potential Effects	Applicable Environmental Protection Measures
Recreation	Construction timing may affect recreation, including hunting season. Proposed project construction could disrupt and/or disturb mountain bike trails (South Buck Trail, Parallel Trail, and Power Line Trail).	Recreation uses that occur within or through the transmission line corridor would be affected for a short time period during construction, due to route closures, truck and equipment access, construction activity, and noise. Implementation of EPMs would minimize effects on recreation, and recreation uses would return to pre-construction levels following proposed project construction.	A-1 through A-8, AQ-2, R-1 and R-2
Socio-economics	An improvement in the transmission line from 115-kV to 230-kV could negatively affect private property values.	Any change in property values would likely be negligible due to the presence of the existing transmission line and highway.	LU-2
Noise	The proposed project could result in increased noise from construction and the "corona effect" from the transmission line itself. Noise generated by project construction activities must be in compliance with C.R.S. 25-12-103(5), industrial noise levels.	Short-term noise effects during construction would range from moderate to negligible, depending on the location of the noise receptor. The new transmission line would not introduce any new long-term elevated noise levels. The corona noise associated with electrical transmission would be negligible at the edge of the ROW. Noise effects would be minimized with implementation of EPM N-1 and N-2. The design standard for transmission line construction is to generate less than 50 decibels (dBA) at the edge of the ROW.	N-1 and N-2
Electro-Magnetic Fields (EMF)	Increased line voltage could increase EMF and subsequently affect health and safety.	EMF generated by the improved line would dissipate by the edge of the ROW; risks to human and animal health would be non-existent or negligible. The ROW width associated with the transmission line is intended to prevent construction of residences or other structures in the corridor.	N/A

Additional information on resources evaluated is in Chapter 3 (see Table 13).

1.8.2 Issues Identified during EA Scoping

Two issues that influenced the development of alternatives were identified based on information obtained during external and internal scoping conducted in 2014:

1.8.2.1 Threatened and Endangered Species

- The proposed project may result in increased habitat fragmentation within occupied GuSG habitat in the Dry Creek Basin.

- During construction, noise and human activity may cause GuSG to temporarily avoid portions of their habitat and affect their foraging activities.

1.8.2.2 Visual Resources

- Scenic quality for river users and other recreationists may be negatively affected at the Dolores River crossing.
- Larger structures and facilities as well as conversion from wood to metal structure poles in some portions of the proposed project could diminish scenic quality.
- Moving the facility along SH 141 in the Dry Creek Basin could affect scenic quality for residents and drivers.

In response to potential adverse effects on GuSG habitat, an alternative alignment through the Dry Creek Basin was included as a routing option. To address potential scenic quality effects in Dolores Canyon, upgrading in place at the existing crossing was evaluated as a routing option.

1.8.3 Changes between Preliminary and Final EAs

Several changes were made between the Preliminary and Final EAs based on comments provided on the Preliminary EA. The list below is a summary of the primary edits:

- Additional information regarding San Miguel LUC;
- New structure detail for Dolores River Crossing;
- Dry Creek Basin Alternatives evaluation of impacts for both north and south side of highway for realignment option;
- Identification of an Agency Preferred Alternative (Alternative A, Proposed Action);
- Updated weed mapping;
- New information for the GuSG, including affected environment and environmental consequences; analysis of the updated POD Appendix B, Tri-State Biological Resource Protection Plan, also has been integrated;
- New sections for Areas of Critical Environmental Concern and Socioeconomics;
- Description of public involvement process for Preliminary EA review and update of communication and coordination sections;
- Additional detail in Appendix D, Tri-State's POD and Appendices; and
- Addition of Appendix F for responses to public and agency comments.

2 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

During the alternatives development process, the BLM relied on the BLM NEPA Handbook and the USFS NEPA Handbook (BLM 2008; USFS 2012) for guidance on developing a range of reasonable alternatives. The road effects in this EA are tiered to the 2006 EA (BLM 2006), which authorized Tri-State's use of 118 miles of existing access roads for maintenance and repairs to the existing 115-kV transmission line. All of the Action Alternatives would use most of the previously authorized roads for construction access and long-term maintenance, unless otherwise noted in the alternative description. The No Action Alternative would also use existing access roads for maintenance of the existing transmission line.

Aside from two routing option areas in the Dry Creek Basin and Dolores River crossing, improvements to the existing transmission line are identical under both Action Alternatives (Alternatives A and C) and would follow the existing transmission line corridor. Alternative B is the No Action Alternative (see Section 2.3.2). There are a total of four combinations of Action Alternatives that are possible for the project, as follows:

- Tri-State's Proposed Action, Alternative A: realignment at the Dolores River crossing and upgrade-in-place at the Dry Creek Basin (see Section 2.3.1 and Figure 14);
- BLM Routing Options, Alternative C:
    - Dolores River crossing routing option: Alternative A incorporating the upgrade-in-place at Dolores River crossing (see Section 2.3.3 and Figure 15);
    - Dry Creek Basin routing option: Alternative A incorporating the realignment in Dry Creek Basin (see Section 2.3.5 and Figure 16);
    - Both routing options: Alternative A incorporating the upgrade-in-place at Dolores River crossing and the realignment in Dry Creek Basin (see Section 2.3.6 and Figure 17).

The remainder of the transmission line would be improved as described below in Section 2.3.6, which includes design features and EPMs (see Table 9).

Finally, two smaller realignment options were considered. One option was eliminated from detailed analysis (see Section 2.4.1), for an adjustment requested by a private property owner. A second option – a small alignment shift near the Cahone substation – was incorporated into all Action Alternatives. In these cases, public letters in response to scoping were evaluated, as well as agency resource information and Tri-State's preliminary correspondence with private landowners for these two options.

Tri-State's Proposed Action is to improve the existing MNC 115-kV transmission line to a 230-kV transmission line, and to operate and maintain the new 230-kV transmission line and fiber optic cable. The Proposed Action would upgrade the transmission line in its existing alignment with a realignment at the Dolores River crossing and near the Cahone substation (see Section 2.3.1). The Proposed Action would include upgrades to the Montrose and Cahone substations, as

well as a new 230-kV Nucla substation (called the "Maverick" substation). The sections that follow describe:

1. Routing options at the Dolores River crossing (see Section 2.2.1), which were developed to address maintenance/safety and visual resource concerns;
2. Routing options at the Dry Creek Basin (see Section 2.2.2), which were developed to address GuSG habitat concerns;
3. Compilation of routing options into alternatives, including the Proposed Action (Alternative A; Section 2.3.1), the No Action Alternative (Alternative B; Section 2.3.2), and one other agency-developed Action Alternative (Alternative C; Sections 2.3.3, 2.3.4, and 2.3.5) with three different combinations of the routing options;
4. Detailed description and design sketches of components common to all Action Alternatives, including design and processes for construction, maintenance, and operation of the new transmission line (Section 2.3.6);
5. Environmental protection measures proposed by Tri-State (see Table 9 and Table 10) to minimize resource effects; and
6. Summary comparison of effects to the resource issues that informed the development of alternatives (see Table 12).

2.2 Routing Options

Maintenance, safety, and visual quality concerns at the Dolores River crossing, and GuSG concerns through the Dry Creek Basin led to the development of routing options in these two areas (see Figure 2).

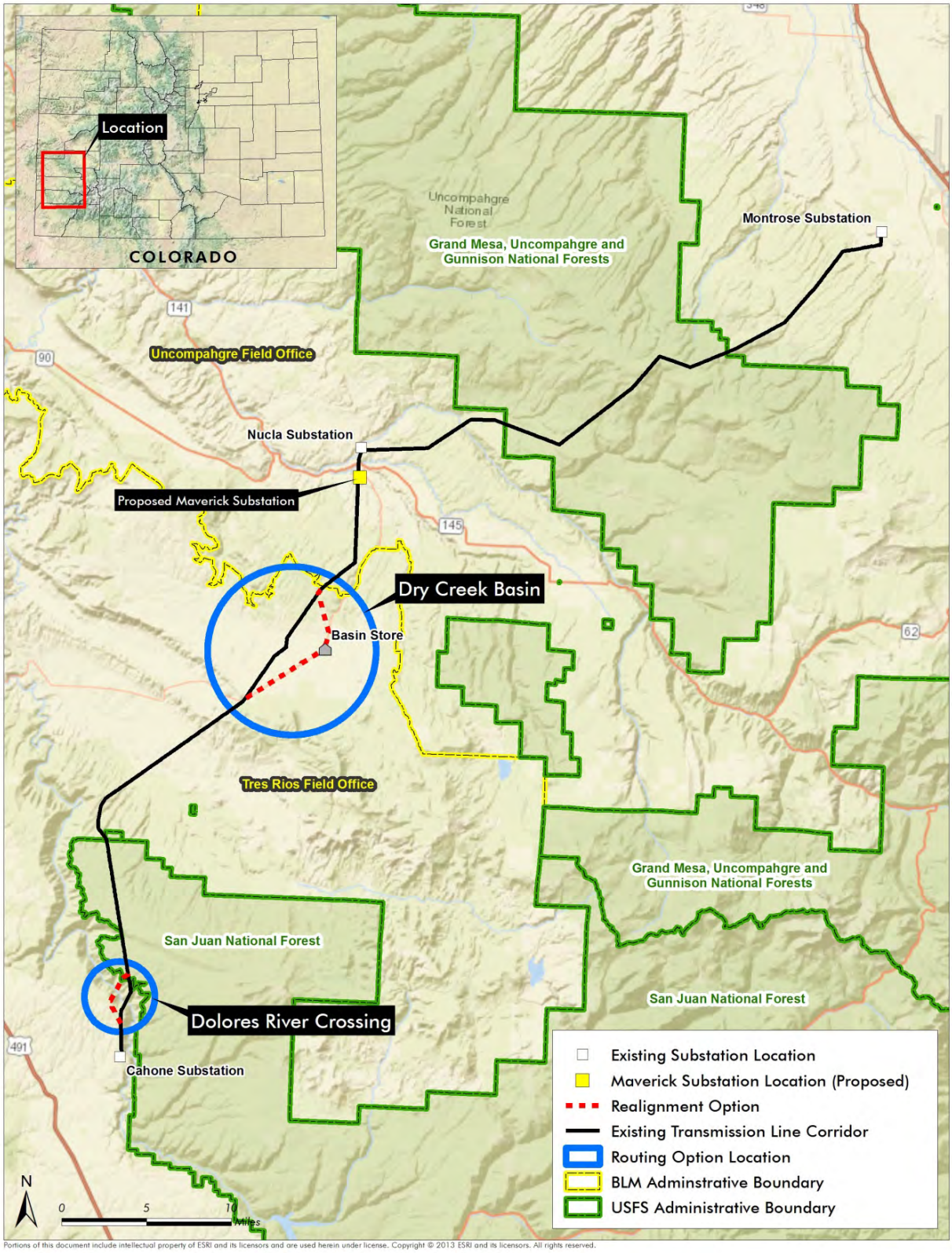

Figure 2. Routing Options Overview

2.2.1 Dolores River Crossing

The BLM and USFS evaluated options for minimizing visual effects while accommodating safe access for construction and for routine and emergency maintenance activities at the Dolores River crossing. Accessing the line from the ground on each side of the canyon year-round is necessary for inspection and maintenance, and for emergency repairs. The steep slopes associated with access to the existing crossing on the north rim have created ongoing maintenance access and safety issues for Tri-State's maintenance crews. Localized erosion is also an ongoing concern with the existing crossing.

To identify potential alternatives at the Dolores River crossing, the BLM and USFS reviewed existing conditions, reviewed topographical information, and evaluated draft photo simulations taken from agency identified Key Observation Points (KOPs) (Visual Resources Report; HLA 2015; see EA Appendix C), as well as Tri-State's road standards for construction and maintenance of transmission lines. Two routes – Tri-State's proposed realignment option and an upgrade-in-place option – are evaluated in detail for the Dolores River crossing and described in the sections that follow. Tri-State's Proposed Action is the Preferred Alternative at this location.

2.2.1.1 Background of Existing Conditions

The existing Dolores River crossing was routed, designed, engineered, and constructed using materials and equipment from 1958. Due to engineering constraints of that time period (specifically the ability to engineer and construct long spans), the line was routed in one of the narrowest areas of the canyon, and the line was constructed below the rim onto steep side slopes in an effort to reduce span length. The existing transmission line diverts from the rim of the canyon downslope onto a narrow promontory. While the existing route does shorten the total span length across the canyon, nine of the structures (and associated access roads) leading up to the crossing on the north side are on steep slopes with erodible soils. Some of the smaller structures, particularly structure 366 (see Figure 3), have continued to shift down the unstable slope, requiring several repairs and replacements.

In addition to structure-related issues, access and maintenance of structures 365 through 372 (see Figure 3) are seriously hampered by side slopes (some exceeding 30 percent) and eroding soils, making it very dangerous for crews and maintenance equipment. Currently, when repairs are needed, a large bulldozer is needed to pull equipment up and down the slopes and to serve as an anchor for maintenance equipment. Use of the bulldozer and associated maintenance activities have resulted in the further destabilization of the erodible soils on the original access grade. The line has exceeded its life span, and, consequently, required maintenance and use of the road have increased. The road must be maintained by grading each time maintenance work is required. The current access road alignment requires a crossing of Chicken Aspen Canyon. This creates environmental and maintenance-related issues. Figure 4 and Figure 5 show the extent of the erosion at the north rim between 2006 and 2012. The erodible soils are difficult to re-vegetate and stabilize after major maintenance-related road work takes place.

Inspection activities are currently conducted by helicopter and all-terrain vehicle (ATV); however, vehicular access is needed for maintenance, repairs, and emergency situations. To safely access the structure with maintenance equipment, especially during inclement weather, the existing road is continually rebuilt and improved as previously discussed.

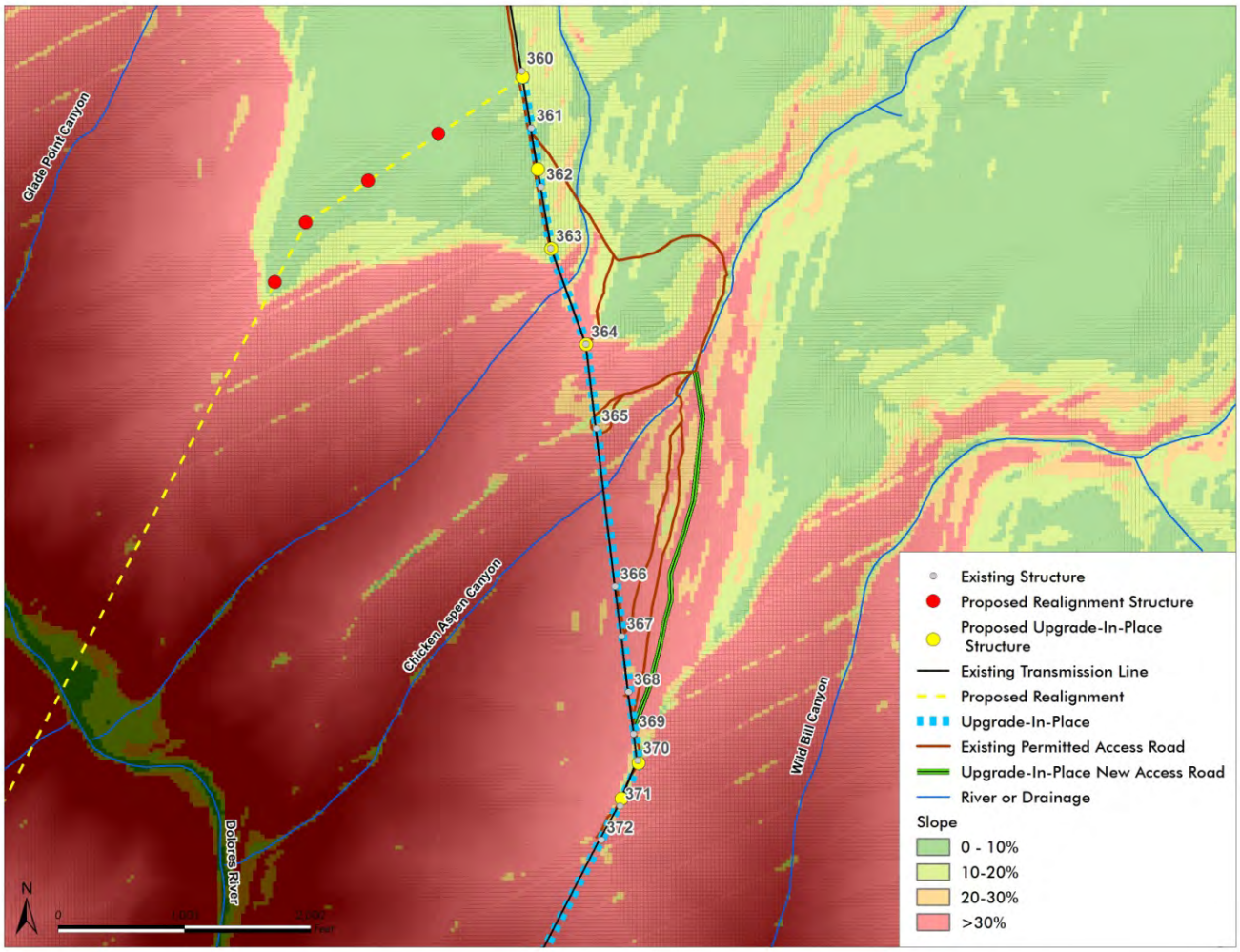

Figure 3. Slopes at Dolores River Upgrade-in-Place and Proposed Realignment Crossing

Figure 4. Structure 371 in 2006, above Main Crossing Structure along Access Route

Figure 5. Structure 371, Same Location in 2012 – Note Erosion of Access Route and Pad

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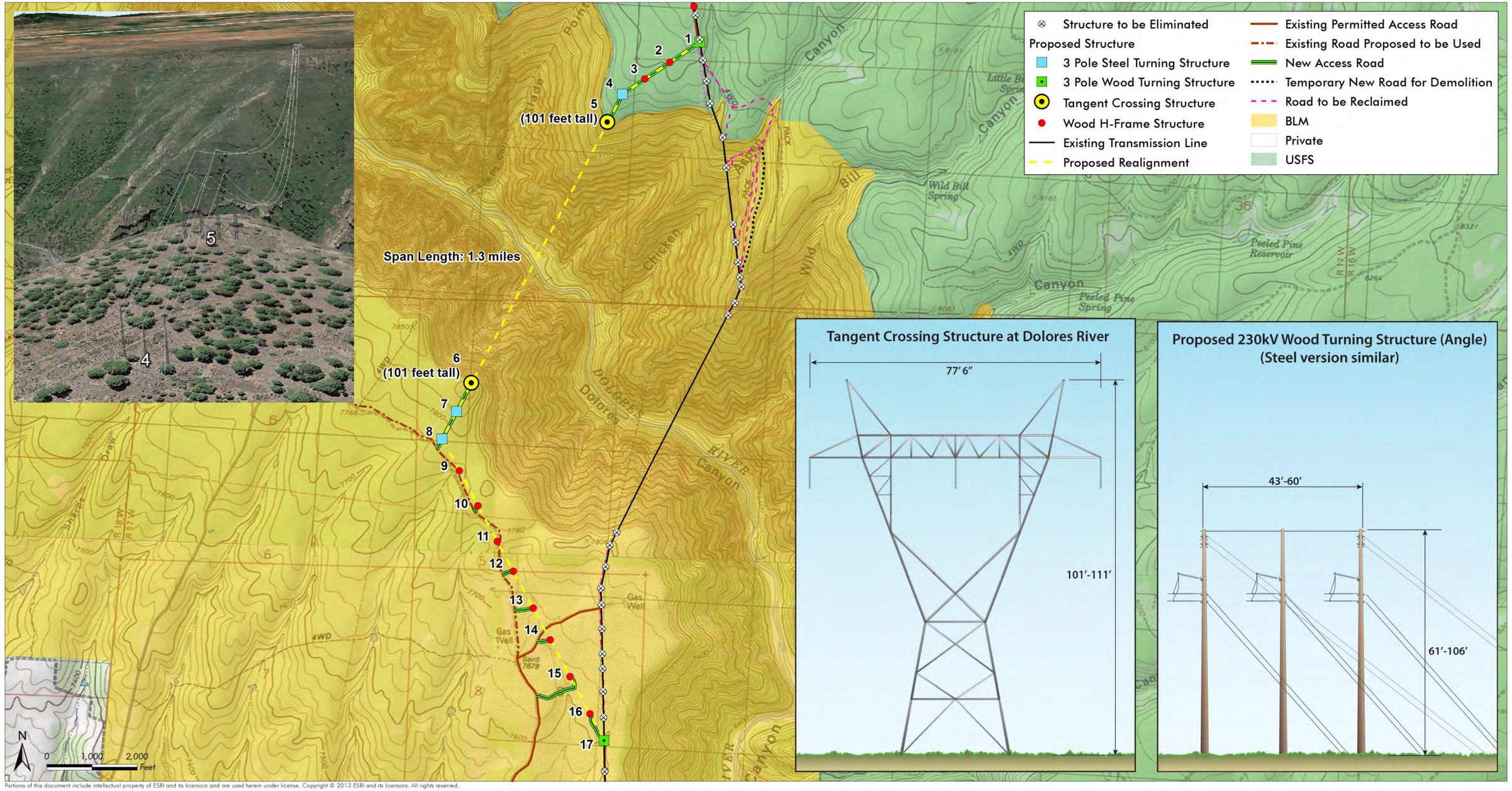

Figure 6. Dolores River Crossing Realignment Option (Proposed Action, Alternative A; Preferred Alternative)

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2.2.1.2 Tri-State Proposed Dolores River Crossing Realignment

Tri-State proposes to realign the transmission line crossing at the Dolores River Canyon to resolve ongoing maintenance and safety concerns associated with the existing alignment. Under this alternative, Tri-State proposes to move the crossing approximately 1 mile (at the furthest point from the existing alignment) to the west where slopes are less steep, and soils are more stable. In addition, access at this location would be primarily at the same grade as the surrounding topography and immediately adjacent to the transmission line, without the need for substantial cut and fill. The new alignment would take advantage of relatively gradual slopes on both the north and south rims of the canyon (Figure 6; also see Figure 3). Road access on the north rim would be constructed adjacent to or under the line, and primarily existing roads would be used on the south rim. The proposed crossing would be about 6,700 feet long and would require steel towers and special conductor wire to safely span the canyon. The new ROW would be 150 feet wide except the canyon span. The ROW within the canyon span would be less than 100 feet wide.

2.2.1.2.1 *Structures and Construction*

Detailed sketches of the structures described in this section are shown in Figure 6 insets as well as on Figure 20 and Figure 21. More details about other pre-construction, construction, and maintenance activities are in Section 2.3.6.

Two new steel lattice (tangent crossing) structures would be constructed on each side of the canyon rim (Structures 5 and 6) and would result in a 6,700-foot span across the canyon. Based on current engineering, the tower on the north rim would be approximately 101 feet tall, and the tower on the south rim would be approximately 101 feet tall. The towers would be acid-etched galvanized, non-reflective steel to minimize reflection and decrease visibility.

Structure 1 on the north rim and Structure 17 on the south rim would be a self-supporting, three-pole steel structure on a concrete foundation, approximately 80 feet in height. Structure 7 on the south rim and Structure 4 on the north rim would be a self-supporting three-pole steel turning structure, also approximately 80 feet in height. The remaining crossing structures (Structures 1 through 3 and 8 through 16) would be standard 230-kV wooden H-frames, varying between 61 and 106 feet in height (Figure 18). Steel H-frame structures may be used in areas with extremely difficult access because they can be more readily and safely transported by truck or helicopter (compared to wood, steel H-frame materials are lighter, and can be transported in smaller sections and assembled on-site).

The new conductor proposed for this alternative is high strength and low sag, which allows for longer spans while maintaining reasonable structure heights (see Section 2.1.2). *Sag* is defined as the vertical distance between the point where the line is joined to the tower and the lowest point on the line. Sag is the result of conductor tension and can cause the conductor to be too close to the ground or vegetation thus causing safety clearances to be violated. Lines that are too close to obstacles such as rocks or vegetation may arc and cause outages, and represent a safety hazard for people nearby. The conductors at the Dolores River crossing would remain in a constant state of sag. This sag would vary with temperature, ice, and wind loads as well as the age of the conductor. The final design of the line would take all of these factors into account to ensure minimum ground clearance is maintained at all times.

There would be a total of five wires spanning the canyon: three current-carrying conductors below and two fiber optic cables above. Like the existing crossing, the top wires must be marked with colored marker balls as required by Federal Aviation Administration (FAA) regulations (FAA 2007). Thirty-six-inch-diameter marker balls would be spaced no more than 400 feet apart on each of the top two fiber optic cables, using orange, white, and yellow balls in an alternating pattern, so that marker balls are not more than 200 feet apart in cross-section (see Figure 7).

Figure 7. Alternating Marker Balls on Optical Fiber, Existing Dolores River Crossing

Concrete foundations are necessary for the steel towers and steel structures at each side of the canyon rim (structures 4 through 8; see Figure 6). Foundation holes would be about 2.5 feet in diameter and 7.5 to 13 feet deep and would vary depending on location. These foundations would require the use of large drill rigs. Once the holes are drilled, concrete may be placed either by helicopter or truck. Multiple loads of concrete would be required for the installation of these structures. Once the foundations are constructed, the structures would be set by helicopter and ground equipment. Stringing of fiber optic cable and conductor would be partially completed by helicopter. Tensioning would also require large ground operations and equipment on both sides of the canyon. Construction of structures at the canyon crossing is expected to occur over about seven months.

2.2.1.2.2 *Clearing*

Vegetation removal would be required for the proposed realignment, on both ends of the canyon, to meet federal reliability requirements and to facilitate construction and future maintenance operations. The north rim is more heavily forested than the south rim, because the BLM has

recently conducted fuels treatment in the general vicinity of the alignment on the south rim. The north rim realignment is managed by the USFS (NFS land), and the south rim is managed by the BLM. Required vegetation clearing would be conducted in compliance with Tri-State's Transmission Vegetation Management Plan (TVMP; see POD Appendix T-Operations, Maintenance, and Vegetation Management).

2.2.1.2.3 *Access*

About 1.4 miles of new access road would be required for the realignment. It is expected that only minor grading would be required for construction and future maintenance of these access roads due to the gentle terrain. No large areas of cut, fill, or soil compaction would be needed for road construction, and no water would be used other than what is needed for dust suppression (about three 4,000 gallon water trucks). Access road construction is expected to take 3 to 5 days. About 4.5 miles of existing access road would be reclaimed as part of the realignment, incorporating applicable EPMs for revegetation, public access, and other management measures.

2.2.1.3 Dolores River Crossing Upgrade-in-Place

Under the Dolores River crossing upgrade-in-place option, the Dolores River crossing would remain within the existing transmission line corridor. The ROW would be expanded from 100 feet to 150 feet to accommodate the higher voltage conduit. The ROW within the canyon span would be less than 100 feet wide. A total of six existing structures would be eliminated as part of this alternative; a secondary span would eliminate structures and reduce safety and erosion issues (see Figure 8 and Figure 9). The transmission line alignment would remain in approximately the same corridor. A new north rim access road would be constructed, and existing roads that are not needed for the new routing option would be reclaimed. The approximate proposed structure locations and a preliminary route for the proposed access road are shown below in Figure 9.

2.2.1.3.1 *Structures and Construction*

A total of six structures would be eliminated as a part of this alternative (Structures 365 through 369, and 372, shown on Figure 3 and Figure 8). Structure removal results in a secondary 3,300-foot span in addition to the main canyon span, which requires a span of 5,770 feet (see Figure 3 and Figure 8). The new alignment would require two tangent crossing structures made of steel lattice (see inset details in Figure 9) at each end of the primary canyon crossing (Structures 2-6 and 2-7). The North and South rim tangent crossing structures at the Dolores River both would be 111 feet tall, and would have the same non-reflective surface treatment as described in Section 2.3.6.2 (see Table 9, EPM A-6). Four, three-pole steel turning structures (see inset details in Figure 9) would be used as intermediate structures: three at the north rim (2-3, 2-4, and 2-5) and one on the south rim (2-8). There would be one self-supporting three-pole steel turning structure at Structure 2-9. The number and type of conductors, the sag, and the marker ball arrangement would be the same as discussed under the Dolores River crossing realignment option. The conventional three-pole steel turning structures would be approximately 80 feet tall. Other structures near the crossing would be wood H-frame structures (see Figure 18) except in areas extremely difficult to access; in these locations, steel H-frame would be used.

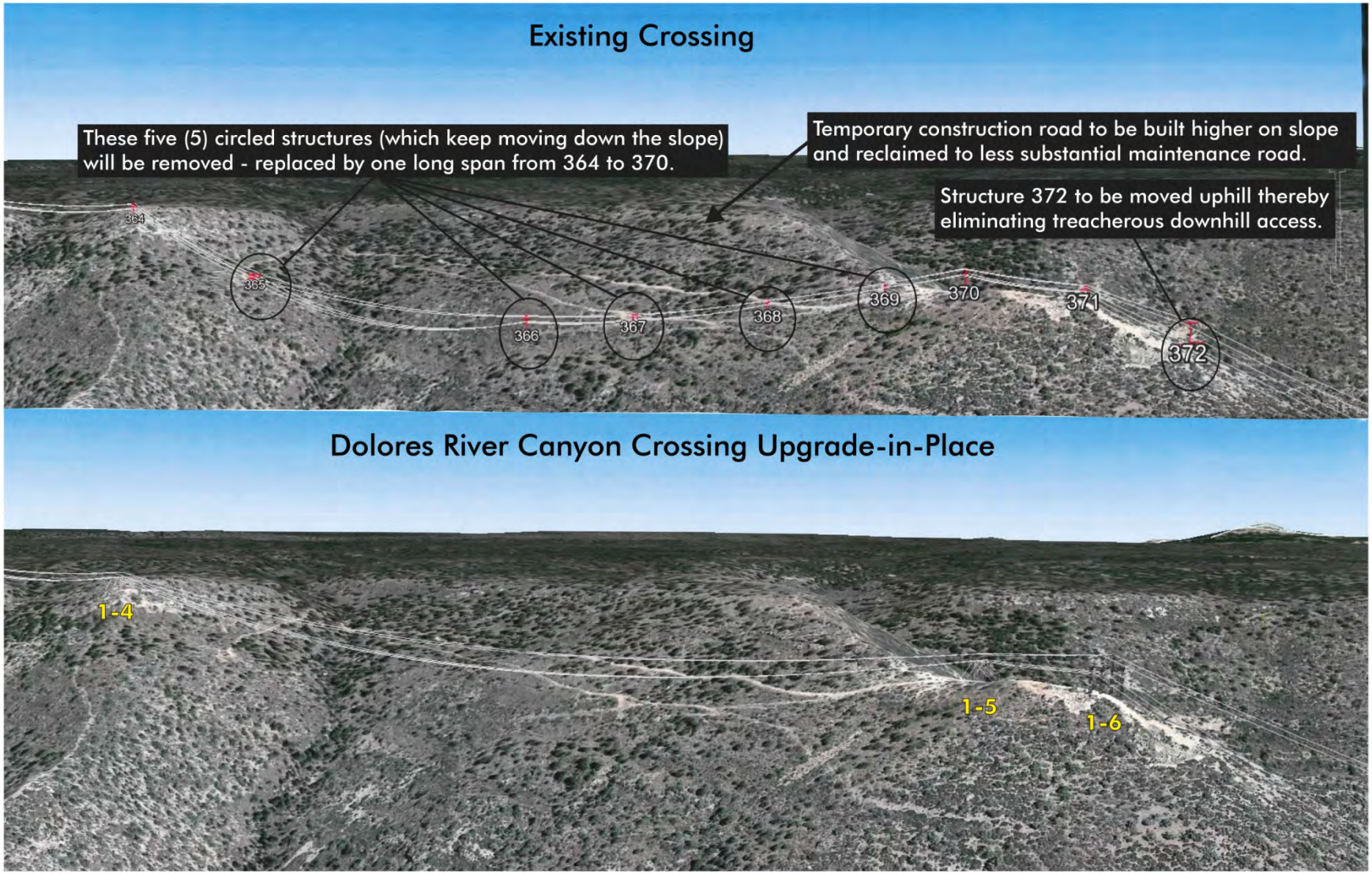

Figure 8. Dolores River Crossing Secondary Span Compared with Existing

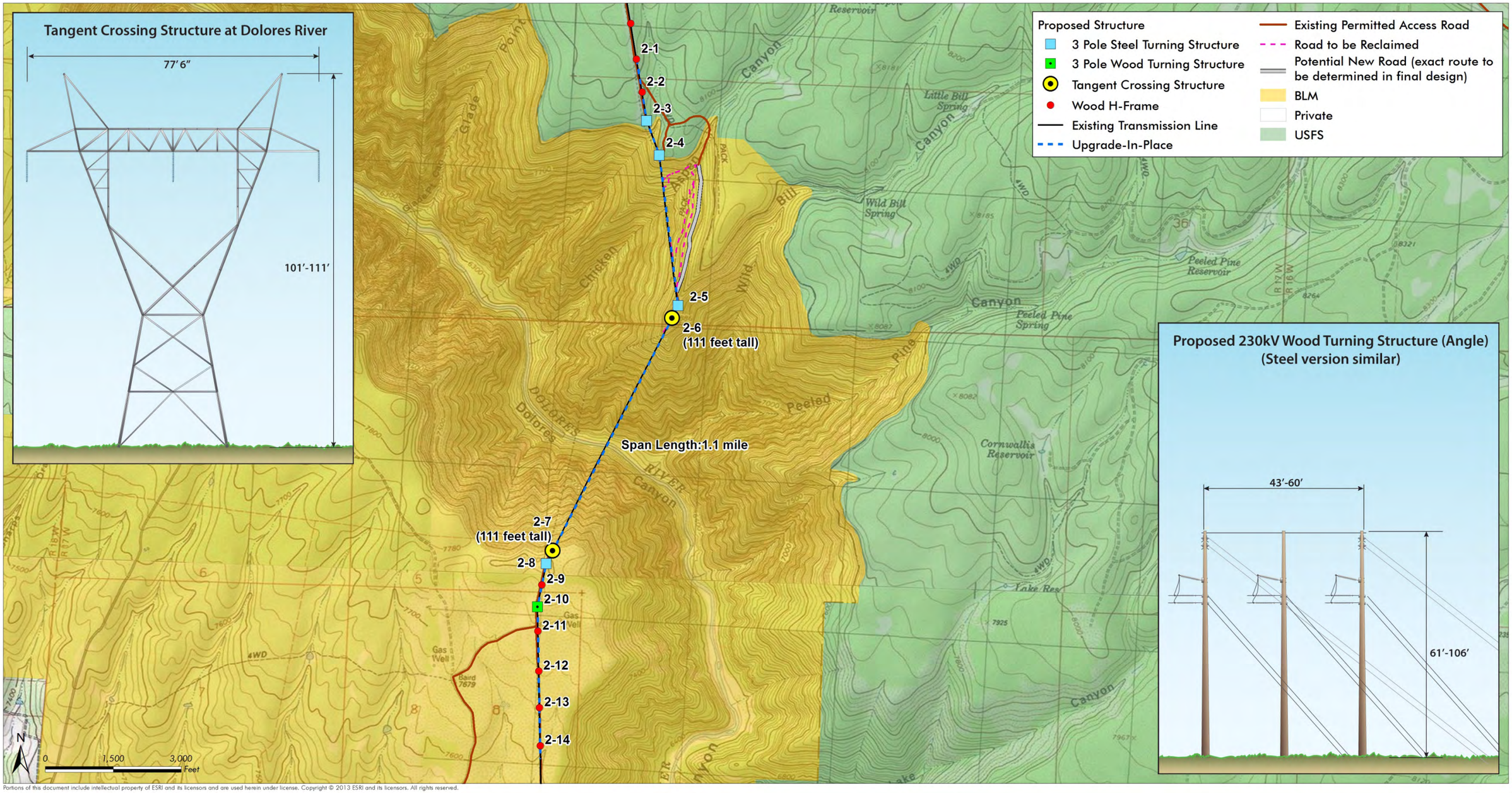

Figure 9. Dolores River Crossing Upgrade-in-Place Routing Option

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The construction of the tangent canyon crossing structures would require concrete foundations (2-6 and 2-7; Figure 9). Concrete for foundations would be delivered by truck and/or helicopter. Each tangent crossing structure would require four concrete foundations approximately 5 feet in diameter and 25-feet deep to be strong enough to withstand the high tension forces of the special conductor that would be used as well as significant wind and ice loads. A truck-mounted drill rig and supporting bulldozer would be needed for drilling operations. The construction process is described in Section 2.3.6. The steel pole turning structures would be directly imbedded or placed on concrete foundations and anchored with guy wires, depending on the results of geotechnical investigations.

Drilling and wire stringing operations at 2-6 and 2-7 would require grading a flat temporary pad for the drill rig, approximately 30,000 square feet (150 feet by 200 feet), as well as the puller and tensioner equipment used to string, pull, and tension the conductor wires. Following construction, the temporary pad would be reclaimed and revegetated except for a smaller, permanent pad for long-term maintenance. The pad would be revegetated to the extent feasible with grasses and forbs to reduce long-term erosion, but the grade would be left in place to facilitate safe access for future line maintenance.

Helicopters could be used for some of the construction work (possible concrete delivery, pulling the sock line, and installing approximately 50 aerial marker balls), but ground vehicular access would be needed to drill the structure foundations for 2-4 through 2-8 using a drill rig and bulldozer, which may be used to anchor the drilling equipment.

The Dolores River crossing would require the use of an atypical conductor. A high temperature, low sag conductor has been proposed to keep structure heights to a minimum. Each wire over the canyon would weigh from 7,800 to 15,600 pounds, depending on the conductor selected. To string the conductor across the Dolores River crossing, a helicopter could be used to pull across a "sock line" which is much lighter and smaller than the conductor. Once the sock line is in place, it would be attached to the conductor, which would be pulled across and tensioned by using a puller and a tensioner located on the ground. In order to safely set up this puller and tensioner equipment, a flat pad site and access to the structure would be required.

2.2.1.3.2 *Clearing*

Vegetation removal would be required for the Dolores River crossing upgrade-in-place option on both rims of the canyon to meet federal reliability requirements and to facilitate construction and future maintenance operations. Although much of the ROW is already cleared or would be spanned by the new structures, additional vegetation clearing would be needed. Additional trees would be cleared to extend the 100-foot ROW to 150 feet. Clearing would be conducted in compliance with Tri-State's TVMP (see Final POD, Appendix T-Operations, Maintenance, and Vegetation Management) and per BLM and USFS requirements for treatment and removal.

2.2.1.3.3 *Access*

About 0.5 mile of new access road on the north rim would be required for the Dolores River crossing upgrade-in-place option (see Figure 9). The new north rim access road would be designed to accommodate the equipment and loads necessary for construction of the new transmission line as discussed above. This road would be designed with a plan and profile to minimize disturbance to the extent feasible. The road would be needed for long-term

maintenance access following construction. Formal engineering design for this access road has not been completed. Preliminary design was conducted using aerial photography, topographical maps, and the results of Tri-State staff field reviews.

Preliminary design results indicate that the steep (greater than 30 percent) cross-slopes shown in Figure 3 may require additional cuts and fills to construct the 16-foot wide road necessary to provide access for construction equipment. Access ROW widths for the road would vary depending on the slope. Assuming a worst case scenario (a continuous ROW width of 75 feet for the 0.5-mile road), the disturbance would be about 4.9 acres. Depending on final routing and design, the ROW width and acres disturbed would likely be less.

Construction is expected to require water to process and compact structural fill material from the native materials on-site. A large water tanker (possibly an 18-wheeler) would be used to fill an on-site pedestal-mounted bulk tank located on an existing access road. Smaller water trucks would be filled from the bulk tank, then travel down the ROW and deliver water to the work area. Water would be brought in from a permitted source off-site and would temporarily increase truck traffic on approximately 20 miles of USFS access routes prior to and during construction. Tri-State would coordinate final siting and engineering of the road with the agency road engineers to ensure the road required for transmission line construction is adequately designed for the planned use. Surface disturbance would be minimized to the extent feasible, given soils and terrain. Following construction, ground vehicular-access to the structures would be required for maintenance and emergency repairs; Tri-State would require a permanent road ROW for this purpose, for roads outside of the transmission line ROW.

Tri-State would reclaim and revegetate a portion of the road to reduce the visibility of the road from the south rim of the canyon following construction. The maintenance access road would require periodic grading and stabilization over the life of the transmission line. Additional measures to minimize visual effects of the road would be implemented. These measures may include placement of boulders, feathering, or rock staining. Prior to final approval for construction, Tri-State would detail the road reclamation and visual mitigation plans for post-construction activities, as well as the specifications for the long-term road that would remain in place for future maintenance activities. BLM and USFS would approve all plans before granting the construction Notice to Proceed (NTP). As noted previously, the level of design is preliminary; ROW widths, water use, and other details are conservative estimates.

2.2.1.4 Summary of differences between Dolores River Crossing Alignments

Table 3 summarizes the differences between the proposed realignment and the upgrade-in-place. Figure 10 shows the general topography for the two crossing alignment options on the north rim of the Dolores Canyon; view is generally toward the south.

Table 4. Dolores River Crossing Design Summary and Comparison

	No Action	Realignment Option	Upgrade-in-Place Option
Total power line mileage	3.1 miles	3.5 miles	3.1 miles
Right-of-way width	100 feet	150 feet (<100 feet in canyon span)	(same as Realignment)

	No Action	Realignment Option	Upgrade-in-Place Option
Conductor type and size	336.4 kcmil* Aluminum Conductor Steel Reinforced ([ACSR] 0.720")	High strength, low sag conductor (1.345")	(same as Realignment)
Circuit configuration	Horizontal	(same)	(same)
Design minimum ground clearance beneath conductors	25 feet	28 feet	(same as Realignment)
National Electrical Safety Code (NESC) minimum ground clearance	20.7 feet	23.3 feet	(same as Realignment)
Span between structures (maximum)	5,400 feet	6,700 feet (single span)	5,770 feet Dolores River Canyon span 3,300 feet Chicken Aspen Canyon span
Typical span between wood structures (average)	500 feet	625 feet	(same as Realignment)
Number of structures per mile	11	7	(same as Realignment)
Height of wood H-frame structures (typical range)	48 to 57 feet	61 to 106 feet	(same as Realignment)
Height of steel H-frame structures	N/A	100 to 120 feet	(same as Realignment)
Height of tangent crossing structures	90 feet (North Rim) 80 feet (South Rim) Wood Structures	101 feet (North Rim) 101 feet (South Rim) Steel Lattice Structures	111 feet (North Rim) 111 feet (South Rim) Steel Lattice Structures
Height of three-pole wood guyed structures	78 to 88 feet	61 to 106 feet	61 to 106 feet
Construction disturbance for H-frame structures	N/A	4,800 square feet (about 70 by 70 feet)	(same as Realignment)
Permanent disturbance for H-frame structures	30 square feet	40 square feet	(same as Realignment)
Maximum construction disturbance at three-pole steel and wood guyed turning structures	N/A	30,000 square feet (about 150 by 200 feet)	(same as Realignment)
Permanent disturbance at three-pole steel and wood guyed turning structures	6,000 square feet (about 80 by 75 feet)	13,000 square feet (about 100 by 130 feet)	(same as Realignment)
Construction disturbance at each tangent steel structure base (maximum square feet)	N/A	30,000 square feet (about 150 by 200 feet)	(same as Realignment)
Permanent disturbance at each tangent crossing structure	About 50 square feet at south rim; about 15,000 square feet at north rim	About 610 square feet for north and south rim	About 610 square feet for south rim, and 7,500 square feet (about 100 by 75 feet) for north rim
New constructed access roads	N/A	1.4 miles	0.5 mile
Construction disturbance for new access roads	0	4.2 acres permanent 4.6 temporary	4.8 acres
Duration of new access road construction	N/A	3 to 5 days	10 to 15 days

* kcmil = thousands of circular mils

	No Action	Realignment Option	Upgrade-in-Place Option
Gallons of water for dust suppression and soil compaction on new access roads	N/A	12,000	120,000
Total water truck trips	N/A	3	18
Reclaimed access roads	N/A	4.5 miles	1.3 miles
Existing authorized access road impacts evaluated and disclosed in the 2006 EA (Note: this document tiers to prior analysis in the 2006 EA)			
Use of existing authorized down line access roads (2006 EA)	3.4 miles	0.0 miles	2.0 miles
Current disturbance for existing authorized access roads	6.5 acres	0.0 acres	3.9 acres
Construction disturbance for existing authorized access roads	5.6 acres	0.0 acres	3.4 acres

Note: Transmission line engineering information is preliminary and subject to change. Information provided is based on preliminary design conducted for the proposed project, using standard effect measurements for proposed structure types. Also note that the new roads associated with the realignment option would primarily require vegetation removal and no major grading.

Figure 10. Topography along the Upgrade-in-Place and Realignment Options at the Dolores River Crossing

2.2.2 Dry Creek Basin

The BLM carefully considered many different options within the Dry Creek Basin area to minimize effects to GuSG and visual resources, balancing the concerns of private landowners, the Colorado State Land Board, San Miguel County, and CPW, as well as Colorado Department of Transportation (CDOT) along the SH 141 ROW. The BLM considered the final TRFO RMP (BLM 2015), instructional memorandums (IM), agency feedback during meetings (including BLM IM No. 2014-100: Gunnison Sage-Grouse Habitat Management Policy on Bureau of Land Management-Administered Lands in Colorado and Utah) and numerous meetings with USFWS and CPW (refer to Section 6.2 Persons, Groups, and Agencies Consulted), as well as land ownership mapping. Industry standard practices for high voltage rural transmission line construction were also considered. Based on these considerations, two routes were selected for analysis in the EA—a realignment option and an upgrade-in-place option. The upgrade-in-place is Tri-State's Proposed Action and BLM's Preferred Alternative. The two routes at the Dry Creek Basin are described in the sections that follow.

2.2.2.1 Background

The Dry Creek Basin is a broad, flat, sagebrush-dominated basin south of Nucla. On November 12, 2014, the USFWS issued a final rule that listed the GuSG as threatened under the ESA in addition to designating critical habitat (see Section 1.7.1.3). Although the final rule specifies that lands covered by buildings, pavement or other manmade structures are not included in critical habitat, it further clarifies that a road or powerline right-of-way that is not paved would be considered critical habitat (79 FR 69326). GuSG inhabit sagebrush ecosystems in southwestern Colorado and southeastern Utah, including the Dry Creek Basin (see Sections 3.5.6.1). The realignment along SH 141 in the Dry Creek Basin option is being evaluated to address concerns regarding proposed project related effects to GuSG and occupied habitat from construction, operation, and maintenance of the proposed 230-kV transmission line. EPMs relevant to the GuSG are included in Table 9 and Table 10, and apply to both the upgrade-in-place and realignment options in the Dry Creek Basin.

2.2.2.2 Upgrade-in-Place (Tri-State's Proposed Action, Alternative A; Preferred Alternative)

2.2.2.2.1 *Structures and Construction*

The proposed upgrade-in-place alignment in the Dry Creek Basin would follow the existing transmission line corridor (see **Figure 14**). This alignment would be about 7.9 miles long, and would cross five private properties. Self-supporting unguyed steel monopole structures would be used in occupied habitat. All horizontal surfaces as well as the pole top would be fitted with perch discouragers to reduce avian predator perching and nesting activities in occupied habitat. Steel structures would require concrete foundations (see Section 2.3.6.11).

2.2.2.2.2 *Access*

Existing access roads that are currently used to maintain the transmission line would be used to construct and maintain the improved line. Structures would be placed to avoid or minimize the need for new access road construction. Some improvements, particularly where the road has been eroded by stormwater and runoff, would be needed. Any temporary disturbance areas would be reseeded following construction. Short segments of new road would be needed.

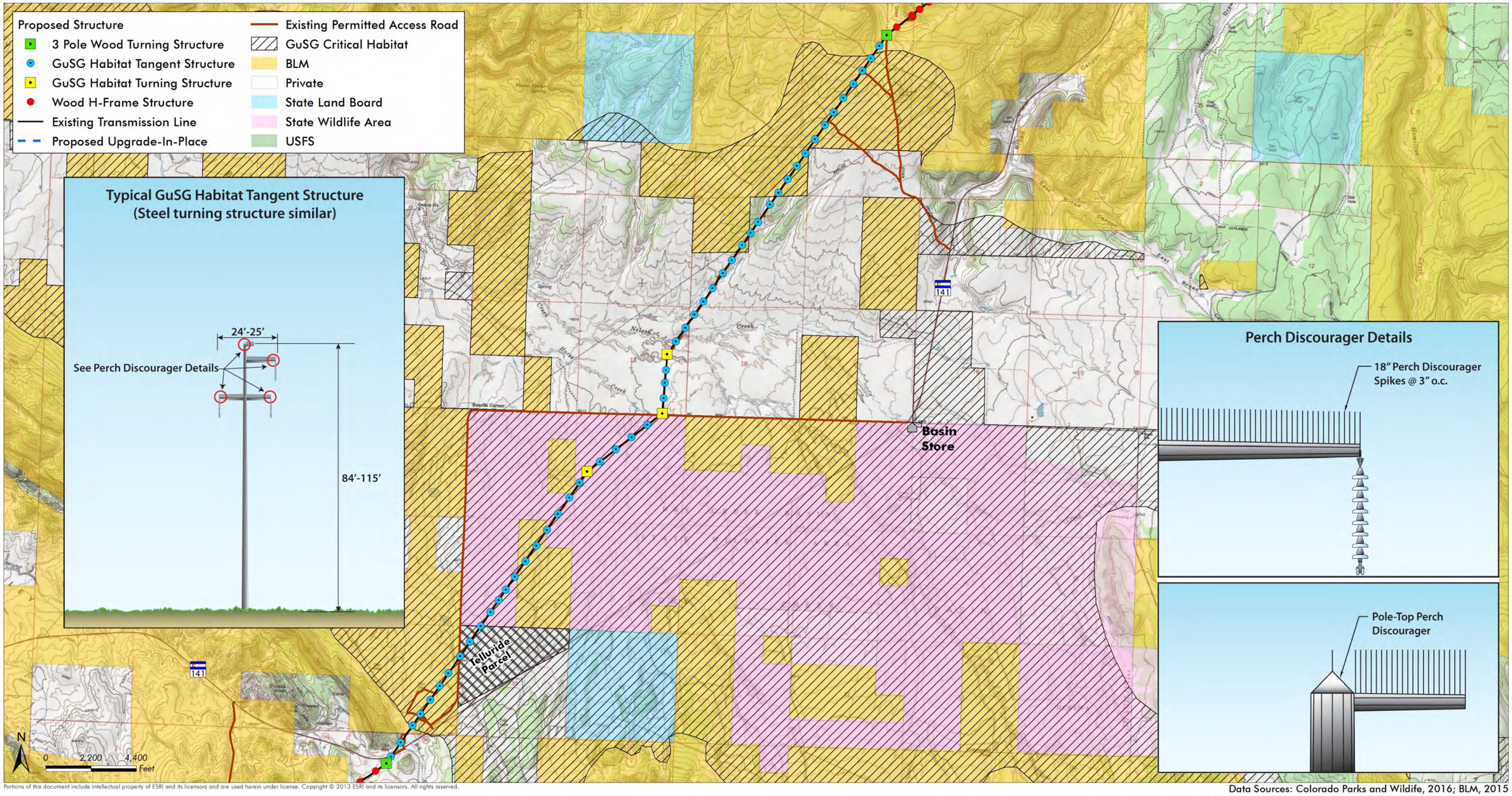

Figure 11. Upgrade-In-Place in the Dry Creek Basin (Tri-State's Proposed Action, Alternative A; Preferred Alternative)

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2.2.2.2.3 *Design Features/Applicant Committed Measures*

Tri-State has developed a Biological Resource Protection Plan for GuSG and other sensitive resources (see Draft POD Appendix B). The Plan includes environmental protection measures, design features, and additional proposed conservation plan elements to conserve, protect, and aid in recovery of GuSG habitat. Environmental protection measures include Tri-State's proposed voluntary design features (specifically, use of steel structures, perch discouragers, and self-supporting turning structures), scheduling constraints, and other actions that are intended to minimize proposed project related effects to GuSG for the upgrade-in-place option. Detailed information including cost is included in Appendix B. Important measures in addition to EPMs listed in Table 9 include:

- Tri-State purchase of 500 acres with an active GuSG lek in the Miramonte Reservoir area, and transfer ownership to CPW for long-term management to benefit the GuSG; and
- Tri-State commitment of $100,000 to BLM for habitat improvement projects specifically to benefit the GuSG.

Appendix B also includes details regarding an Avian Protection Plan to protect all migratory birds, including raptors.

2.2.2.3 Realignment along SH 141

2.2.2.3.1 *Structures and Construction*

The Dry Creek Basin realignment option would move the existing transmission line alignment parallel to SH 141 to consolidate linear disturbances along a single corridor in Dry Creek Basin. Options for both the north and south side of SH 141 are included in the EA analysis. The Dry Creek Basin realignment would diverge from the existing alignment at the north end of the Dry Creek Basin and connect to the SH 141 corridor (see Figure 15). The transmission line would follow the north side of SH 141 beyond U29 Road near the Basin Store. From that point, the line would either follow the north side or the south side of the SH 141.

The realignment would require construction of an additional 1.2 miles of transmission line relative to the existing alignment, for a total length of about 9.0 miles (North side of SH 141) or 9.1 miles (South side of SH 141). Structure types, including perch discouragers, are described in Section 2.3.6.2.

If the realignment is selected, it would cross lands owned and managed by CPW, private landowners, City of Telluride (north side of highway), and lands administered by the BLM (see Table 31 and Figure 32 for additional detail).

2.2.2.3.2 *Access*

About 7.9 miles (North side of SH 141) or 8.5 miles (South side of SH 141) of new downline access road are anticipated for the realignment. Much of the access may be overland due to flat slopes in the area, but some minor grading/improvements would be required to facilitate the safe operation of construction equipment through drainages and steeper areas of terrain. The proposed long-term access road ROW for the realignment along SH 141 is 30 feet. Areas requiring additional improvement would require a 50-foot easement, but the access road would be re-seeded post construction. Tri-State would re-seed the overland access surface to reduce

erosion and reduce noxious weed infestations. If grading is required, the road bed would be left in place, but it would be re-seeded post construction. The downline access roads on the existing alignment would be revegetated/reclaimed where necessary under Alternative C.

2.2.2.3.3 *Design Features/Applicant Committed Measures*

Under the realignment along SH 141 in the Dry Creek Basin option, Tri-State would construct approximately 1.2 additional miles of transmission line (relative to the upgrade-in-place) to consolidate the ROW with SH 141. Tri-State's new ROW would overlap the existing CDOT ROW by 25 feet in some locations (see Figure 13; overlap is related to the width of the CDOT ROW, which varies throughout the corridor). The total cost of Tri-State's proposed voluntary design features to minimize proposed project related effects to GuSG is approximately $3.7 million. For additional details, please see the POD's Appendix B-Biological Resource Protection Plan.

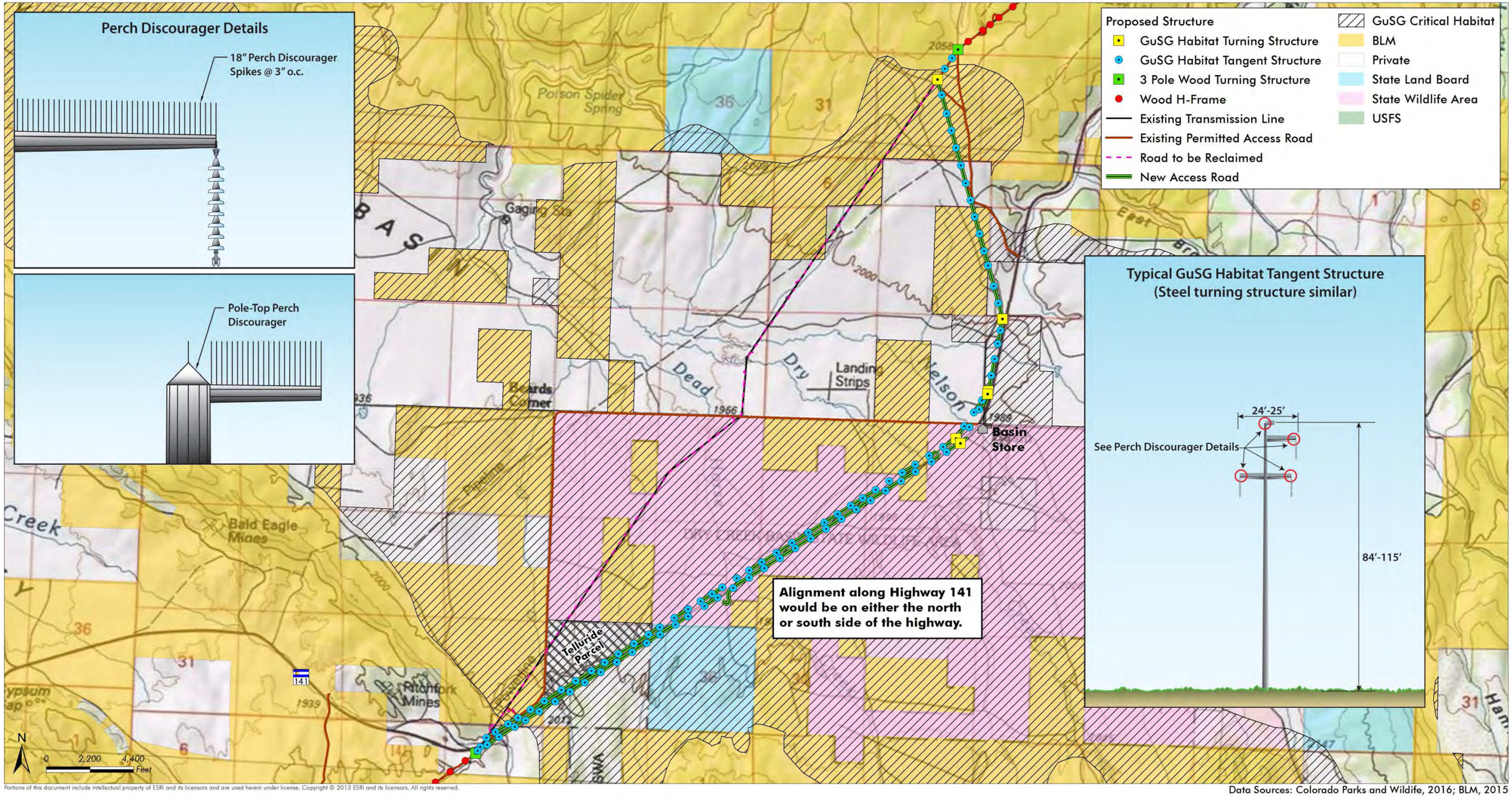

Figure 12. Dry Creek Basin Routing Option-Realignment Along SH 141

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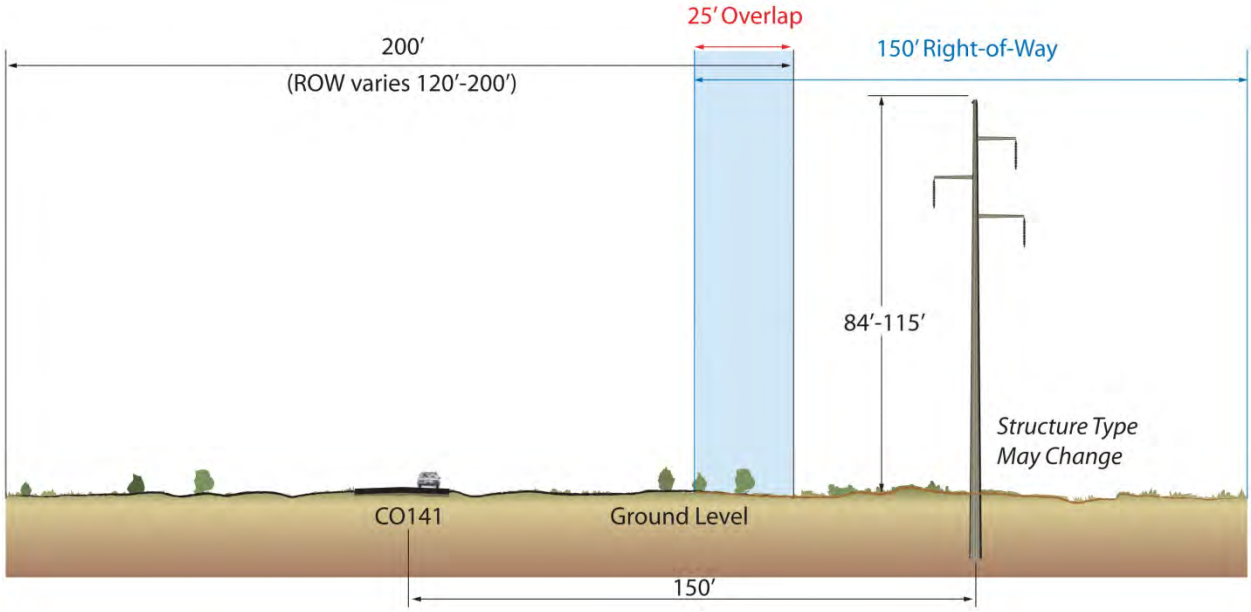

Figure 13. Conceptual Cross-Section SH 141 Overlap for the Dry Creek Basin

2.2.2.1 Summary of Differences between Upgrade-in-Place and Realignment along SH 141

Table 5 summarizes the differences between No Action, upgrade-in-place, and realignment along SH 141.

Table 5. Dry Creek Basin Design Summary and Comparison

	No Action	Upgrade-in-Place	Realignment Along SH 141; (north) south side of SH 141
Total power line mileage	7.9	7.9	(9.0) 9.1
Right-of-way width	100 feet	150 feet	(same as Upgrade-in-Place)
Conductor type and size	336.4 kcmil Aluminum Conductor Steel Reinforced ([ACSR] 0.720”)	1272 ACSR (1.345”)	(same as Upgrade-in-Place)
Circuit configuration	Horizontal	Vertical	(same as Upgrade-in-Place)
Minimum ground clearance beneath conductors	25 feet	28 feet	(same as Upgrade-in-Place)
NESC minimum ground clearance	20.7 feet	23.3 feet	(same as Upgrade-in-Place)
Typical span between structures (average)	500 feet	625 feet	(same as Upgrade-in-Place)
Number of structures per mile	11	7	(same as Upgrade-in-Place)

	No Action	**Upgrade-in-Place**	**Realignment Along SH 141; (north) south side of SH 141**
Number of self-supporting steel turning structures	NA	3	4
Number of structures in occupied GuSG habitat	72	50	(57) 54
Height of steel monopole structures (typical range)	48 to 57 feet	84-115 feet	(same as Upgrade-in-Place)
Construction disturbance at each steel mono-pole structure base (maximum square feet)	NA	6,500 square feet (about 100 by 65 feet)	(same as Upgrade-in-Place)
Permanent disturbance at each steel mono-pole structure base	NA	1,600 square feet (about 80 by 80 feet)	(same as Upgrade-in-Place)
Construction disturbance for pole structure footprint	0	7.3 acres	(8.3) 7.9
New access roads	0 miles	0.2 mile	(7.9) 8.5 miles
Construction disturbance for new access roads	0	0.3 acre	(28.6) 30.5 acres
Reclaimed access roads	0 miles	0.1 mile	7.9 miles
Existing authorized access road impacts evaluated and disclosed in the 2006 EA (Note: the roads analysis in this document tiers to prior analysis in the 2006 EA)			
Use of existing authorized down line access roads (2006 EA)	8.6 miles	8.6 miles	0.2 mile
Current disturbance for existing authorized access roads	6.2 acres	6.0 acres	(0.4) 0.6 acre
Construction disturbance for existing authorized access roads	25.2 acres (over unknown time period, as needed, for maintenance activities)	25.4 acres	0.5 acre

Note: Transmission line engineering information is preliminary and subject to change. Information provided is based on preliminary design conducted for the proposed project using standard effect measurements for proposed structure types.

2.3 Alternatives

As noted previously, aside from two routing option areas in the Dry Creek Basin and Dolores River crossing, improvements to the existing transmission line are identical under both Action Alternatives (Alternatives A and C). There are a total of four combinations of Action Alternatives that are possible for the project, described in the following subsections.

2.3.1 Alternative A (Proposed Action, Preferred Alternative) – Realignment of Dolores River Crossing and Upgrade-in-Place at Dry Creek Basin

Under Alternative A, Tri-State proposes to improve the existing MNC 115-kV transmission line to 230-kV, utilizing the existing transmission line corridor with the exception of the Dolores River crossing (Figure 14), where a realignment is proposed. See Section 2.3.7 for a detailed description of many components common to all Action Alternatives, including structure type and

design, conductor wires including fiber optic cable, ROWs, temporary use areas, access roads, vegetation management, substations, preconstruction and construction plans, construction workforce and schedule, post construction, emergency repairs, and EPMs.

As part of the improvements, the ROW would be expanded from 100 feet to 150 feet to accommodate the higher voltage, except the Dolores River span. At the Dolores River span, the ROW would be less than 100 feet. Throughout the corridor, Tri-State would primarily use wooden H-frame structures as well as some self-supporting steel and guyed turning structures in specific locations. The H-frame structures would be taller and wider than the existing structures because of the increase in voltage and associated clearance requirements under the National Electric Safety Code. The project incorporates many design features to avoid and minimize environmental effects; those design features are included in the sections that follow, and are summarized in Table 9.

For the Dolores River crossing (Section 2.2.1.2), the realignment approximately 1 mile to the west was proposed to address road access and safety concerns for maintenance and repairs, along with slope stability and erosion issues for specific structures. The crossing would be about 6,700 feet long. The proposed upgrade-in-place alignment in the Dry Creek Basin (Section 2.2.2.2) follows the existing transmission line corridor and would be about 7.9 miles long, crossing five landowners. Self-supporting steel monopole structures would be used in occupied habitat for the GuSG and would require concrete foundations. All horizontal surfaces as well as the pole top would be fitted with perch discouragers to reduce avian predator perching and nesting activities in occupied GuSG habitat.

If approved, Tri-State plans to construct the project as described in Section 2.3.6.12. Tri-State would continue to maintain the existing transmission line and associated access roads until the new 230-kV line is in operation (see Table 7. Preliminary Montrose-Nucla-Cahone Transmission Line Improvement Schedule).

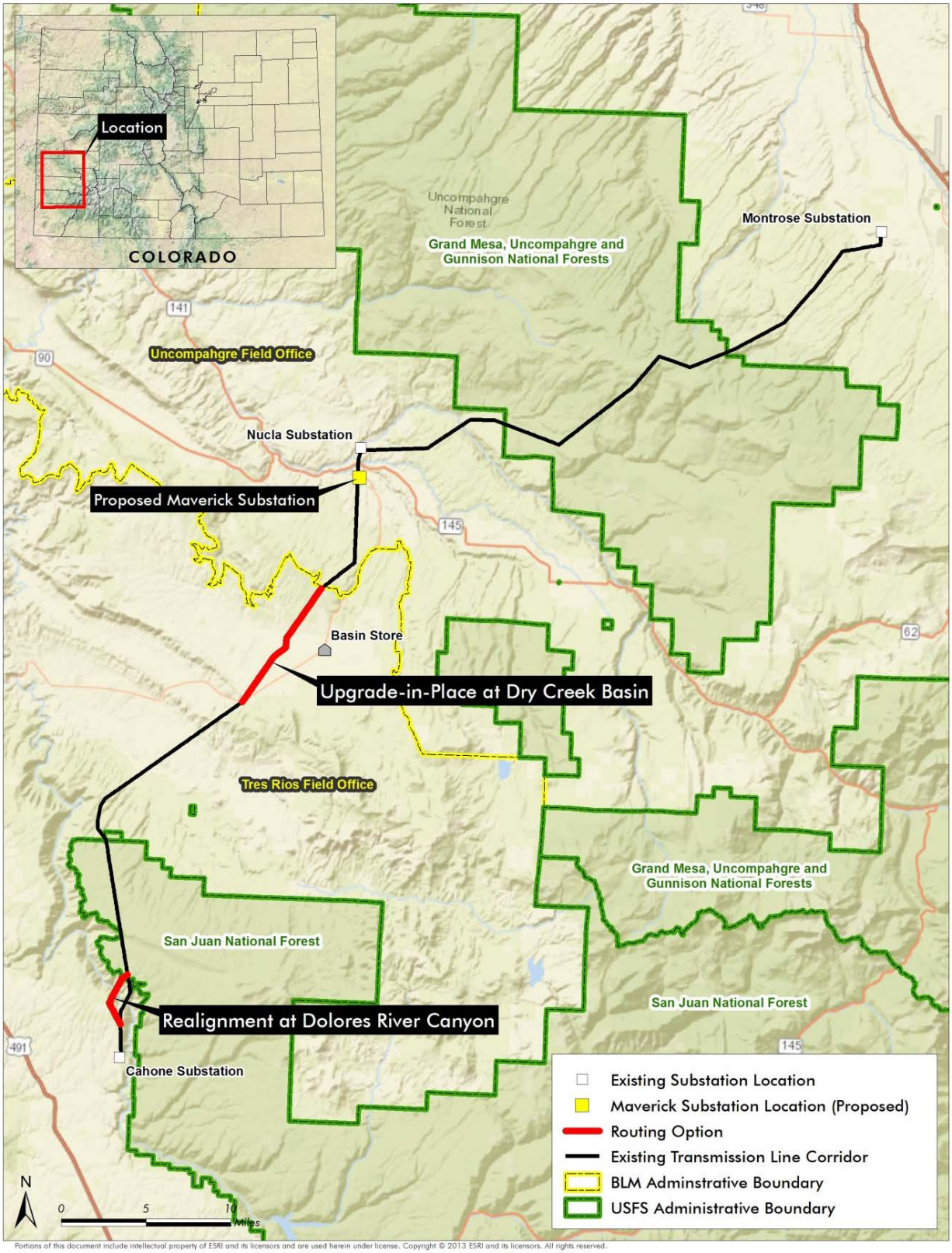

Figure 14. Alternative A (Tri-State's Proposed Action; Preferred Alternative) - Transmission Line Upgrade within Existing Corridor, with Realignment at Dolores River Crossing

2.3.2 Alternative B – No Action

In the No Action Alternative, the agencies would not grant Tri-State's request for a ROW grant and an SUA allowing the line to be improved. The existing 115-kV transmission line from Nucla to Cahone and associated access roads would remain, and the transmission line would not be upgraded to 230 kV. The age and condition of the structure dictates that over time, the entire 115-kV line would need to be rebuilt. In order to continue to maintain the 115-kV line, more frequent and major maintenance activities would be required, including cross arm replacement, hardware replacement, structure replacements, and re-conductoring of the line. These activities are included in the 2006 POD that was authorized by the BLM in 2007. The frequency with which Tri-State would be conducting inspection and maintenance activities in the ROW would increase over time as individual structures are replaced. It generally takes one to two days to replace a structure. The extent and timing of the structure replacements would depend on the annual inspection results and available budgets from year to year. Over the course of the next 10 years, replacement could result in a handful of structures needing to be replaced one year, and dozens of structures replaced in other years. In order to replace structures, large equipment is required to remove the existing pole, auger the hole for the new pole, and erect the new pole and wires. Typically this work requires a bucket truck and/or LineTrac®, a digger/derrick, and a pole trailer. Typically the pole is cut off and the butt is pulled out of the hole. The pole is placed in the existing hole whenever feasible. Access roads would need to be improved in places to ensure safe access to the structures that need to be replaced. The disturbance/revegetation in the ROW over time would continue until all of the poles are replaced.

The No Action Alternative would also result in impacts to Tri-State's ability to meet its reliability requirements and load-serving capability in southwestern Colorado, which may result in extended outages in the near future.

2.3.3 Alternative C - Dolores River Crossing Routing Option (Alternative A Incorporating Upgrade-in-Place at Dolores River Crossing)

Alternative C - Dolores River crossing routing option (Figure 15) includes an upgrade-in-place alignment at the Dolores River Canyon, described previously in detail (Section 2.2.1.3). A total of six structures would be eliminated, and structures on steep slopes would be moved farther upslope to address safety and erosion issues. A new north rim access road would be constructed upslope of the existing access roads to take advantage of natural contours and better grades. The existing access roads would be reclaimed. Aside from the Dolores River Canyon area, this alternative is the same as described in Alternative A and Section 2.3.7-Components Common to All Action Alternatives.

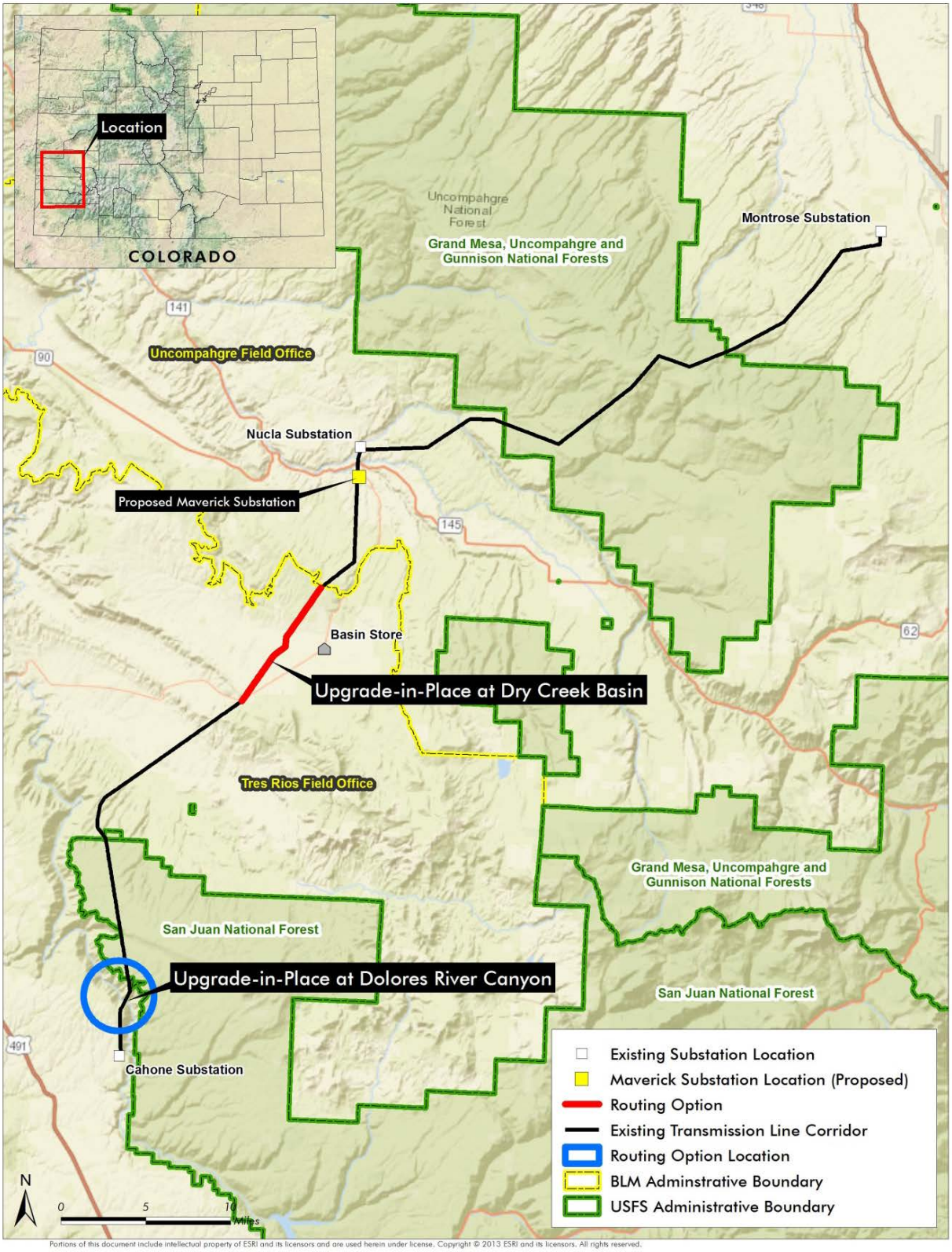

Figure 15. Alternative C - Dolores River Crossing Routing Option (Alternative A Incorporating Upgrade in Place at Dolores River Crossing)

2.3.4 Alternative C - Dry Creek Basin Routing Option (Alternative A Incorporating Realignment at Dry Creek Basin)

Alternative C - Dry Creek Basin routing option (Figure 16) includes realignment through the Dry Creek Basin along SH 141, described previously in Section 2.2.2.3. The proposed realignment through the Dry Creek Basin was developed in response to habitat concerns for the GuSG. Both the north and south sides of SH 141 are considered in this analysis. The new alignment would cross multiple private landowners (see Table 31 and Figure 32) and would require the construction of an additional 1.2 miles of transmission line, for a total length of about 9 miles for either option along Highway 141. Aside from the Dry Creek Basin area, this alternative is the same as described in Alternative A and Section 2.3.7-Components Common to All Action Alternatives.

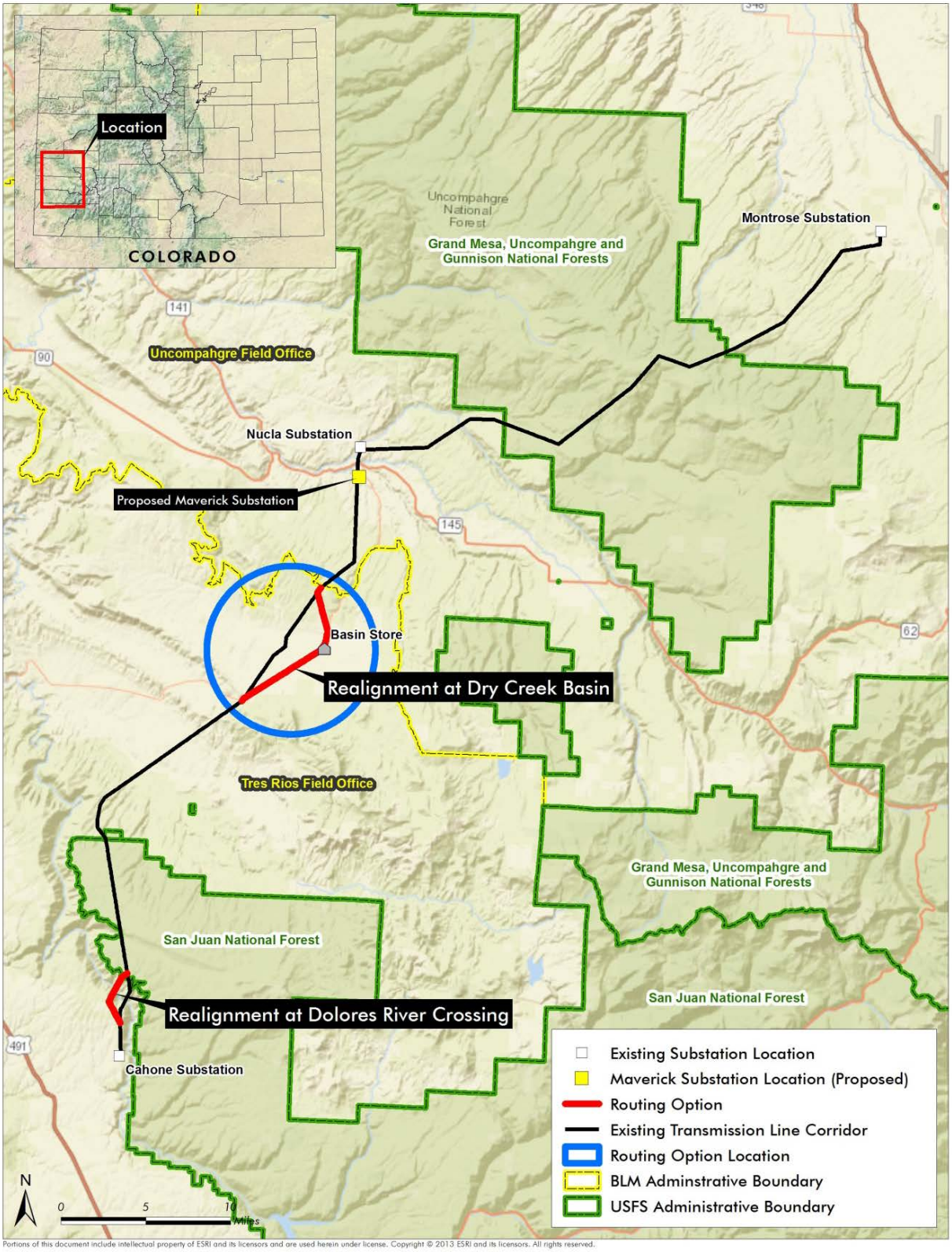

Figure 16. Alternative C - Dry Creek Basin Routing Option (Alternative A Incorporating Realignment at Dry Creek Basin)

2.3.5 Alternative C - Dolores River Crossing and Dry Creek Basin Routing Options (Alternative A Incorporating Upgrade-in-Place at Dolores River Crossing and Realignment at Dry Creek Basin)

Under Alternative C - Dolores River crossing and Dry Creek Basin routing options (Figure 17), the transmission line would be upgraded-in-place at the Dolores River crossing (see Section 2.2.1.3) and realigned along SH 141 through the Dry Creek Basin (see Section 2.2.2.3).

Aside from the Dolores River Canyon and the Dry Creek Basin area, this alternative is the same as described in Alternative A and Section 2.3.7-Components Common to All Action Alternatives.

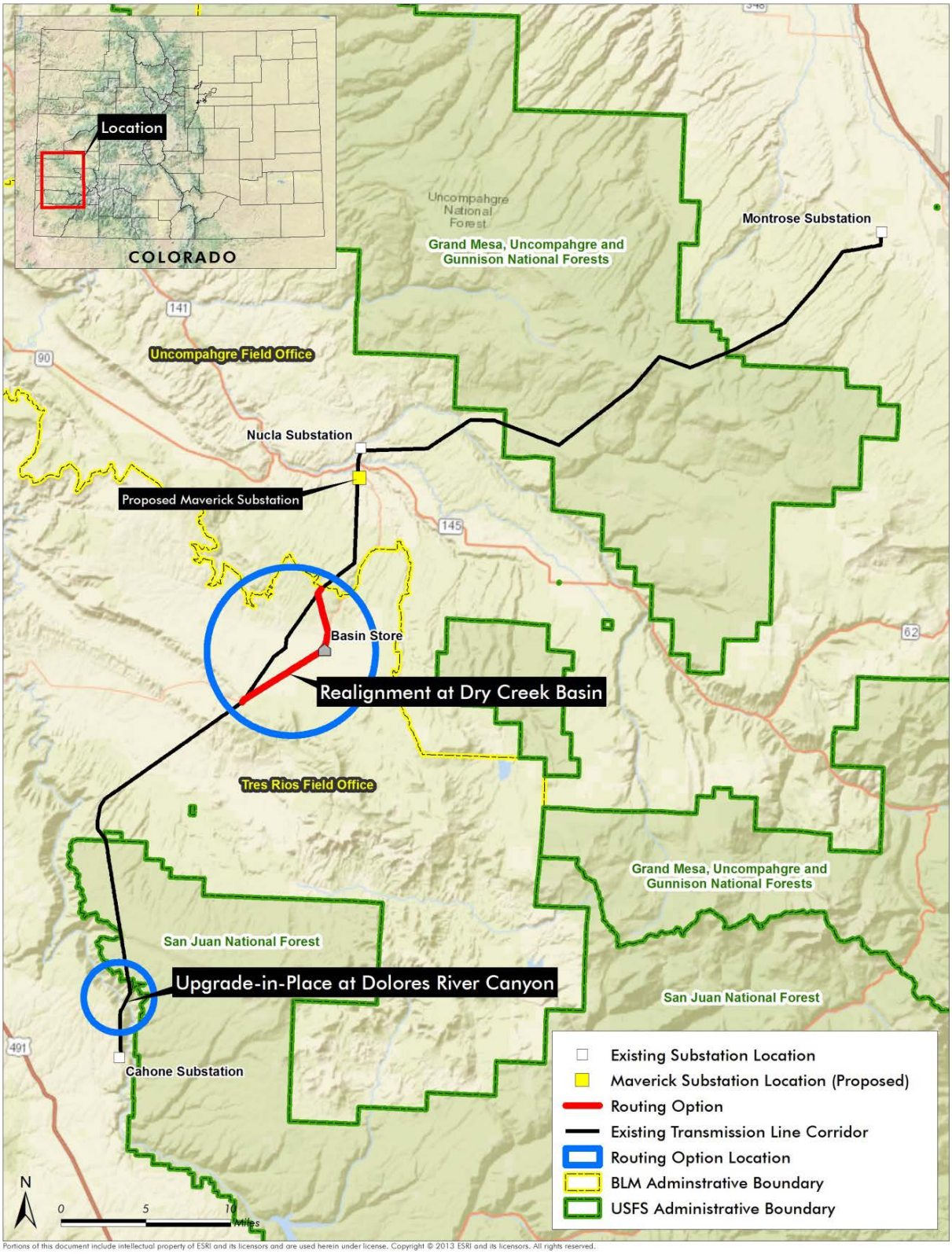

Figure 17. Alternative C - Dolores River Crossing and Dry Creek Basin Routing Options (Alternative A Incorporating Upgrade-in-Place at Dolores River Crossing and Realignment at Dry Creek Basin)

2.3.6 Components Common to all Action Alternatives

Tri-State proposes to expand the existing 100-foot ROW for the 115-kV line to a 150-foot wide corridor to accommodate the safe operation and maintenance activities for the new larger 230-kV transmission line. If approved, Tri-State plans to construct the project as described in Section 2.3.6.12. Tri-State would continue to maintain the existing transmission line and associated access roads until the new 230-kV line is in operation (see Table 7. Preliminary Montrose-Nucla-Cahone Transmission Line Improvement Schedule). The existing 100-foot ROW would be used to the extent practical for construction (operation requires the 150 foot ROW for safety reasons to account for conductor sway in the ROW). For all Action Alternatives, the ROW at the Dolores River Canyon Crossing span would be less than 100 feet. Tri-State would primarily use wooden H-frame structures, as well as some self-supporting steel turning structures in specific locations. The H-frame structures would be taller and wider than the existing structures. The improvement would consist of the following components:

- A new substation near the existing Nucla substation and power plant, near Nucla, Colorado. The new substation would be called the Maverick 230-kV substation.
- A 230-kV transmission line from the existing Montrose substation west of Montrose, Colorado to the Maverick 230-kV substation.
- A 230-kV transmission line from the Maverick 230-kV substation to the existing Cahone substation near Dove Creek, Colorado.
- Expansion and equipment additions to the existing Montrose substation (on Tri-State property) to accommodate the new 230-kV circuit.
- Expansion and equipment additions to the existing Cahone substation (on Tri-State property) to accommodate the new 230-kV circuit.
- Double circuit structures between the Maverick 230-kV substation and existing Nucla 115-kV substation at the Nucla station. The double circuit would consist of a new 115-kV line which would provide a 115-kV electrical connection from the Maverick 230-kV substation back to the existing 115-kV substation at the Nucla generating station; and a new 230-kV Nucla section to Cahone section of the MNC transmission line.
- A short deviation from the existing route to avoid canyon walls near the Cahone substation.
- As noted previously, existing access routes authorized in 2007 (BLM 2007b) for maintenance of the existing transmission line would be used, with any necessary modifications to accommodate construction vehicle widths/lengths, for construction of the improved transmission line.
- Pending final engineering design, additional spur routes could be needed for construction and long-term operation/maintenance of the line; tower locations would change in some locations due to an increase in the span between towers from the 115-kV tower spacing.
- Installation of the fiber optic cable.
- Removal of the existing 115-kV structures and line following construction of the 230-kV line.

If approved, Tri-State plans to construct the proposed project as described in the following sections. The Action Alternatives incorporate many design features to avoid and minimize environmental effects; those design features are included in the sections that follow, and are summarized in Table 9. The Action Alternatives incorporate the requirements of all applicable federal, state, and local laws, regulations, and permits as detailed in the POD. Additional details

for all of the Action Alternative components are in the Draft POD (Appendix D) and would be edited and refined in the Final POD.

2.3.6.1 Summary Description of Existing Conditions and Proposed Improvement Design Features

Table 6 provides additional details on the proposed project components under the Action Alternatives. Additional details for the Dolores River and Dry Creek Basin routing options are discussed in Section 2.2.

Table 6. Transmission Line Design Comparison

Description	Comparison of Existing and Proposed Structure Designs*	
	Existing 115-kV Wood H-Frame Structures (to be removed)	**Proposed 230-kV Wood H-Frame and Steel Mono-Pole Structures (to be installed)**
Right-of-way width	100 feet	150 feet
Span between structures (average)	500 feet	625 feet
Span between structures (maximum; Dolores River)	5,400 feet	6,700 feet
Number of structures per mile (average)	11	8*
Height of wood H-frame structures (typical range)	48 to 57 feet	61 to 106 feet
Height of steel H-frame structures	N/A	100 to 120 feet
Height of steel monopole structures (typical range)	N/A	90 to 130 feet (double-circuit portion of line)**
Height of tangent crossing structures at Dolores River	North rim: 90 feet South rim: 80 feet Wood Structures	North rim: 101 feet South rim: 101 feet Steel Lattice Structures
Land temporarily disturbed by construction at each wood or steel H-frame structure base	N/A	4,800 square feet (about 70 feet by 70 feet)
Land permanently disturbed by construction at each wood or steel H-frame structure base	30 square feet	40 square feet
Land temporarily disturbed by construction at each steel mono-pole structure base	N/A	6,500 square feet (about 80 feet by 80 feet)
Land permanently disturbed by construction at each steel mono-pole structure base	N/A	1,600 square feet (about 40 feet by 40 feet)
Land temporarily disturbed by construction at each 3-pole turning structure	N/A	30,000 square feet (about 150 feet by 200 feet)
Land permanently disturbed by construction at each 3-pole turning structure	6,000 square feet	13,000 square feet
Land temporarily disturbed by construction at each tangent crossing structures at Dolores River	N/A	30,000 square feet (about 150 feet by 200 feet)
Land permanently disturbed by construction at each tangent crossing structures at Dolores River	About 50 square feet at south rim; about 15,000 square feet at north rim	About 610 square feet for both realignment structures (north and south) and south rim upgrade-in-place; about 7,500 square feet for upgrade-in-place north rim structure
Conductor type and size	336.4 kcmil ACSR (0.720”)	1272 kcmil ACSR (1.345”)
Circuit configuration**	Horizontal	Horizontal and vertical
Minimum ground clearance beneath conductors	25 feet	28 feet
NERC electrical clearance	20.7 feet	23.3 feet

*Note: This table represents typical construction only for analysis purposes. Engineering is in the process of designing the line and numbers are preliminary and subject to change. Non-typical conditions, such as the Dolores River crossing, may require non-typical structure types, structure heights, special conductors and disturbance areas that are yet to be determined. More details would be included in the Final POD. Dry Creek Basin averages 7 structures per mile.
**The circuits would be stacked vertically in the Dry Creek Basin and between the Nucla generating station and the proposed Maverick substation.

2.3.6.2 Structure Design and Types

Tri-State would primarily use wooden H-frame structures, similar in configuration to the existing wooden H-frame structures on the existing line. Some locations are extremely difficult to access. Structures in those locations would be constructed of weathered steel, which appears similar to wood, but would be much lighter and easier to transport safely by helicopter or truck. Improved 230-kV H-frame wood or steel structures would be taller and wider than the existing 115-kV H-frame structures to accommodate a higher voltage conductor (see Figure 18). New wood structures would range from about 61 to 106 feet in height, and steel H-frame structures used where needed would range from 100 to 120 feet in height. An average span between structures would be about 625 feet. Single steel pole structures would be used for reinforcing turning angles on the 230-kV line as well as the portion of the line that crosses the Dry Creek Basin (see Figure 19). Steel structures would average between 84 to 115 feet in height in the Dry Creek Basin, although some structures up to 130 feet in height may be required due to difficult terrain and for the double-circuit portion of the line. In areas outside of Dry Creek Basin where steel poles are required, especially the double circuit portion of the line, steel structures would average 90 to 130 feet (Figure 20) and would be treated with acid etching to minimize visual effects. In the Dry Creek Basin, steel structures would be outfitted with perch discouragers to prevent raptors and other GuSG predators from perching on the structures. Outside of the Dry Creek Basin, turning structures would use a configuration of three poles (either wood or steel, depending on location), stabilized by guy wires (see Figure 20). Tri-State would use special steel tangent towers on either side of the Dolores River crossing (Figure 21). These towers would be 101 feet in height. Final structure type and position would be identified during final design and included in the Final POD. Additional information on transmission line construction is in Section 2.3.6.11.3 and on steel poles in Section 2.3.6.11.4. To minimize visual effects, Tri-State would treat all steel structures, including steel fence (see EPM A-6, Table 9).

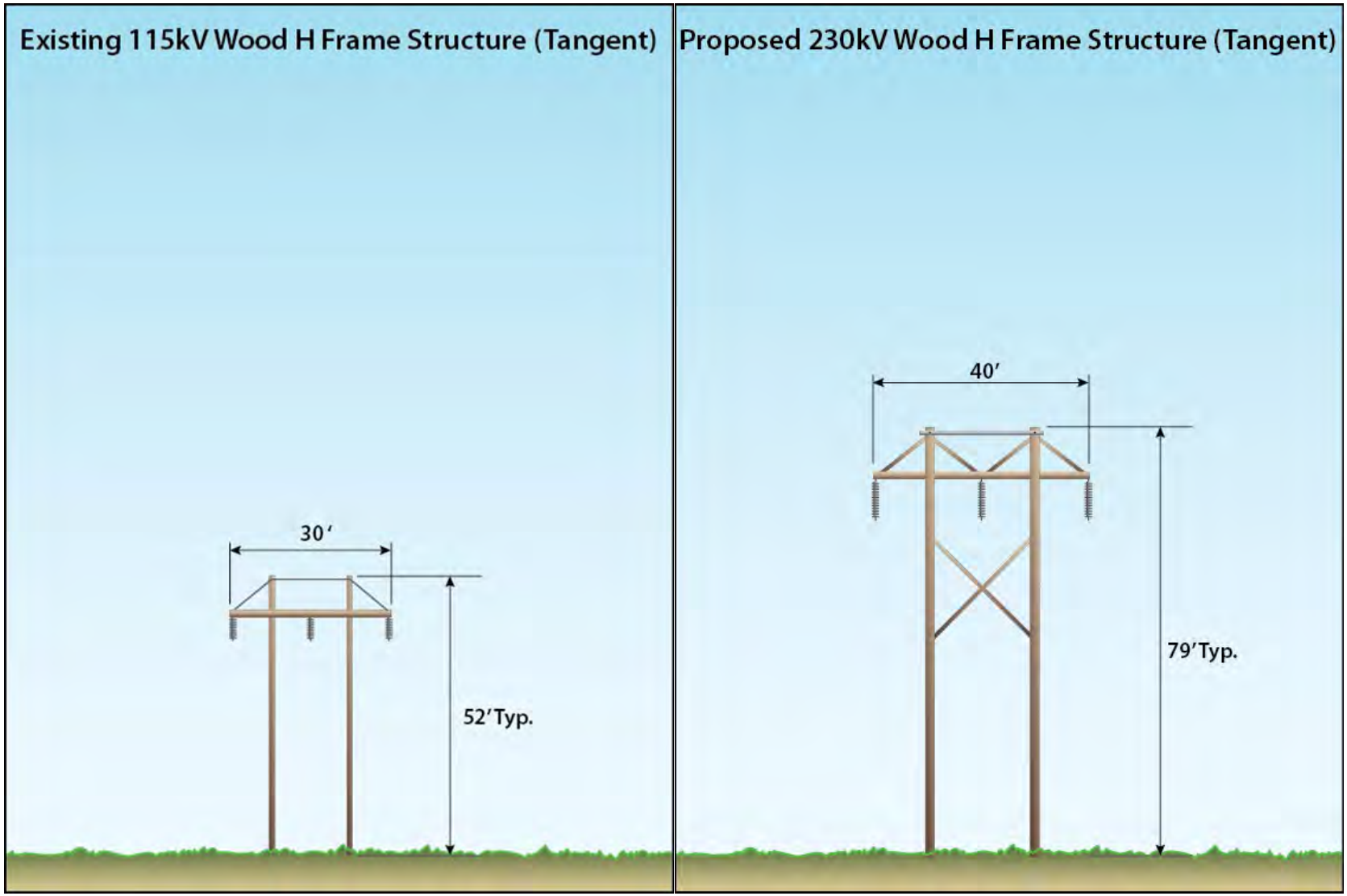

Figure 18. Comparison of 115-kV and 230-kV Wooden H Frame Structures

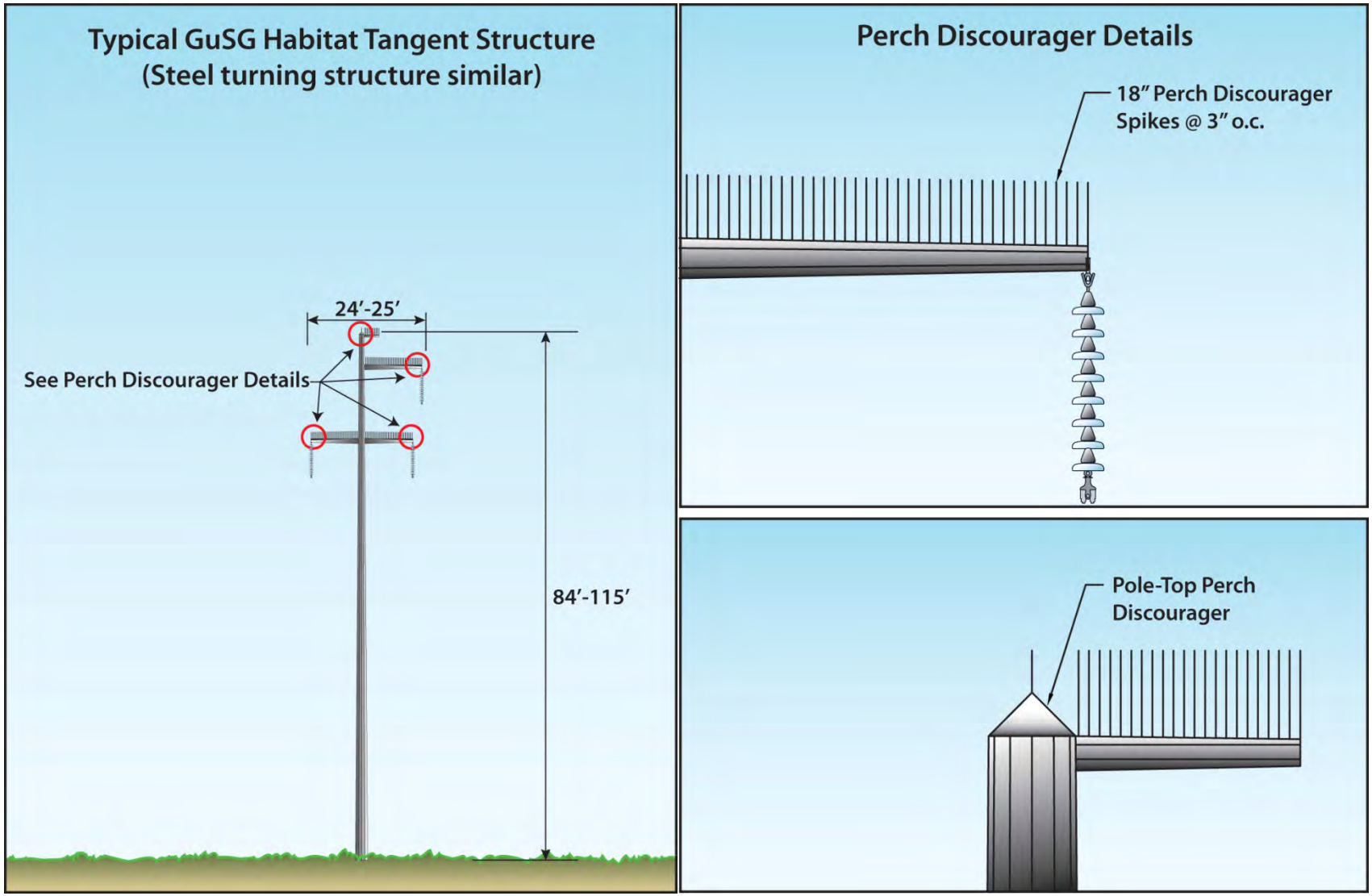

Figure 19. Steel Structures in Dry Creek Basin Gunnison Sage-Grouse Occupied Habitat

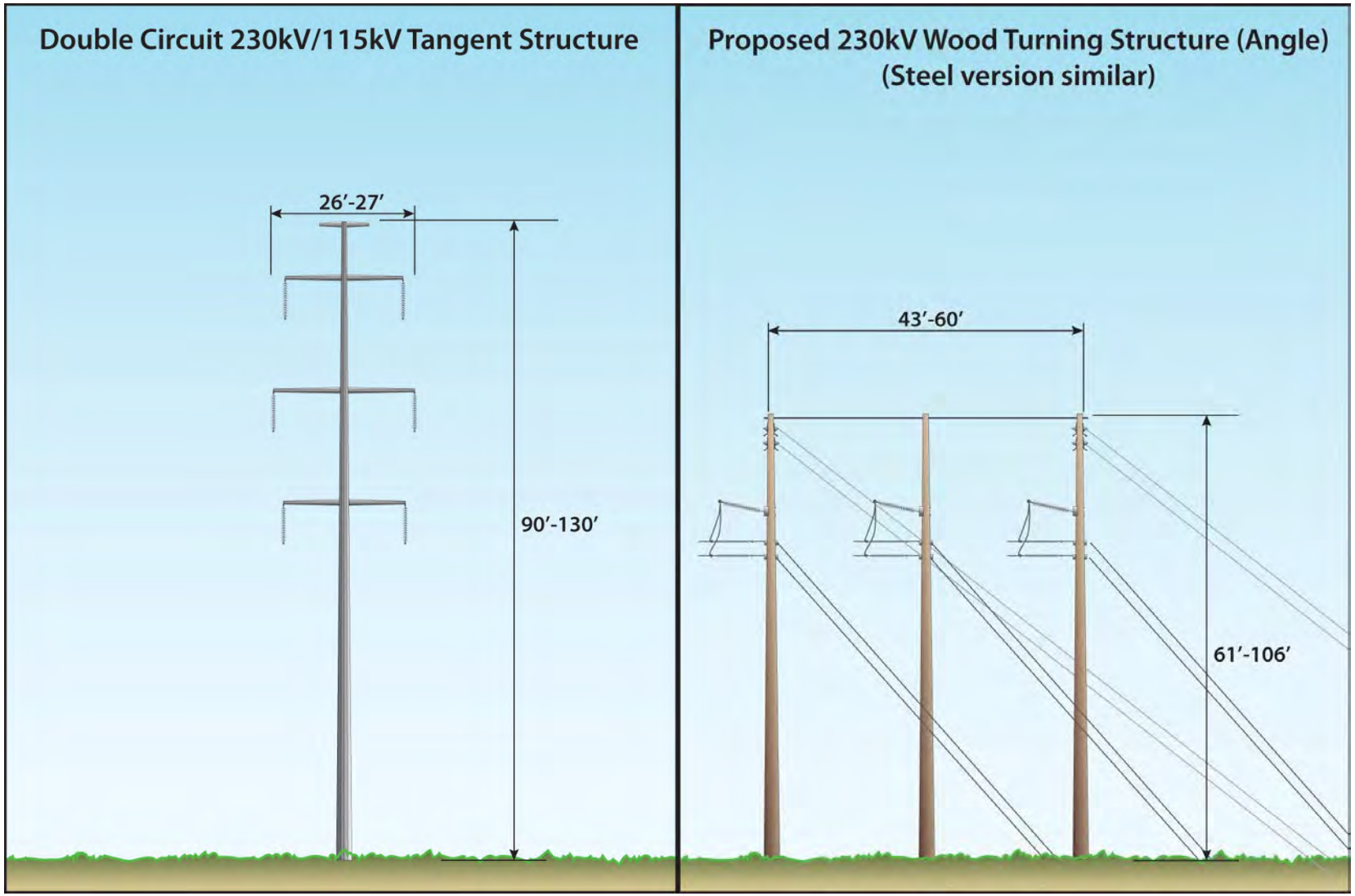

Figure 20. Double Circuit Structure (Nucla Generating Station to Maverick 230-kV Substation) and Wood Turning Structure Detail (Steel Similar; self-supporting would lack guy wires)

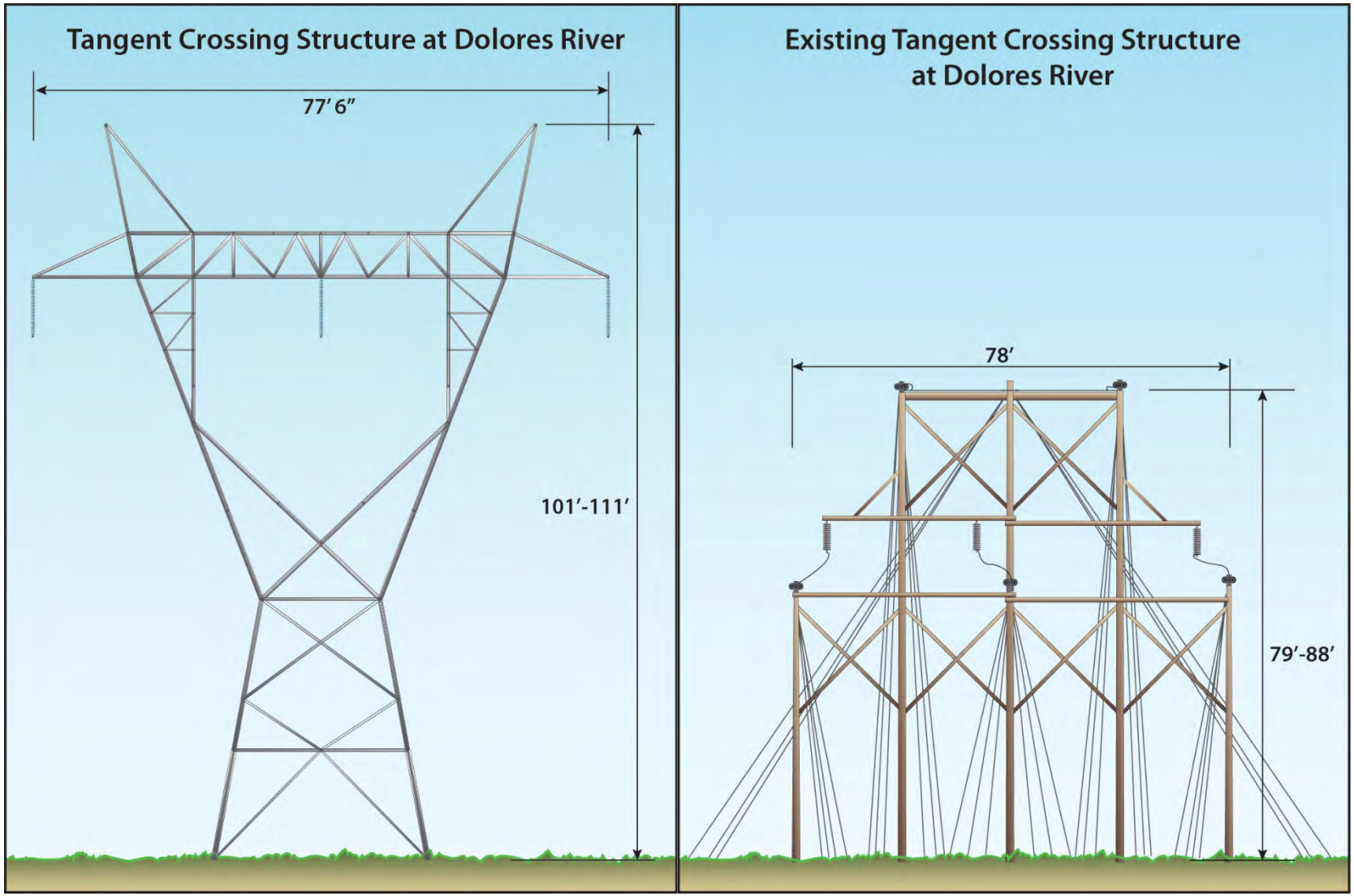

Figure 21. Comparison of Proposed and Existing Tangent Crossing Structures at the Dolores River

2.3.6.3 Conductor Wires Including Fiber Optic Cable and Equipment Types

New larger 1.35-inch-diameter conductors would be used for the 230-kV transmission line rather than the 0.72-inch-diameter conductors used on the 115-kV line (conductor size pending final engineering design). In order to minimize visual effects from the transmission line, Tri-State has committed to utilizing non-specular conductor; high strength, low-sag non-specular conductor would be used at the Dolores River crossing. Non-reflective insulators would be used for all conductor-to-structure connections.

One new shield wire and one new fiber optic cable would be installed as part of the Action Alternatives. The fiber optic cable would also provide Tri-State's communication for the new 230-kV transmission line. The fiber optic cable is a cable that contains numerous glass fiber optic rods that can be used for various applications, including communications. Fiber optic cable hangs along with the conductors on the H-frame structures. This wire provides protection from lightning strikes, similar to the normal static wire, while protecting and carrying the tiny fiber optic rods. Using fiber optics for communication allows for fewer microwave radio stations on the transmission system.

Along with communication for the transmission system, the current fiber optic cable contains a portion of the Northern Fiber Optic Telecommunication Project, which was added to the line in 2003. This 220-mile system, previously known as PathNet, provides critical communications for emergency services (911) to southwestern Colorado, along with commercial internet capabilities. Eighty miles of this system currently reside on the project transmission line system.

Service for this critical communication link cannot be interrupted and would need to remain in service while the new 230-kV line was constructed. This presents unique challenges to constructing the new 230-kV line and is described in Section 2.3.6.11. The fiber optic cable would be new, but the service and customer base would remain the same. An additional fiber optic cable would be installed at the Dolores River crossing only, in order to create backup service. This second fiber optic cable would only be activated if the first one is damaged.

The line voltage increase from the existing 115-kV to 230-kV would increase the possibility of corona, which is an electrical field around the surface of a conductor, insulator, or hardware caused by ionization of the surrounding air. This increase, however, would be offset by the selection of a much larger conductor (1.35-inch diameter vs. the existing 0.72-inch), and larger phase spacing (19.5 feet vs. the existing 15.5 feet).

2.3.6.4 Long-Term Rights-of-Way

Construction of the 230-kV transmission line would occur within a proposed 150-foot-wide long-term ROW and at temporary authorized work areas within and outside the ROWs (e.g., staging yards, pulling sites outside the ROW, helicopter landing areas; see Section 2.1.4). The proposed ROW width in the Dolores Canyon span is less than 100 feet. Access roads would also require a long-term ROW about 30 feet wide. A wider ROW may be required in steep terrain. Access roads are described in more detail in Section 2.3.7.6.

2.3.6.5 Temporary Use Areas (TUAs)

2.3.6.5.1 *Storage and Staging Areas*

Based on preliminary siting information, between three and six temporary staging areas likely would be needed to store poles, equipment, and vehicles. Staging areas would occur on private lands to the extent feasible. The largest staging area is expected to be approximately 60 acres. Two to five other staging areas of 10 to 20 acres each would be needed along the line. Staging areas of this size are required to store poles and conductor and construction equipment for the proposed project as well as provide space to assemble structures when necessary. Staging areas are expected to occur throughout the proposed project area, with the largest site centrally located. Staging areas would be located mainly on private lands with existing agricultural and industrial disturbance and level terrain, to the extent practicable. Sites would occur along existing established access routes and outside of any sensitive areas. Helicopters may also need staging areas for storing fuel and landing. Staging areas would be identified during final project design and provided prior to Notice to Proceed.

2.3.6.5.2 *Pulling Sites for Wire Setups, Splicing, and Structure Pads*

There would be a number of sites along the ROW or immediately adjacent to the ROW that would be used for wire setups, referred to as "pull sites." The pull sites would be used during wire stringing and pulling activities for conductor wires and fiber optic cable, as well as wire splicing. The workspace is needed for a tensioner, puller, spools of wire, stub poles, and a crew.

In general, the pull sites would be in the ROW or in-line and behind large-angle, dead-end structures. However, a certain number of pull sites may be required off-ROW. Typical pulling sites are expected to require approximately 60,000 square feet or an area that is 150 feet by 400 feet. This area could be on either side of a structure.

Some grading and leveling may be required within individual pull sites in order to provide a level surface for equipment. Most of the area in each pull site is for allowance of wires to have adequate space to travel above the ground from the equipment to the structures. Preliminary estimates indicate that 20 pull sites would be required for the line segment running from Nucla to Cahone and 17 pull sites from the Montrose to Nucla segment of line. It is possible that a total of 25 pull sites may be required outside the 150-foot transmission ROW. Pulling sites would be reclaimed and re-seeded post-construction. Pull sites would be identified as part of final engineering, and locations would be presented in the Final POD.

More location information regarding pull sites, splicing locations, and structure pads would be available in the Final POD after engineering and final design are complete.

2.3.6.6 Access Roads for Proposed Project Construction and Long-Term Maintenance

Proposed project construction would require the use of numerous access routes to transport personnel, equipment, and materials to the transmission line ROW, structure sites, and work areas. The locations of access roads are discussed in the Draft POD (Appendix A-Access Road Siting and Management Plan, Appendix R-Traffic and Transportation Management Plan, Appendix V-Right of Way Legal Descriptions, and Appendix W-Map Atlas). The existing access network constructed for the 115-kV line would be used along with short spur roads, which would be required if overland or down-line access is not feasible due to terrain or other sensitive

resource concerns. Tri-State would minimize construction of new access roads by placing new structures in proximity to existing structure locations (with authorized access) to the extent feasible. Any existing access roads not required for construction or long-term maintenance would be reclaimed.

Construction activities associated with removal of existing structures, installation of new structures, and road work would require a variety of work crews, equipment, and material deliveries during work from 2017 to 2019. Final traffic routes, crew sizes, and vehicle trips per day would be determined by the construction contractor following final design. In 2017, it is anticipated that road improvements and ROW tree clearing for the Nucla to Cahone section of transmission line would require small crews traveling on SH 141, County Road (CR) 19Q, and NFSR 504 for about 8 weeks. Expansion of the Montrose 345-kV yard would require small crews likely travelling from Ridgeway (SH 62), Montrose (SH 550), and Cortez (SH 491) to the work site for about 12 weeks.

In 2017-2018, pole removal, construction, and revegetation for the Montrose to Nucla section of the transmission line would primarily use CR 90 and NFSR 504 for about 12 months. Smaller crews, of about 30 workers, may be possible for this segment of transmission line construction. Construction of the expanded Montrose substation would require access from SH 50 and CR 90 over about 6 months by a small crew of workers.

In 2018-2019, work on the Nucla to Cahone section of the transmission line would occur over a 12-month period from January to December using a variety of state, county, NFSR, and BLM roads. Primary travel would occur on SH 141, CR 19Q, CR 29W, CR 15, CR 16, CR M, CR J, and NFSR 504. A large staging area on private land off CR 19Q, which connects to SH 141, would have a concentration of increased traffic as workers travel to the site and as material is transported in and out of the staging area. The largest volume of material traffic would occur over about a three month period from the transport of poles and other material from the staging area to locations along the transmission lines. Approximately 50 to 60 workers would also be traveling to various work sites using pick-up trucks and smaller vehicles. These workers are likely to travel daily from Ridgeway (SH 62), Montrose (SH 550), Cortez (SH 491), and Norwood (SH 145). Work on the Nucla 230-kV substation would be accessed via SH 145 and SH 141 for about five months by a workforce of about 20 people. Construction of Phase II of the Montrose 345-kV substation would use SH 550 and SH 90 for access for about two months. Expansion of the Cahone substation would take about five months with work crews accessing the site primarily on SH 491, CR R, CR 15, CR 18, and CR 8.

2.3.6.7 Access Road Improvements

Improvement levels for all access routes were evaluated, classified for levels of improvement, and designated as administrative access in the 2006 POD for the 115-kV line (Tri-State 2006). At that time, about 60 percent of the road system was considered to require little or no improvement. About 6 percent of the access roads needed brush removal, 22 percent needed minor grading, and about 13 percent of the roads needed moderate to extensive grading to restore grades and drainage crossings. Recent field reviews of the existing road system indicate that grading and brush and tree removal is needed on a larger percentage of the ROW. Other improvements needed are generally characterized in the 2006 EA (BLM 2007b) and 2006 POD (Tri-State 2006).

Road ROW widths would generally remain the same as detailed in the 2006 POD; specifically, 30 feet (15 feet either side of centerline). However, additional road improvements outside of the existing permitted access ROWs would likely be required in certain locations along the alignment due to uneven or steep terrain. Access road conditions in some locations have likely deteriorated and improvements would be required to create a road that would safely enable construction and maintenance equipment to pass. In addition, construction requires the use of equipment such as pole trucks, which require larger turning radii. Temporary disturbance outside of the driving surface would be reclaimed and revegetated post-construction. unreclaimed cuts and fills would be limited to 30 feet.

2.3.6.7.1 *Dust Management*

During construction, dust control measures would be implemented to avoid or minimize air quality issues related to fugitive dust from construction traffic on dirt roads (see Table 9). All water for fugitive dust control would be purchased from holders of existing, currently valid water rights such as municipalities, agricultural water users, or businesses with an ability to provide water for dust suppression purposes.

2.3.6.7.2 *Public Access*

Construction activities would require some new access through existing fences. Permanent gates would be installed within the ROW limits or along designated access roads to provide for access during construction as well as for the long-term maintenance of the transmission line. To prevent the passage of livestock, all gates would be kept closed except to briefly allow the passage of equipment during construction. All gates would remain closed, unless the landowner or land management agency has given specified instructions to leave a gate open.

Tri-State would work with the BLM and USFS to close off access roads to the public that may result in travel management concerns. Currently, Tri-State and USFS maintain locked gates to restrict access south of the Big Water Springs Road and on both sides of Forest Road 509 east of Dolores Canyon in SJNF.

Any gates or traffic control posts (bollards) installed by Tri-State on behalf of the BLM and USFS would be in compliance with existing BLM and USFS travel management plans and would accommodate all agency requirements. All ROWs could be accessed by BLM or USFS personnel at any time especially in the event of emergencies, such as fires. Tri-State would provide funding for the BLM and USFS to install instructional signage in key areas along access roads, to clarify which roads are being used for administrative purposes only, or Tri-State may install signs with BLM and USFS approval. The Final POD would provide additional details on the proposed project components related to public access.

2.3.6.7.3 *Surface Water Crossings*

Access roads may require surface water crossing of ephemeral, intermittent, or perennial drainages, arroyos, and wetlands. Those areas requiring improvement to facilitate road construction such as a culvert, armored rock crossing, or pulled back banks would fall under this category and would be identified as such on the associated construction drawings in the Final POD. Also see Table 9 EPMs WQ-1 through WQ-21.

2.3.6.8 Vegetation Management

The primary cause of electrical outages is trees located within or adjacent to the ROW that grow or fall into overhead electric power lines. Vegetation management is crucial to access electrical facilities and reduce wildfire effects to and from power lines and is a key component of operations for the proposed project. While some of these outages cannot be prevented (due to storms, heavy winds, etc.), many can be mitigated by managing the vegetation below the line before it becomes a problem. Arcing can occur if the physical separation between trees and power lines is not properly maintained. Arcing distances vary depending on voltage and ambient conditions, but any branch in proximity to a conductor can spark a fire. Utilities and regulators generally agree that keeping overhead conductors clear of trees and vegetation is critical to both electric service reliability and fire prevention. Preventing outages and fires related to tree and power line conflicts are in the interest of public safety and are mandated by federal law (also see Section 1.7, and Appendix O-Health, Safety, and Noise Plan of the Draft POD).

2.3.6.8.1 *Vegetation Management During Construction*

In order to minimize effects, where grading is not required, low-lying vegetation would be trampled instead of removed along access routes where it does not pose a safety or fire hazard. If there is the potential for vehicle catalytic converters to ignite tall brush or if vegetation impedes work, the vegetation would be bladed or cut at ground level. Construction vehicles would be equipped with government approved spark arresters and used where feasible. All woody vegetation within approximately a 75-foot radius around each transmission structure would be removed to improve structure survivability in the case of wildfire, reduce risk of vehicle induced fires on the ROW during construction and maintenance activities, and to ensure maintenance and construction vehicles can safely set up next to the structure. A vegetative cover crop (low-lying vegetation) would be left in place, to the extent feasible, for erosion control.

Trees and vegetation that could pose a hazard to the safe construction and/or long-term operation of the power line would be trimmed or removed as necessary to meet the NERC guidelines for vegetation management; see Draft POD for vegetation management practices that would be used for the long-term maintenance of the transmission line (Appendix T-Operations, Maintenance, and Vegetation Management).

Merchantable timber removed during clearing activities would be purchased and hauled offsite to an approved disposal facility or disposed of onsite as directed by the BLM and USFS. Where appropriate, cleared trees and/or vegetation may be spread onsite to promote wildlife habitat or chipped/masticated in place and used as mulch for erosion control with approval from the environmental monitor and the landowner or land management agency. On forested land, Tri-State would consult with the BLM and USFS regarding design criteria for the treatment and removal of woody vegetation

Grading would be required for some access roads, structure sites, staging yards, and work areas. Grading would be limited to the minimum necessary to provide a safe work area for crews and equipment. Special care would be taken to avoid damage to trees, shrubs, and vegetation adjacent to designated work areas.

Prior to ground-disturbing activities, temporary erosion and sediment control measures, including water bars and sediment barriers (i.e., silt fences, straw wattles, and/or straw bales),

would be installed as needed to minimize erosion and prevent sediment from leaving work areas. The location of erosion and sediment control measures would be determined as part of the Stormwater Management Plan (SWMP) as required by CDPHE. General techniques and process are described in Appendix Q-Storm Water Management Plan of the Final POD. SWMPs, if required, would be completed prior to the Notice to Proceed.

Where possible, topsoil would be salvaged from temporary work areas where grading is required, including pull/stringing sites and spur roads. Topsoil would be salvaged to the actual depth (first color change) to a maximum of 12 inches and protected for use during restoration. Topsoil would not be salvaged from foundation holes or where permanent effects have been designed (i.e., existing access roads, guy wires, or substation expansions). Tri-State would salvage adequate topsoil from the Maverick substation to reclaim disturbed areas outside the fenced footprint of the substation after construction is complete.

2.3.6.8.2 *Vegetation Management During Operation*

Regular management of vegetation along access roads and within the transmission line ROW would be needed. Access roads would remain clear of tall/woody vegetation to allow maintenance of the transmission line (POD Appendix T-Operations, Maintenance, and Vegetation Management).

2.3.6.9 Substations

The existing transmission system is supported by three substations; Montrose, Nucla, and Cahone. Substation modifications at the Montrose and Cahone substations would require about 10 acres of expansion at existing facilities owned by Tri-State. The location of the Maverick 230-kV substation would be south of the SH 145 and SH 141 intersection (see Figure 22). The new substation cannot be located at the existing Nucla substation because space is limited at this facility and the new substation requires approximately 20 acres. A new substation is proposed on private land. Construction activities for substation modification and construction include:

- Conducting survey work, geotechnical drillings, and soil resistivity measurements;
- Assessing area to ensure drainage patterns are maintained and the area is prepared to manage stormwater in accordance with the project SWMP (Draft POD Appendix Q-Storm Water Management Plan);
- Site clearing and grading;
- Constructing access roads;
- Building staging and storage yards;
- Placing and compacting structural fill to serve as a sub-base under the foundations for equipment;
- Installing subsurface grounding rods;
- Installing subsurface control conduits;
- Erecting chain link fencing;
- Building the facility and power equipment assembly including foundations, structure erection, switches, bus work, circuit breakers, oil spill containment facilities, etc.; and
- Conducting site cleanup, stabilization, and revegetation, as necessary.

The point of system interconnection for the improved 230-kV transmission line would be located at the existing Montrose 345-kV substation in order to transform the voltage from 345-kV to 230-kV. The Montrose 345-kV substation would be expanded to allow for the installation of the 345/230-kV transformer and other related equipment. In addition to the expansion of the existing 345-kV facility, a new 230-kV facility would be constructed at Montrose and the Montrose-Nucla transmission line segment would terminate within the new 230-kV facility.

Once the substations are energized and in operation, substation monitoring and control functions would be performed remotely by Tri-State from its operation center. Proposed project substations would not be staffed; however, a remotely monitored security system would be installed. More information about the substation would be included in the Final POD.

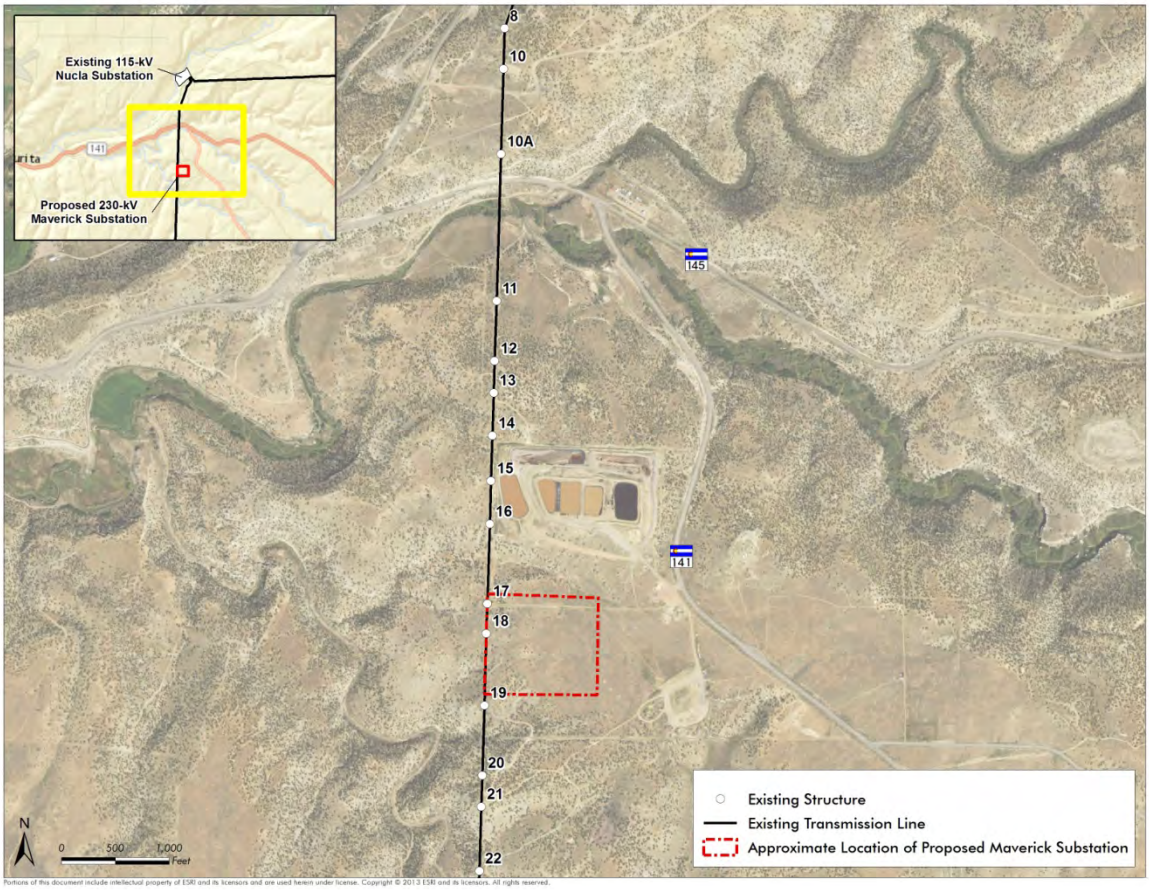

Figure 22. Proposed Maverick 230-kV Substation Location

2.3.6.10 Preconstruction Activity

Preconstruction activities would occur prior to construction crews mobilizing to the ROW and substation locations. Preconstruction activities entail obtaining necessary permits, notifying resource agencies, and conducting preconstruction surveys. Conducting environmental training for proposed project personnel and identifying work areas described below would also occur during the preconstruction phase of the proposed project. Pre-construction environmental

surveys would occur (see Table 9, EPMs BR-2, BR-3, BR-5, BR-11, CR-5, CR-7, NW-1, and VG-4).

2.3.6.10.1 *Geotechnical Investigations*

Geotechnical investigations, including drilling small coffee-can sized holes at representative locations throughout the project area, would be completed during 2016 and 2017 prior to construction. The equipment, locations and process for completing the geotechnical investigations are detailed in POD Appendix M (see mapbook in Appendix M with the locations for drilling shown on maps as yellow circles and labeled in the legend as "Geotechnical Testing Location").

2.3.6.10.2 *Environmental Training*

All construction personnel working the proposed project would be required to attend an environmental briefing to review the environmental requirements approved by the agencies. Participants of the training program would be required to sign a form that acknowledges their commitment to complying with the EPMs and mitigation measures stipulated in the compliance monitoring plan (with cultural, biological, and other environmental monitors as needed) (see Draft POD Appendix G-Environmental Monitoring and Compliance Plan; Table 9, EPMs G-2, G-3, BR-2, BR-3, GuSG-9, CR-4, and CR-7).

Sensitive resources identified during environmental surveys that are within or immediately adjacent to work areas would be marked in the field as determined by the environmental monitor. Resource areas requiring avoidance would be clearly marked as an exclusion zone and flagged or fenced so that crews do not inadvertently enter the area (see Table 9).

2.3.6.10.3 *Traffic Control and Planning*

Tri-State or its construction contractor would be responsible for obtaining permits from CDOT and county road departments for use of highways and county roads as well as the USFS for use of NFS roads and BLM for use of BLM roads. These permits include measures to minimize effects of construction traffic on the public. Traffic plans would likely include the use of signs and flagman to control traffic. Tri-State likely would use guard structures across major roadways when stringing conductor and fiber optic cable; traffic and transportation management would be detailed in (see Appendix R-Traffic and Transportation Management Plan of the Final POD).

2.3.6.10.4 *Project Staking*

Prior to the start of construction, the locations of proposed project facilities, including pole sites, access roads, staging yards, pulling/stringing sites, and the centerline would be defined. This may occur along the entire route, or for a discrete section of the line depending on the construction schedule. In either case, staking would be completed prior to construction crews beginning work on any given section of the ROW. The use of signs, flagging, or survey staking would be based on the engineering specifications and the final design. Some activities may occur on the ROW prior to surveying and staking, such as biological, cultural, and geotechnical work, but these activities would result in negligible or no ground disturbance. Project staking would be an ongoing activity and would occur as needed throughout the duration of construction. More information regarding project staking would be available in the Final POD after engineering and final design are complete.

2.3.6.11 Transmission Line Construction

The MNC transmission line would be constructed in phases in order to maintain electrical service. Outages must be planned in advance in cooperation with other electric utility companies to allow for the system to be supported by other portions of the grid while this line is being improved. Tri-State is proposing to begin construction at the Montrose substation in 2016 beginning with grading to prepare for installation of equipment in 2017 coinciding with outages associated with scheduled maintenance at one of the Craig generating station units. The new 230-kV substation must be operational before the line is completed, and the existing fiber optic cable must remain in service at all times. These constraints, along with the seasonal constraints of constructing at high elevations and in rugged terrain, present unique challenges to constructing this proposed project.

Tri-State would use a variety of construction techniques and strategies to complete the proposed project. The schedule for construction is described in Section 2.3.6.12. Using the existing road system, much of the transmission system can be built using traditional construction techniques. However, given rugged terrain, seasonal timing constraints, and the outage timeframe, some portions of the line may be constructed using helicopters. The location and extent of helicopter use would be determined by the contractor once final engineering design is complete and would be detailed in the Final POD.

2.3.6.11.1 *Removal of 115-kV Poles and Conductor*

Wood structures and wires on the 115-kV line would be dismantled and removed either prior to or post -construction of the new 230-kV transmission line. Since the existing fiber optic cable must remain operational throughout construction, Tri-State may leave the structure in the ground until the new line is constructed and the fiber optic cable is transferred; Tri-State may remove only a portion of the structure so one pole could remain to support the fiber optic cable; or the fiber optic cable may be moved to other temporary poles until construction is complete. A new fiber optic cable would be installed on the 230-kV structures. When the new fiber optic cable is operational the old fiber optic cable and the supporting pole would be removed.

Conductor would be removed while under tension to avoid contact with the ground. Poles designated for removal would be pulled completely out of the ground in most instances. The poles would be winched out of the holes, and the hole would then be filled. In sensitive areas, poles could be cut off at ground level. Additional details would be provided in the Final POD.

2.3.6.11.2 *Pole Hole Drilling*

Each wood pole structure requires a hole approximately 2.5 feet in diameter by 7.5 to 13 feet deep depending on the pole height and subsurface conditions. Holes would be augured with a truck-mounted or track-mounted auger. Holes may also be augured by hand in areas inaccessible to vehicles and heavy equipment. If possible, spoil generated from auguring the holes would be used to tamp the pole in place. Usually excess soil can be mounded around the pole and spread around the pad site to match the original contours. Sometimes excess soil may need to be hauled off site. In areas with soils that cannot be compacted or are too rocky, road base material or concrete would be used to backfill and compact around the pole. Special care would be taken to ensure that spoil is not inadvertently placed on salvaged topsoil or on topsoil that was not segregated during grading activities.

2.3.6.11.3 *Embedded Wood Poles*

Structure assembly would be completed within the approved workspace at each pole site. Assembly includes affixing cross arms to the poles, installing insulator hardware, and installing pulleys (stringing blocks) to assist during wire stringing operations. All transmission poles would be treated prior to delivery on-site with copper napthanate, pentachlorophenol, or creosote to inhibit deterioration. Once the structures have been assembled, they would be inserted into the holes using a crane, boom truck, or helicopter.

2.3.6.11.4 *Steel Poles*

Steel structures would be used in the Dry Creek Basin and at the Dolores River crossing. Steel structures require concrete foundations to support the steel design. After the foundation hole has been drilled, a rebar cage would be constructed at the pole site and inserted into the foundation hole. An anchor bolt plate would be inserted and aligned and then concrete would be poured into the hole to form the foundation. After a period of curing and testing, the steel poles would be placed onto the anchor bolts with a crane or helicopter and secured to the anchor bolts with nuts.

In order to prevent concrete from hardening inside of the concrete trucks, concrete washout sites may be required prior to concrete truck drivers leaving the work area. Where concrete washout is necessary, it would only occur in approved work areas (e.g., staging areas) or at a designated concrete washout station. Additional detail on washouts, locations, and disposal would be included in the Final POD.

2.3.6.11.5 *Wire Stringing and Conductor Splicing*

Wire stringing for both electrical conductor and fiber optic cable typically does not begin until several miles of structures have been installed. The first activity is to install string blocks or sleeves to the insulators or shield wire support(s). The string blocks can either be installed while the structure is on the ground, or after the structure has been erected by climbing the structure manually or using a bucket truck.

A compression splice would need to be installed somewhere along the centerline of the pull with hydraulic tools. The exact location of the splice would be determined during stringing.

To prevent damage to the conductor and to facilitate wire stringing, a sock line made of rope would be placed in each stringing block located on each structure from a bucket truck. Where access is not possible by vehicles or equipment, helicopters can be used to fly the sock line, or crews would install the rope by hand. Additional information regarding conductor and fiber optic cable stringing and splicing would be included in the Final POD. To protect against accidental contact of the public with wires during stringing operations, temporary guard structures would be installed as detailed in the Final POD.

The fiber optic cable located on the existing 115-kV pole would be removed after the new fiber optic cable was installed, tested, and operational on the proposed new 230-kV project. The single poles remaining after the fiber optic cable was removed would be winched out of the holes, and the poles removed and disposed of in approved landfills. In sensitive areas, poles could be cut off at ground level.

2.3.6.11.6 *Aerial Markers*

To ensure air traffic safety, Tri-State would mark the top wires for spans that exceed 200 feet above ground (for example, at the Dolores River Canyon crossing) using 36-inch-diameter marker balls (see Section 2.2.1.2.1 and Figure 7).

In addition, any areas identified as having a moderate to high collision risk for avian species would be marked with some form of flight diverter. The collision risk assessment would occur once final engineering is complete. Additional information on aerial markers would be provided in the Final POD.

2.3.6.12 Construction Workforce and Schedule

Construction must be staged to allow for outages to be taken sequentially to maintain electrical service in the region. Table 7 lists a tentative schedule of activity.

Table 7. Preliminary Montrose-Nucla-Cahone Transmission Line Improvement Schedule

Construction Task	Construction Completion
Existing ROW clearing and expansion of the existing Montrose 345-kV substation	2017
Energize Montrose substation expansion	2017
Construction of new 230-kV Maverick substation (Nucla)	2018
Completion of Montrose 230-kV substation	2018
Construction of Nucla-Montrose transmission line	2018
Construction of Nucla-Cahone transmission line	2019
Construction of Cahone substation expansion	2019

2.3.6.12.1 *Construction Personnel*

Proposed project personnel would encompass a wide variety of Tri-State staff and contractors. Transmission and substation construction require a specialized workforce that would likely come from outside of the region. Other support contractors, such as environmental consultants, surveyors, and inspectors, may come from the local workforce. Table 8 summarizes the construction workforce and equipment anticipated for the 115-kV transmission line and substation facilities. The construction workforce would include, but is not limited to:

- General Contractor specializing in transmission line construction;
- General Contractor specializing in the installation of power cables;
- Clearing and grading subcontractors;
- Environmental compliance inspectors;
- Biological and cultural resource specialists;
- Construction inspectors and management team;
- Survey staking contractor;
- Concrete contractor for steel pole foundations and conduit duct bank;
- Trucking and shipping contractors; and
- Helicopter and helicopter support crew.

Many individuals may be trained and qualified to complete multiple tasks; therefore, the crew sizes and totals in Table 8 overestimate the actual number of people that would be needed.

Table 8. Anticipated Construction Workforce and Equipment

Crew Total	Total Time
Maximum range each year 40 to 60 people	Maximum each year 12 months
21 to 26 people	14 to 18 weeks
12 to 16 people	5 to 6 weeks
31 to 40 people	20 to 24 weeks
41 to 50 people	20 to 24 weeks
27 to 36 people	14 to 21 weeks

2.3.6.13 Stormwater Management

2.3.6.13.1 *Temporary Controls/EPMs*

While most poles would be installed without substantial ground disturbance, temporary erosion and sediment control may be required where exposed soils are susceptible to erosion. Areas susceptible to erosion may include, but are not limited to, access and spur roads, staging areas, pole sites where grading is required, pad sites, and work areas adjacent to sensitive resource areas. EPMs in Table 9 for Water Resources and Quality would be implemented to further reduce effects to surface waters and water quality and would reduce erosion related effects (also see the POD Appendix F-Water Resources Protection Measures and Appendix Q-Storm Water Management Plan).

2.3.6.13.2 *Permanent Controls*

Slope breakers (also known as water bars and rolling dips) are intended to shorten the effective slope length, reduce runoff velocity, and divert water off of work areas and/or access roads. The number, location, and design of slope breakers or rolling dips would be approved by the affected agency and documented in the stormwater management plan submitted to the CDPHE.

Disturbed ground not needed for permanent use would be seeded and mulched as specified in the SWMP and by landowner/land management agencies. Stabilization would be considered permanent when disturbed sites reach 70 percent of pre-existing vegetative cover. Also see Table 9 and the POD, Appendix P-Reclamation Plan.

2.3.6.14 Post Construction

Final clean-up and restoration activities would begin once pole structures, conductors, and the fiber optic cable have been installed and no further construction-related work is anticipated. All areas disturbed by construction that would not be used or maintained during the operation phase of the proposed project would be returned to 70 percent preconstruction conditions and seeded as required in the Reclamation Plan (see POD, Appendix P-Reclamation Plan) or as specified by landowners and land management agencies.

2.3.6.14.1 *Clean-up*

Upon completion of construction in a given section of the line, Tri-State would remove all construction debris and materials, including the 115-kV structures, unused conductor and guy wire, excess conduit and cable, and survey lath from the ROW and dispose of it at a licensed waste or recycling facility. Brush piles generated during clearing operations would also be removed from the ROW and disposed of at a licensed facility, unless previously approved by the landowner or land management agency. Brush or masticated material could also be used for erosion control at the affected agencies discretion. In addition, Tri-State would repair and restore driveways, roads, trails, gates, landscaping, or other features damaged during construction of the proposed project. Additional information on clean-up after construction is in Table 9 and the POD (Appendix P).

2.3.6.14.2 *Restoration and Revegetation*

Interim reclamation activities would be completed to stabilize the ROW and associated access while allowing long-term maintenance of the transmission line. More details on reclamation activities are in Table 9, and in Appendix P-Reclamation Plan of the Draft POD.

2.3.6.14.3 *Noxious Weeds*

Monitoring for noxious and invasive species is currently conducted on the existing 115-kV line by agency staff under a management agreement covering all Tri State transmission lines on SJNF- and GMUG NF-managed lands. Appropriate mitigation and treatment are completed by USFS Rangeland Management Program staff on an annual basis. Records of all monitoring and treatment activities are maintained by USFS staff. Tri-State may collaborate with BLM and county weed programs or contract with a certified applicator to control weeds on BLM-administered and private lands. No weeds would be treated within the Dry Creek Basin or Miramonte Reservoir area until the BLM TRFO completes programmatic consultation with the USFWS regarding weed management. Future weed management in GuSG habitat would comply with this programmatic Section 7 consultation.

More information is in the Noxious Weed Management Plan (Appendix S-Noxious Weed Management Plan of Draft POD).

2.3.6.15 Emergency Repairs

Tri-State has procedures in place to address the potential for accidents and emergency repair and response during the operation phase of the proposed project. Protection equipment within the substations would monitor the operating condition of the electrical system and would rapidly de-energize the line or substation equipment if a fault or other problem is detected. The nature of the problem would be relayed to Tri-State's Control Center via the utility's communication system (fiber optic cable). The system operator would diagnose the problem and restore service

using remote operation of switches and circuit breakers if possible. Montrose and Durango maintenance personnel would be dispatched to the site if necessary.

Emergency outages may be caused by lightning strikes, high winds, heavy snow and ice, vandalism, or equipment failure. The type of emergency, location, weather, or season would define the equipment required to restore service. If the new line was significantly damaged, the repairs could take from one day to several days, depending on location and weather conditions. The duration of the interruption would depend on the source of the fault and would vary from a couple of seconds to up to a few days.

2.3.6.16 Environmental Protection Measures

EPMs committed to by Tri-State for the construction and operation of the proposed 230-kV transmission line are included below in Table 9. This table would be updated in the Final POD (Table 4 of the POD) to include more specific EPMs once engineering and design is complete.

Table 9. Tri-State EPMs for Construction Projects

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
General		
G-1	Tri-State and its contractors will comply with all federal, state and local environmental laws, orders and regulations. Tri-State will comply with applicable San Miguel, Dolores, and Montrose County Land Use Code provisions, and Special Use Permit conditions of approval. Prior to construction, all construction personnel will be instructed on the protection of cultural and ecological resources.	C and O&M
G-2	Tri-State will discuss with the Contractor/Maintenance staff areas of environmental sensitivity within the project area, and, in particular, those areas where a monitor must be present during construction and future heavy maintenance.	C and O&M
G-3	Tri-State will contract an agency approved and qualified transmission construction environmental monitor who will be present at all times when working on federal and state lands as well as on private lands when work will occur in proximity to sensitive biological, paleontological or cultural resources. The environmental monitor will be responsible for keeping Tri-State and its contractors in compliance with the Final POD and associated permits/easements. The environmental monitor will report any compliance concerns to the agencies' authorized representative and Tri-State's chief environmental compliance officer concurrently within 24 hours or less of all reportable violations. The environmental monitor will be given full authority to halt construction if an activity will result in non-compliance with any terms of grants, permits, easements and associated committed environmental protection and mitigation measures approved for the project. Tri-State would also employ a monitor for "heavy maintenance" activities in sensitive habitat including historic properties/eligible cultural resources.	C
G-4	Tri-State and its contractors will adhere to the Final POD which includes keeping all construction and future maintenance activities within the permitted transmission and access road ROWs. Any deviation from the Final POD will require submittal and approval of a variance request to the BLM/USFS. The Final POD will include environmental protection measures (EPMs) applicable to future routine and emergency maintenance activities including vegetation management. All construction plans will be approved by the agencies before the Notice to Proceed (NTP) is issued by BLM.	C and O&M

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
G-5	The project will be planned, constructed, operated, and maintained in accordance with the Finding of No Significant Impact (FONSI), ROW grant (BLM), special use authorization (USFS), and requirements of other federal, state and local permitting agencies.	C and O&M
G-6	Tri-State will notify the BLM, USFS, and appropriate landowners regarding the schedule and scope of work for construction of the transmission line as well as for future major maintenance activities. A pre-construction meeting will be held with Tri-State, its contractors, environmental monitors, and agency representatives to review environmental and land use compliance for the project.	C and O&M
Access Routes (also see Traffic section, T-1 and T-2)		
AR-1	No construction or heavy maintenance activities will be performed during periods when the soil is too wet to adequately support equipment and vehicles. If equipment or vehicles create ruts in excess of 4 to 6 inches deep for a distance of 10 feet on native surface roads, the soil will be deemed too wet to adequately support construction equipment. If equipment or vehicles create ruts in excess of 2 inches deep on graveled roads, the roads will be deemed too wet to support construction equipment.	C and O&M
AR-2	Only the minimum amount of soils and vegetation necessary for the construction and maintenance of the access routes and the safe and reliable operation of transmission line will be disturbed. If excavation is necessary, topsoil (if present) will be conserved and reused as cover on disturbed areas to facilitate re-growth of vegetation. Vegetation will be cleared from those areas necessary to obtain adequate working width and turning radius space for maintenance equipment and allow for the safe operation of the transmission line.	C and O&M
AR-3	Tri-State's construction contractor and maintenance crews will be required to remain within authorized access ROWs. Access outside of permitted access ROWs will need to be approved by the affected land management agency/owner prior to use. Future maintenance work will also occur entirely within the transmission and access ROWs unless otherwise authorized by the affected agency/landowner.	C and O&M
AR-4	Tri-State and its contractor(s) will work with the BLM and USFS regarding travel restrictions as well as the need, location and type of closure devices that will be utilized and installed to protect key areas along access roads and to clarify which roads are being used for administrative purposes only. Tri-State will provide funding for closure devices and informational signage. All rights-of-way will be maintained to allow BLM and USFS personnel access at any time, especially in the event of emergencies (e.g. fires).	C and O&M
AR-5	Tri-State will design, construct and maintain access roads to BLM/USFS road standards through coordination with the authorized agencies road engineer and obtain design approval from the relevant agency road engineer prior to construction. In areas where more than 3 feet of grading is required (Tri-State improvement Level 3b), Tri-State will coordinate with the BLM and USFS engineers prior to the initial work on the ground to strategize on how the work can be accomplished with the minimum amount of surface disturbance. Tri-State will use the USFS/USID's (United States Agency for International Development) Low-Volume Road Engineering: Best Management Practices Field Guide and the BLM Gold Book to minimize soil losses, erosion and unstable slope conditions. These measures include: maintenance of soil erosion features such as dips and cross drains, repair of ditches, clearing of culverts and avoiding maintenance during wet periods.	C and O&M
AR-6	Tri-State will work with the USFS to maintain locked gates to restrict access south of the Big Water Springs Road and on both sides of Forest Road 509 in the San Juan National Forest (east of Dolores Canyon).	C and O&M

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
AR-7	*Emergency Maintenance Access:* Emergency access will be allowed during any time of the year. In the event of an emergency, Tri-State and its contractor(s) will notify the BLM and/or USFS/landowner as soon as possible. Tri-State will meet with BLM and/or USFS/landowner onsite after an emergency to determine the required rehabilitation work and to establish a rehabilitation schedule. If emergency access to the transmission line is required during wet weather, or if other maintenance activities result in the removal of vegetation, or substantial vehicle impacts to existing native vegetation, revegetation of disturbed areas will be completed as directed by the BLM/USFS or affected landowner. Reclamation and revegetation will be implemented, as required, as soon as practical after any emergency road access or maintenance work needed to repair the transmission line. If emergency line maintenance is required during the winter or spring months, care will be taken to minimize erosion and sedimentation to the extent practicable and effects will be mitigated after the emergency has been resolved in coordination with the affect land management agency or landowner.	O&M
Aesthetics/Visual Resources		
A-1	Tri-State and its contractors will exercise care to preserve the natural landscape, and will conduct construction operations so as to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent work, approved temporary or permanent construction roads, staging areas or excavation operations, vegetation will be preserved and will be protected from damage by the contractor's construction operations and equipment.	C
A-2	Tri-State and its contractor(s) will minimize scarring, defacing, damage, or destruction of the natural landscape resulting from construction operations; any unnecessary or unauthorized disturbance will be repaired by the contractor to the satisfaction of the agency authorized officer.	C
A-3	All construction and future maintenance materials, waste, and debris will be removed from the project area in a timely manner. Burning or burying of waste materials on the ROW or construction sites will not be allowed. All materials resulting from the contractor's clearing operations will be removed from the ROW.	C and O&M
A-4	Structures and access roads will be located and designed to conform to the terrain and to minimize visual effects whenever possible. Specifically, visibility from Key Observation Points (KOPs) will be considered at the Dolores River crossing. (See A-6). Leveling and benching of the structure sites will be done to the minimum extent necessary to allow for construction and future maintenance operations. Existing cleared or disturbed areas will be used to the extent practicable for staging areas and other temporary use areas.	C
A-5	Tri-State and its contractor(s) will attempt to manage vegetation within the ROW in a manner that reduces the visual effect by only removing non-compatible vegetation that could pose a threat to the transmission line in the next 10 years and leaving compatible vegetation in the ROW. The first priority is to allow Tri-State to meet their federal reliability standards for vegetation management within and adjacent to the transmission ROW.	C and O&M
A-6	In order to minimize visual effects from the transmission line from a design perspective, Tri-State has committed to utilizing non-specular conductor, applying acid-etched galvanized finish or weathering finish to all steel structures including steel fence, and using gray porcelain insulators.	C

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
A-7	EPM VG-2 through VG-9 will minimize visual effects from project construction and operation by reclaiming areas of temporary disturbance and minimizing vegetation removal to tall woody vegetation required for the safe construction, operation, and maintenance of the transmission line.	C and O&M
A-8	The alignment of any new access roads will follow the designated area's landform contours where practical, provided that such alignment does not additionally affect resource values. This will minimize ground disturbance and reduce scarring (visual contrast).	C
Air Quality		
AQ-1	Tri-State and its contractor(s) will utilize practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.	C and O&M
AQ-2	Possible construction related dust disturbance will be controlled by the periodic application of water to all disturbed areas along the ROW and access roads, thus preventing any visible dust plumes from project-related traffic or excavation activities.	C
AQ-3	Vehicles and equipment showing excessive emission of exhaust gases due to poor engine adjustments or other inefficient operating conditions will not be operated until corrective adjustments or repairs are made.	C and O&M
AQ-4	Post seeding mulch or other approved methods will be utilized during reclamation activities to help reduce wind erosion and blowing dust. Soil stabilization will be performed as soon as possible after completion of project activities to minimize potential fugitive dust generation as re-vegetation occurs.	C and O&M
AQ-5	The contractor will turn off equipment when it is not in use.	C and O&M
AQ-6	When wind speeds exceed 20 miles per hour (mph), Tri-State and contractors will minimize new disturbance to the extent possible and/or mobilize additional water trucks to minimize fugitive dust from exposed surfaces. Also see AQ-4.	C
Biological Resources and Federally Listed Species		
BR-1	Tri-State and its contractor(s) will also restrict construction activities and future major routine maintenance activities in elk production areas on lands administered by the USFS and BLM administered lands in lands in accordance with the respective Resource Management Plans and Land Management Plans. These timing restrictions on federal lands will be adhered to whenever feasible and a waiver will be required from the land management agency in coordination with Colorado Parks and Wildlife (CPW) if construction needs to occur in sensitive big game habitats during sensitive time periods. Prior to the Notice to Proceed, Tri-State will update the POD atlas to identify seasonal restrictions for big game per direct guidance from the USFS, BLM, and CPW.	C and O&M

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
BR-2	To ensure compliance with the Migratory Bird Treaty Act, Tri-State and its contractor(s) will incorporate BLM, USFS, CPW, and US Fish and Wildlife Service (USFWS) guidelines for raptor protection if construction occurs during the breeding season. Raptor nest surveys will be conducted prior to construction. If an active raptor nest is found within the project area, seasonal buffers and timing restrictions will be determined through coordination with the affected agency and will utilize guidance as outlined in CPW's Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors (CPW 2008) on BLM UFO, private, State, and USFS administered lands. Separate guidance will be followed on lands in the BLM Tres-Rios Field office (TRFO). Buffers will be determined according to species, existing disturbance in the area, and line of sight. If complete avoidance of a buffer is not feasible, a qualified biological monitor could be used to observe the nest during construction activities to ensure the activity does not disturb nesting activities. The biological monitor will have the authority to halt or modify construction if an activity is likely to result in nest abandonment.	C and O&M
BR-3	No bald or golden eagle nests are known to occur within 0.5 mile of any portion of the project. Surveys will be conducted prior to construction to identify any active nest or roost location within 0.5 miles of the transmission ROW and associated access roads. If an active eagle nest is found prior to construction, no work will be permitted within 0.5 mile of the active nest from December 15 through July 15 unless otherwise authorized by the USFWS. Historically, bald eagle communal roosting site and winter concentration areas have been documented along the San Miguel and Dolores Rivers, Wrights Mesa, Dry Creek Basin, and Disappointment Valley. Activity will be restricted from November 15 through March 15 if an active communal roost is found within 0.5 miles the proposed project activities during pre-construction surveys unless otherwise authorized by the USFWS. If complete avoidance of a nest or roost buffer is not feasible, the USFWS will be contacted to approve a modified buffer or approve use of a qualified biological monitor to observe the nest during construction activities to ensure the activity does not disturb nesting activities. The biological monitor will have the authority to halt or modify construction if an activity is likely to result in nest abandonment. If USFWS determines take may occur, Tri-State will obtain an eagle take permit from the USFWS prior to construction. The same process will apply to future major maintenance activities.	C and O&M
BR-4	Once pre-construction surveys have been completed, the Final Construction Constraints Atlas will be updated to reflect appropriate seasonal restrictions and buffers to ensure construction activities are in compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Seasonal avian restrictions will also apply to heavy maintenance activities as defined in the POD.	C and O&M
BR-5	On State owned lands, USFS, and private property, if a prairie dog colony is found within the project area prior to construction, and construction is scheduled to occur during the breeding season for burrowing owls (April 1 through September 1), surveys will be conducted using CPW's approved protocol. If prairie dog colonies occur on BLM lands, burrowing owl surveys will be conducted using protocol from the TRFO BLM. If an active nesting burrow is found, it will be avoided by a buffer of 0.25 miles from March 15 through August 15 or until the young have fledged and left the nest.	C and O&M
BR-6	In order to preclude avian electrocutions and minimize collision risk, Tri-State has incorporated guidelines developed by the Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC 2012) to protect birds on power lines.	C

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
BR-7	The construction contractor will be required to avoid active burrows whenever feasible within the ROW during project construction to minimize impacts to ground dwelling species.	C
BR-8	Structure holes will be covered when work is completed each day to prevent entrapment of wildlife.	C
BR-9	Impacts to wildlife and special status species habitats will be minimized through incorporation of EPMs included under Vegetation and Water Resources.	C and O&M
BR-10	If vegetation removal occurs during the spring and summer months, Tri-State will conduct pre-construction surveys to ensure compliance with the Migratory Bird Treaty Act. Tri-State will map active nests and flag and avoid any active nests identified.	C and O&M
BR-11	Tri-State and its contractors will site transmission structures and access roads to avoid BLM/USFS sensitive plant species to the greatest extent feasible. Where sensitive plants are located adjacent to the transmission structures or access roads, fencing/ropes/signs will be installed to prevent construction crews from impacting BLM/USFS sensitive plants. Management of fugitive construction dust as discussed under water resources and quality will also minimize indirect effects to sensitive plant species.	C
BR-12	Emergency maintenance activities will be permitted any time of year to ensure electric reliability and to protect the public health and safety. Examples of emergency maintenance activities include wires on the ground, structure repairs required as a result of severe weather incidents and vandalism activities. The affected agencies will be notified as soon as possible, but within 48 hours of the activities occurring and any required reclamation will be completed as soon as possible.	O&M
Gunnison Sage-Grouse		
GUSG-1	Tri-State will utilize single-pole structures to reduce perching surfaces for GuSG avian predators through Dry Creek Basin.	C
GUSG-2	Tri-State and its contractor(s) will install perch discouragers on the horizontal portions of the steel structure including the pole tops in Dry Creek Basin.	C
GUSG-3	Tri-State will utilize self-supporting steel structures in GuSG occupied habitat to reduce GuSG and other avian and wildlife collisions with guy wires.	C
GUSG-4	The project will comply with the 0.6-mile No Surface Occupancy Buffer for lek sites and there are no access roads proposed within 0.6-mile of an active lek. In addition, the project does not occur within 0.6 miles of riparian habitat or documented GuSG concentration areas.	C
GUSG-5	Tri-State's transmission line and access road construction along the existing alignment will not occur within occupied habitat from March 1 through June 30th.	C
GUSG-6	Planned heavy maintenance activities by Tri-State's and its contractor(s) including structure replacement, cross arm replacement, and replacement/re-pair of the conductor/fiber optic cable (OPGW) will not occur March 1 through June 30 in GuSG occupied habitat. Light maintenance activities such as annual inspections, hardware tightening, pole testing, and insulator replacement will be permitted year-round. However, during the lekking season, these activities will occur after 10:00 a.m.	O&M

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GUSG-7	Emergency maintenance activities will be permitted any time of year to ensure electric reliability and to protect the public health and safety. Examples of emergency maintenance activities include wires on the ground and structure repairs required as a result of severe weather incidents and vandalism activities. The affected agencies will be notified within 48 hours of the activities occurring and any required reclamation will be completed as soon as possible.	O&M
GUSG-8	Maintenance and construction crews will be required to drive 35 miles per hour (mph) or less on all roads associated with GuSG occupied habitat in Dry Creek Basin (with the exception of SH 141) to minimize vehicle collisions with GuSG.	C and O&M
GUSG-9	An agency approved environmental monitor will be present at all times during construction in GuSG occupied habitat to ensure compliance with any and all environmental protection and mitigation measures identified in the Environmental Assessment (EA) and Biological Assessment (BA). The environmental monitor is given full authority to stop or modify construction activities that may be affecting GuSG and other sensitive resources.	C
GUSG-10	Construction and maintenance crews will be required to go through formal environmental training prior to the initiation of construction and maintenance activities in GuSG habitat to ensure compliance with all approved EPMs and mitigation measures for the project.	C and O&M
GUSG-11	Any areas disturbed during project construction and future maintenance activities will be reclaimed using an approved weed-free native seed mix beneficial to GuSG, as provided by the affected land management agency/landowner.	C and O&M
GUSG-12	Tri-State and its contractor(s) will treat noxious weeds infestations per NW-1 through NW-8 to minimize habitat effects impacts to GuSG.	C and O&M
GUSG-13	Tri-State will monitor and maintain the condition of the perch discouragers for the life of the transmission line. Tri-State in coordination with BLM and CPW will monitor the efficacy of the perch discouragers installed in occupied habitat for GuSG for two years. This will include one year of pre-construction monitoring to evaluate current perching activity on the existing 115-kV line.	O&M
GUSG-14	A draft GuSG design minimization and conservation strategy has been prepared by Tri-State for the existing alignment through Dry Creek Basin. This draft minimization strategy can be found in the *Biological Resource Plan, Appendix B.*	C and O&M
GUSG-15	Establish and implement a fire prevention and suppression plan for construction and future heavy maintenance activities. Adhere to seasonal fire restrictions and stipulations which may include: • Educate crews how to enforce and practice appropriate fire prevention and suppression actions and behavior. • Minimize idling during construction and routine maintenance activities. • Park vehicles in designated parking or construction areas. Avoid parking over tall, dry vegetation. • Implement use of spark arrestors.	C and O&M
GUSG-16	Any areas disturbed during project construction and future maintenance activities will be reclaimed using an approved weed-free, native seed mix as provided by the affected land management agency/owner.	C and O&M
GUSG-17	Tri-State will design access and pad sites for structures locations in a manner that minimizes effects to the greatest extent feasible while also allowing for the safe operation of construction of maintenance and construction equipment.	C

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Cultural Resources		
CR-1	Prior to construction and future heavy maintenance activities, all construction personnel will be instructed on the protection of cultural and paleontological resources with reference to relevant laws and penalties, and the need to cease work in the location if cultural resource items are discovered.	C and O&M
CR-2	Should any previously unknown historic/prehistoric sites or artifacts be encountered during construction, all land altering activities at that location will be immediately suspended and the discovery left intact until such time that the appropriate land management agency is notified and appropriate measures taken to assure compliance with the National Historic Preservation Act and enabling legislation.	C and O&M
CR-3	Cultural Resources—Inadvertent Discovery: Pursuant to 43 Code of Federal Regulations (CFR) 10.4 (g); Tri-State will notify the authorized officer, by telephone with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony or possible vertebrate fossils. Further, pursuant to 43 CFR 10.4 (c) and (d), Tri-State will stop activities in the vicinity of the discovery and protect it until notified to proceed by the authorized officer.	C and O&M
CR-4	Sensitive cultural resource locations (historic properties) in proximity to the area of potential effect will be flagged prior to construction and major maintenance activities to ensure avoidance. A qualified and agency approved cultural resource monitor will be on site when construction activities are planned in proximity to cultural resources to ensure historic properties are not disturbed.	C and O&M
CR-5	Cultural resource inventories will be completed for areas that were not previously surveyed and the existing treatment plan will be appended to include newly documented areas of unavoidable disturbance to historic resources. The Memorandum of Agreement (MOA) and agency approved appended treatment plan will be updated and implemented prior to the start of any construction activities.	C
CR-6	Tri-State and its contractors will comply with the historic properties treatment plan approved by the BLM, USFS, and the State Historic Preservation Office (SHPO) to ensure unavoidable effects to historic properties are properly mitigated.	C and O&M
CR-7	Construction activities within the boundaries of historic properties will be limited to permitted access roads or noncontributing areas of sites, or mitigated or monitored as specified in the Treatment Plan for any off-road travel necessary."See also AR-1 which addresses rutting in wet road conditions.	C
CR-8	To the extent feasible, as allowed by transmission line design requirements, Section 106 implementing procedures (36 CFR 800) will be followed for the portions of the area of potential effect not yet surveyed.	C
Fire Prevention/Control		
FP-1	Construction vehicles will be equipped with government approved spark arrestors.	C and O&M
FP-2	Tri-State and its contractor(s) will maintain in all construction and maintenance vehicles a current list of local emergency response providers and methods of contact/communication.	C and O&M
FP-3	A fire plan is included in the Final POD and will be adhered to during transmission construction and maintenance activities.	C and O&M

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FP-4	The following procedures will be followed by Tri-State and its contractors to reduce fire danger during project construction and future maintenance activities: • The BLM, USFS, and CPW will be kept appraised of Tri-State work locations during times of high fire danger to provide for evacuation purposes and fire alert opportunities. • The nearest federal agency as well as the local fire department will be notified in the event a construction or maintenance crew observes a lightning strike or other suspicious smoke. • Tri-State's contractors and maintenance crews will avoid parking hot vehicles in contact with dry vegetation. • Vegetation will be removed around the structure (roughly a 75-foot radius) to allow bucket truck access which will help minimize effects to the power line in the event of a wildfire. • Vegetation management within and adjacent to the ROW will minimize risk to the transmission line and federal, state, and private lands.	C and O&M
Hazardous Materials		
HM-1	Tri-State and its contractors will comply with all applicable federal laws and regulations existing or hereafter enacted or promulgated regarding toxic substances or hazardous materials during both construction and future maintenance activities. In any event, Tri-State and its contractors will comply with the Toxic Substance Control Act of 1976, as amended (15 United States Code 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the ROW or on facilities authorized under this ROW grant (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 will be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substance will be furnished to the authorized officer concurrent with the filing of the reports to the involved federal agency or state government.	C and O&M
HM-2	No bulk fuel storage will occur within the public lands portion of the ROW project. All fuel and fluid spills within this area will be handled in accordance with appropriate state and federal spill reporting and response requirements. Tri-State's contractor will notify Tri-State of any spills so appropriate notifications can be made to the appropriate regulatory authorities/landowners and managers.	C and O&M

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HM-3	The following hazardous materials management procedures will be used during maintenance and operation activities: • Storage of hazardous materials, chemicals, fuels, and oils and fueling of construction equipment will not be performed within 100 feet of an ephemeral drainage. • An effort will be made to store only enough products required to do the job. • Materials will be stored in a neat, orderly manner, in appropriately closed containers, in secondary containment and, if possible, under a roof or other enclosure. • Products will be kept in their original containers with the original manufacturer's label. • Substances will not be mixed with one another unless recommended by the manufacturer. • Whenever possible, all of the product will be used up before disposing of the container. • Manufacturer's recommendations for proper use of a product will be followed. • If surplus product must be disposed of, local and state recommended methods for proper disposal will be followed.	C and O&M
HM-4	Any waste generated as a result of the project will be properly disposed in a permitted facility. Solid waste generated during construction and periodic maintenance periods will be minimal. All hazardous materials will be handled in accordance with applicable local, state, and federal hazardous material statutes and regulations.	C and O&M
Land Use		
LU-1	All activities associated with the construction, operation and maintenance of the transmission line will take place within the authorized limits of the transmission line ROW and access routes. Additional access routes or cross-country travel will not be allowed outside of the authorized routes prior to review and approval by the affected land management agency authorized officer/landowner.	C and O&M
LU-2	Tri-State will notify private landowners that will be affected during project construction and provide compensation if new easement agreements are required prior to construction.	C

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LU-3	Tri-State will coordinate throughout the planning and construction phases of the project with other ROW grant/Special use permit holders/other lessees within the project area to ensure there are no conflicts or effects to existing land uses. It is Tri-State's and industry standard practice to design and build infrastructure to avoid possible safety and operational concerns from existing land uses (oil and gas, water and gas pipelines, grazing, etc.). Tri-State will work with affected oil and gas and other operators in the project area during project design, construction, and operations on a case-by-case basis. In general Tri-State will: • Contact all affected operators in the study area to explain the project and • Work with operators to identify areas that may require special design considerations on a case-by-case basis. This could include conducting field visits with operators, identifying pipelines that may require cathodic protection (due to proximity to the transmission line), or specific design considerations if they are located under or near access roads; or identifying areas where subsidence may be a concern. As part of these discussions, best management practices and standard operating procedures will be identified on a case-by-case basis, as well as measures that will be implemented to minimize effects to operators during construction. Tri-State will continue to work with operators throughout construction and operation of the project.	C
LU-4	The contractor will maintain all fences, brace panels, gates, and cattle guards during the construction period. Any fence, brace panel, or gate damaged during construction will be repaired immediately by the contractor to appropriate landowner or agency standards as determined by the authorized officer. Tri-State would maintain gates on Tri-State's administrative routes only.	C and O&M
LU-5	The contractor will eliminate, at the earliest opportunity, all construction ruts that are detrimental to agricultural operations and/or hazardous to movement of vehicles and equipment. Such ruts will be leveled, filled and graded, or otherwise eliminated in an approved manner. Damage to ditches, tile drains, culverts, terraces, local roads, and other similar land use features will be corrected as necessary by the contractor. The land and facilities will be restored as nearly as practicable to their original condition.	C
LU-6	Structure foundation holes will not be left open overnight and will be covered. Covers will be secured in place and will be strong enough to prevent livestock, wildlife, or the public from falling through and into a hole.	C
LU-7	Tri-State will provide as-built drawings to federal agencies when construction is completed.	C and O&M
Noise		
N-1	Construction vehicles and equipment will be maintained in proper operating condition and will be equipped with manufacturers' standard noise control devices or better (e.g. mufflers, engine enclosures). Improperly functioning equipment will be removed from the construction site until the issue is corrected.	C and O&M
N-2	Noise associated with project construction activities shall comply with C.R.S 25-12-103(5). Maximum permissible noise levels. Post construction noise levels for project operation shall comply with C.R.S. 25-12-103(12)	C and O&M

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Noxious Weeds		
NW-1	Noxious weed management is required throughout the life of the transmission line easements, special use permits, and ROW Grant. Tri-State shall be responsible for weed control within the limits of the right-of-way. Tri-State is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations) including pesticides/herbicides approved for use on BLM land. A noxious weed MOU is already in place with the USFS for the transmission line. If noxious weed agreements are not in place by the initiation of ROW clearing in spring of 2017. Tri-State will supplement USFS weed treatment efforts as needed prior to construction. Tri-State will pre-treat noxious weeds on BLM and private lands (where permitted) in the spring of 2017. Noxious weed management will continue throughout the life of the transmission line via agreements with the USFS and BLM.	C and O&M
NW-2	Tri-State will continue to participate and voluntarily fund noxious weed management activities on Tri-State ROWs under the existing Collection Agreement between Tri-State and the USFS for the Grand Mesa Uncompahgre Gunnison (GMUG) NF and San Juan National Forest (SJNF) (this agreement covers 18 miles of the existing transmission ROW). Additional detail will be provided in the Final POD (Appendix S, Noxious Weed Management Plan). The existing agreement with between Tri-State and the USFS is also in accordance with USFS direction for invasive species management (including Forest Service Manual 2900 invasive species management; Forest and/or regional invasive species strategy). The same approach to noxious weed management is proposed on BLM administered lands and a draft agreement is currently being drafted. The POD will be updated with this finalized BLM Uncompahgre Field Office and Tres Rios agreement. Tri-State will participate and fund noxious weed management activities on Tri-State ROWs under a Collection Agreement between Tri-State and the BLM GMUG and Tres Rios. Additional detail will be provided in the Final POD (Appendix S, Noxious Weed Management Plan). An approved weed treatment plan shall be reviewed and approved by the BLM prior to the issuance of the Notice to Proceed.	C and O&M
NW-3	The reclamation and noxious weed management plan will be approved by the appropriate agency prior to the issuance of a ROW grant. The noxious weed management plan for areas not covered under pending agreements with the BLM and existing agreements with the USFS will be developed in accordance with appropriate land management agencies' standards, consistent with applicable regulations and agency permitting stipulations for the control of noxious weeds and invasive species (Executive Order 3112).	C and O&M
NW-4	On-site weed control for pre-construction activities that may occur prior to implementation of a noxious weed agreement with the BLM and on private lands will be conducted through herbicide use and a weed control plan and/or agreement approved by the BLM, CPW, and affected landowner (on private lands). The BLM requires a Pesticide Use Proposal package, and will approve proposed herbicides, treatments and time of treatment. Applicators are also legally required to supply the BLM with a written herbicide application record within 24 hours of applying herbicides on BLM-managed lands. The pesticide use proposal should be submitted to the agencies by March 1, annually. Application records will be submitted weekly and will include both spatial and tabular element (using forms provided by the agencies).	C

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NW-5	All heavy equipment, including all-terrain vehicles (ATV) and lowboys, utilized during construction will be washed prior to departure from the equipment storage facility. This method promotes containment of weed seeds on the work site; all seed mixes and mulch used for reclamation activities will be certified weed-free. Tri-State will consider providing a portable/mobile vehicle wash station on-site where appropriate. Tri-State will require that all vehicles be washed prior to entering the project area; when travelling from an area infested with invasives to an area that has no known invasives; and when travelling from an area infested with spotted knapweed to any other parts of the project area.	C and O&M
NW-6	Pre-construction treatment of weeds in staging or temporary use areas will be conducted.	C
NW-7	Noxious weed treatments conducted outside of agreements with BLM and USFS will require avoidance and/or minimization measure to protect documented populations of rare plant species that are included in the project's constraints atlas (POD Appendix G).	C and O&M
NW-8	Noxious weed treatment conducted outside of Federal lands shall comply with Land Use Code 5-1002-E.IX.	C and O&M
Paleontological Resources		
PA-1	In consultation with applicable agencies, a paleontological resource monitoring and mitigation plan will be prepared for locations (if any), where construction will disturb geologic units with high Potential Fossil Yield Classification (PFYC) of high (PFYC) 4) or very high (PFYC 5) resource potential. The plan will include specific monitoring locations, monitoring and fossil salvage and data collection procedures, notification procedures in the event of a scientifically significant discovery, and notification procedures in the event of a fossil discovery by construction personnel in areas that are not monitored.	C
Recreation		
R-1	Tri-State and its contractor(s) will be responsible for avoiding effects to the Power Line Trail and its associated facilities (signs, off-highway vehicle gates, fencing, cattle guards, etc.). If this trail and/or any other trail facilities on BLM and USFS administered lands are impacted during project construction and/or maintenance activities, Tri-State will rehabilitate/re-construct the trail and its corridor to USFS specifications and replace damaged trail facilities. Tri-State will also provide signs and coordinate any necessary trail closures with the BLM and/or USFS. If guy wires are required for specific structures in proximity to trails, the wires will be marked with reflective tape to reduce risk of collision.	C and O&M
R-2	Tri-State has coordinated with CPW to obtain priorities for restrictions in specific areas to reduce impacts to hunters. CPW has indicated their priority is to restrict construction from Naturita Ridge to Disappointment Valley from: 11/2-11/13 in 2016, 11/1-11/12 in 2017, and 10/31-11/11 in 2018. Tri-State will work with CPW, BLM, USFS, and private landowers on reducing effects to hunters and providing information/maps to CPW to provide to hunters within the affected game management units about construction schedules and activities.	C
Soils and Geology		
S-1	Tri-State and its contractor(s) will mitigate temporary effects to soils compacted by movement of construction vehicles and equipment, by: • Loosened and leveled harrowing or disking to approximate pre-construction contours and • Reseeding with certified weed-free grasses and mulched (except in cultivated fields). The specific agency approved seed mix(s) and rate(s) of application will be determined by the affected land management agencies or private landowners.	C

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S-2	Movement of construction and maintenance vehicles and equipment will be limited to the ROW and approved access routes.	C and O&M
S-3	Excavated material not used in the backfilling of structures will be spread around each pole, evenly spread on the access routes in the immediate vicinity of the pole structure or transported off-site to a Tri-State approved disposal location. Disturbed areas will then be regraded to approximate pre-construction contours and reseeded as specified in S-1 (above).	C
S-4	Wherever salvage is feasible, particularly in sensitive areas (wetlands), topsoil will be removed, stockpiled, and re-spread at temporarily disturbed areas not needed for maintenance access.	C
S-5	As part of pre-construction activities, Tri-State and/or Tri-State contractors will perform detailed geologic evaluation and investigations in certain locations to evaluate potential geological and geotechnical hazards, and design the project to avoid and minimize potential geotechnical risks such as slope failure, unstable soils, and landslide risks. In addition, soil will be sampled if potentially contaminated soils were observed during the pre-construction geotechnical investigation.	C
Traffic		
T-1	Tri-State and its contractor(s) will make all necessary provisions for conformance with federal, state, and local traffic safety standards and will conduct construction and maintenance operations so as to offer the least possible obstruction and inconvenience to public traffic.	C and O&M
T-2	Prior to construction, Tri-State or its contractors will develop a construction traffic management plan in consultation with affected landowners. This includes working with San Miguel and Montrose counties as well as Colorado Department of Transportation (CDOT) to incorporate appropriate measures and obtain approval for construction of the transmission line across county roads and state highways as applicable. It also will include obtaining crossing permits as required by state, county, or local requirements and developing a plan for installation of warning signs where construction activities may cross a recreational trail.	C
Vegetation		
VG-1	In designated areas, structures and new access roads (if required) will be placed to avoid and/or minimize sensitive features, such as, but not limited to, threatened or sensitive plants, riparian areas, water courses, and cultural sites.	C
VG-2	Vegetation will be preserved and protected from damage during transmission line construction and operation to the maximum extent practicable and within areas approved in the Final POD, with the exception of trees and other woody vegetation that poses a threat to the safe and reliable operation of the transmission line. Wherever possible, on access roads, vegetation will be trampled rather than cleared where vehicles can move safely across the vegetation. By federal mandate, Tri-State is required to manage vegetation that creates a threat to the electrical reliability of the transmission line or substations, or will impede access for safe operations. Danger tree/vegetation is defined as that vegetation that could grow, fall, or blow into the power line. Tri-State will also work with the authorizing agency to address any fuel loading concerns in the ROW that may pose a threat to the safe and reliable operation of the transmission line. Tri-State will manage ROWs to maintain compatible "low growing" vegetation only.	C and O&M

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VG-3	Disturbed areas where vegetation has been temporarily removed by construction activities to the extent that the potential for soil erosion is increased to a detrimental level will be subject to seedbed preparation techniques, reseeded to an approved seed mixture, and mulched if necessary during a recognized planting season. Mulching will be applied only to those areas where potential erosion will prohibit vegetation establishment and growth. BLM and USFS will provide information on the recognized planting season.	C
VG-4	*Vegetation Management on USFS Administered Lands:* On lands administered by the USFS timber removal and slash management will be coordinated and approved by the USFS and outlined in the Plan of Development prior to construction and future maintenance activities. The Forest Service will conduct a timber cruise of the 150 foot ROW. Tri-State will mark danger trees adjacent to the ROW and incompatible vegetation within the ROW required for removal. These off ROW trees will be counted, measured at diameter breast height, recorded by species, and marked using a paint color and type approved by the Forest Service. A timber appraisal will be conducted for merchantable timber on and off ROW and this timber will be sold to Tri-State at the appraised rate. Tri-State will be responsible for removal/transfer/disposal of material on the ROW. *Vegetation Management on BLM Administered Lands:* Tree removal on BLM administered lands will be conducted in compliance with the TRFO and UFO Resource Management Plans. Tri-State will reduce visual impacts from vegetation management activities by minimizing the appearance of straight edges/visual uniformity whenever practicable while also meeting other federal reliability requirements. The BLM TRFO specifications that will be incorporated into the timber removal for project construction can be found in the Resource Management Plan on Page II-96, Sections 2.16.19, and 2.16.21 (a-f). Trees and vegetation removed during clearing activities will be hauled offsite to an approved disposal facility or masticated on site to a depth approved by the BLM. Where appropriate, cleared trees and/or vegetation may be spread onsite to promote wildlife habitat or chipped/masticated in place and used as mulch for erosion control with approval from the landowner or land management agencies authorized representative. BLM requirements and stipulations for vegetation removal will be incorporated into the Final POD. *Vegetation Management on Private and State Lands"* Vegetation on State, Local, and Private lands will be in compliance with NERC standards and the individual easement agreements.	C
VG-5	Tri-State and its contractor(s) will not cross any wetland, riparian area (of/ or relating to, or located on, the banks of a river or stream), or ponds unless at designated locations authorized under the 404 permit. Any variance from the 404 permit will be reviewed and approved by the U.S. Army Corps of Engineers (USACE).	C and O&M
VG-6	On completion of the work, all temporary use areas will be regraded, as required, so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, and provide for proper drainage and prevent erosion.	C
VG-7	All temporary surface disturbances on State, BLM and USFS administered lands will be seeded with native seed mixtures that have been approved by the authorizing agency. Seed mixes on private land will be at the discretion of the landowner. Reclamation will be deemed complete once vegetation has been reclaimed to 70 percent of pre-construction conditions, or at the discretion of the agency authorized agent.	C
VG-8	All construction materials and debris will be removed from the project area.	C

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VG-9	The Final POD includes a reclamation and noxious weed management plan.	C
Water Quality and Erosion		
WQ-1	A Storm Water Management Plan (SWMP) will be developed and implemented to address all construction/ reconstruction activities. The plan will conform to Colorado Department of Public Health and Environment (CDPHE) requirements including regular inspections to ensure proper and effective functioning of Best Management Practices (BMPs). The Final POD will also be updated with specific water quality design measures once final engineering is complete.	C
WQ-2	All Tri-State construction personnel, including contractors will be trained on stormwater management requirements for the project. The environmental monitor will be responsible for compliance with the stormwater management plan from construction and through post-construction/reclamation.	C
WQ-3	BMPs will be installed for project construction and future access road maintenance to protect water quality and surface waters. BMPs implemented will encompass a wide range of practices, both structural and non-structural in nature, such as road design requirements and construction techniques (installing cross drains, dips, and/or water bars) to minimize sediment discharge to surface water, as well as standards for maintaining road stability to control erosion. Site assessments will be conducted bi-weekly (as outlined in the SWMP) to assess the adequacy of BMPs at the site, and the necessity of changes to those BMPs to ensure continued effective performance. Where site assessment results in the determination that new or replacement BMPs are necessary, BMPs will be installed to ensure effective erosion control. Where BMPs have failed, resulting in noncompliance, they will be addressed as soon as possible, immediately in most cases, to minimize the discharge of pollutants. In addition, there will be areas that will no longer require BMPs. These BMPs will be identified and removed when appropriate.	C
WQ-4	Construction activities will be performed using methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution. Excavated material or other construction materials will not be stockpiled or deposited near or within 100 feet of any surface water, wetlands, stream banks, lake shorelines, or other water course perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself. BMPs will be installed if it is likely materials could leave the site (silt fence, waddles, or other methods could be implemented).	C
WQ-5	With the exception of areas where access roads cross surface waters, buffers will be used when constructing new access roads and structure locations occur in proximity to water resources including wetlands. Tri-State will buffer surface waters, wetlands, riparian areas, and ditches 100 feet regardless of slope class whenever feasible. When 100 feet is not feasible, the following standard will be used: 30 feet for gentle slopes, 60 feet for moderate slopes, and 100 feet or more for severe slopes. If these buffers are not feasible in a particular area because of another resource, land use, or engineering constraint, BMPs will be utilized to ensure that sediment from construction does not enter surface waters and drainages.	C

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WQ-6	Tri-State does not expect dewatering to be required for the project. However, if future geological testing indicates dewatering at structure locations is required, dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or water courses will not be performed without prior approval by CDPHE and affected land management agency. Water and eroded materials will be prevented from entering the streams or watercourses by constructing intercepting ditches, bypass channels, barriers, settling ponds, or other approved methods. All fuel and fluid spills within this area will be handled in accordance with appropriate state and federal spill reporting and response requirements.	C
WQ-7	Wastewaters from concrete batching and other construction operations during project construction or future maintenance activity will not enter streams, watercourses, or other surface waters without the use of turbidity control methods such as settling ponds, gravel-filter entrapment dikes, and approved flocculating processes that are not harmful to fish, recirculating systems for washing of aggregates, or other approved methods. Any such wastewaters discharged into surface waters will be essentially free of settleable material. For the purpose of these specifications, settleable material is defined as that material which will settle from the water by gravity during a 1-hour quiescent detention period.	C
WQ-8	Access roads will be designed/improved to properly drain in order to prevent future erosion. Final access road design/improvement requiring substantial cut and fill (Level 3) will be reviewed and approved by the affected authorized agency road engineer prior to construction.	C
WQ-9	Erosion control measures including silt fences, straw bales, and other stormwater runoff and sediment controls will be implemented and regularly maintained on disturbed areas, including areas that must be used for maintenance operations (access ways and areas around structures).	C and O&M
WQ-10	Prior to construction, a wetland and surface waters wetland delineations will be completed within the area of proposed disturbance and fill within or proximity to potential waters of the U.S., and appropriate permits will be obtained from the USACE if the project exceeds Nationwide Permitting (NWP) thresholds. Construction activities will be limited to that approved in the NWP obtained from the USACE for the project. Tri-State will strictly adhere to all applicable conditions of the 404 permit (s). Tri-State will comply with San Miguel County regulations for wetland protection.	C
WQ-11	Delineated wetland boundaries within the project area will be identified clearly with wetland pin flags, fluorescent wetland tape, and/or orange plastic construction fencing. The markers will be installed prior to the initiation of construction and will be maintained throughout the construction process. Wetland boundaries not authorized for disturbance under a Corps of Engineers permit will be buffered (from construction activities) by 100 horizontal feet.	C
WQ-12	Disposal of excess water from dust control will be done on flat upland locations away from surface drainages to prevent runoff and to encourage infiltration into the soil.	C
WQ-13	Vegetation removal will be limited to the area necessary for construction activities, and disturbed areas will be scarified and revegetated after construction, using native vegetation (see Appendix P). Noxious weed management will occur, per EPMs NW-1 to NW-8 (see Appendix S).	C
WQ-14	Tri-State will hire an agency- approved environmental monitor to ensure the project complies with all conditions of Nationwide Permit 12 (Utility Line Activities) to prevent unplanned impacts to wetlands and other waters of the U.S. Prior to construction, all supervisory construction personnel will be trained in avoidance and minimization techniques to lessen impacts to wetlands and other waters of the U.S.	C

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C and/or O&M*
WQ-15	In areas where construction may occur near surface waters and wetlands but no permanent or temporary impacts are planned and permitted under a USACE permit, 100 horizontal foot buffers will be created to protect these resources from sedimentation and erosion impacts. Fueling will occur only at staging areas and commercial stations to avoid potential contamination of surface waters, wetlands, and riparian communities. All reportable fuel and chemical spills will be reported to the State of Colorado, per applicable statutes and regulations, contained and cleaned up promptly.	C
WQ-16	Culverts or armored low water crossings will be located as approved by the appropriate agencies and any changes to stream banks at crossings will be designed to sustain bank full dimensions of width, depth, and slope and keep streambeds and banks resilient to prevent effects to natural streamflow at stream crossings. New and existing culverts will be maintained in such a manner so as to allow continual flow of irrigation water, return water, waste water and on-and-off site run-off, and allow fish passage if fish were historically present.	C
WQ-17	Low water crossings will be used instead of culverts to the extent possible, particularly in drainages with floodplains. Armored low water crossings will be designed to prevent scouring along the downstream edge, and maintain the channel pattern, profile and dimension. These will be designed and constructed per United States Department of Agriculture (USDA) USFS Tech Reference – Low-Water Crossings: geomorphic, biological, and engineering design considerations. See reference (http://www.USFS.fed.us/eng/pubs/pdf/LowWaterCrossings/LoWholeDoc.pdf).	C
WQ-18	Intermittent or ephemeral streams will be crossed at right angles to the main channel.	C and O&M
WQ-19	No construction equipment will be operated within the stream channel, unless for the purpose of installing armored crossing and culverts or moving construction equipment across the channel for use on either bank.	C
WQ-20	Implementation of EPMs outlined above under Vegetation and Soils will also minimize impacts to water quality and surface waters. Reclamation will occur as soon as the season permits, including implementation of post-construction measures to stabilize areas of permanent and temporary disturbance.	C
WQ-21	Excavated topsoil and/or hydric soils from temporarily or permanently impacted wetlands will be selectively stockpiled for appropriate use in the project area following disturbance. Stockpiled soil will be stabilized using mulch or covering the material, to minimize erosion and sediment delivery to streams and wetlands. Further information can be found in Appendix P.	C

*C refers to Construction of the project, O&M refers to Operations and Maintenance after the project is complete.

All EPMs except GUSG-14 discussed above would apply to all Action Alternatives. These additional measures have been included to specifically address the upgrade-in-place at the Dolores River crossing and Dry Creek Basin options.

Table 10. EPMs Specific to Dolores River Crossing

Topic - No.	Applicant Committed EPMs and Design Features For Construction (C), Operation, And Maintenance (O&M)	Applicable to C, O&M, or Both
A-9	Visibility from KOPs would be considered in structure siting at the existing Dolores River crossing and structure location and design would respond to visual resource concerns to the extent practicable and feasible given other engineering constraints.	C

2.4 Alternatives Considered, but Eliminated from Further Analysis

During the alternatives development process, the following BLM NEPA Handbook (BLM 2008) and USFS NEPA Handbook (USFS 2012) guidelines were used:

An alternative May be Eliminated from Detailed Analysis if (BLM NEPA Handbook p. 52 and USFS NEPA Handbook Chapter 10):

- It is ineffective (it would not respond to the purpose and need).
- It is technically or economically infeasible (consider whether implementation of the alternative is likely given past and current practice and technology; this does not require cost-benefit analysis or speculation about an applicant's cost and profit).
- It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the LUP).
- Its implementation is remote or speculative.
- It is substantially similar in design to an alternative that is analyzed.
- It would have substantially similar effects to an alternative that is analyzed.

Based on guidance from the BLM NEPA Handbook (BLM 2008) and USFS NEPA Handbook (USFS 2012), the following alternatives have been considered but eliminated from detailed analysis:

2.4.1 Love/Anderegg Route

During the project scoping process, private landowners proposed a realignment on their property to eliminate the existing and future line visible from their personal cabin. Where the existing transmission line would cross private property owned by Love and Anderegg at the Dolores-San Miguel county line, the landowners suggested straightening the alignment to avoid crossing their land. This alternative would result in about 2.5 miles of new transmission line alignment and unknown length of access route.

The proposed Love/Anderegg dogleg adjustment was determined to be unjustified from a resource effects perspective. The reroute would not respond to a resource issue. The landowners did not establish a specific resource concern that would require the reroute. The alternative was eliminated because new permanent effects from clearing a new ROW and constructing new access routes would be substantial.

2.4.2 Undergrounding the Proposed Transmission Line through Dry Creek Basin

CPW requested that the BLM and Tri-State evaluate the feasibility of undergrounding the proposed 230-kV line through GuSG occupied habitat in Dry Creek Basin. This alternative was vetted in great detail and dismissed from further analysis because it is not standard industry practice and is economically unfeasible. Tri-State contracted a feasibility study to underground portions of the proposed 230-kV line. A brief summary of the justifications for not undergrounding the transmission line is included below.

There are a variety of factors a utility must weigh when determining the feasibility of undergrounding a high-voltage transmission line including reliability, terrain, voltage, lifespan, existing non-compatible infrastructure/land use, environmental effects, topographical constraints, engineering and operational considerations, and cost.

Issues with burying transmission voltages include repair, heat dissipation, emergency access, increased surface disturbance, material costs, construction and operational costs, long-term line maintenance, and reduced life expectancy of the facilities.

While underground systems comparatively have fewer forced outages than overhead lines, damage to the cable or components often results in longer outage durations. Damage to underground power lines is difficult to locate and repair and the required repairs may take weeks to months, as compared to overhead lines that typically require hours to days to repair.

The ground disturbance associated with the operation and future repair of underground power line construction is greater than for a comparable overhead line. An overhead transmission line typically requires one or more augured foundations that may be several feet in diameter. Such foundations are required at every structure location, and each structure span can vary from 400 to more than 1,000 feet apart. At a minimum, an underground transmission line would require a continuous trench at least 3 feet wide and 5 feet deep. Concrete manholes or large splice vaults are required at recurring intervals. During operational repairs, an entire segment between these vaults may require excavation. In addition, two aboveground riser structures would be required at both ends of the underground cable.

An underground line must be routed to avoid other underground installations such as water and gas pipelines. Unstable slopes, hazardous material sites, wetlands, and bedrock also must be avoided, if possible. In addition, it is not always possible to avoid sensitive resources such as sensitive plant species, paleontological, and archaeological resources during underground construction. Overhead power lines can be designed to entirely span sensitive resources.

Depending on the conductor type, the life expectancy of an underground high-voltage line is about half that of an overhead line (Public Service Commission of Wisconsin 2011). The Edison Electric Institute (2012) estimate that much of the underground cable installed in the 1970s and 1980s now needs replacement.

All these aspects of underground transmission construction lead to substantially higher costs relative to overhead line construction. Estimated costs for undergrounding a high voltage power line on a per-mile basis are estimated to be 4 to 17 times the cost of a standard overhead construction due to time, materials, process, and the use of specialized labor (National Grid

2009, Patrick Engineering 2010, and Public Service Commission of Wisconsin 2011). Therefore, substantial costs would be incurred for infrastructure that has half the life span of the overhead alternative. Specific costs for a 9.0 miles underground alternative across GuSG occupied habitat is discussed below.

As with the case of most electric utility cooperatives, Tri-State is a not-for-profit organization. Costs incurred by Tri-State and its member systems are directly passed on to the individual rate payers. Burying a transmission line in one part of the Tri-State service territory could result in the inequitable sharing of costs for customers outside of southwestern Colorado. For this reason, Tri-State has a Board Policy that states the company will only consider burying transmission lines if the landowners and/or local jurisdictions agree to pay the difference in cost from overhead construction.

Burying the proposed transmission line would change Tri-State's project scope, budget, and schedule substantially. The proposed project's purpose and need was approved in a CPCN by the CPUC (2013) as an "upgrade" of an existing facility, and Tri-State has already amended the project budget for engineering design (single pole steel through Dry Creek Basin; see Figure 19) to minimize potential effects to GuSG. Burying high-voltage transmission lines outside of urban areas is not standard industry practice, would result in considerable cost effects to Tri-State's members and result in considerable effects to Tri-State's schedule.

Tri-State contracted a third party engineering firm to complete cost estimates for six different underground alignments for the transmission line. Alternatives were divided by undergrounding on State lands (for each alternative) as well as burying the line entirely across GuSG occupied habitat for both Action Alternatives carried forward for detailed analysis.

The cost of building steel overhead transmission lines is estimated at $784,200 per mile. The cost of building the line underground is estimated between $5.4 and $5.6 million per mile (see Table 11).

Table 11. Cost Comparison for Construction of Overhead Steel vs. Underground 230 kV Transmission Line

	Overhead Steel	Underground
Cost per Mile	$784,200	$5.4 to $5.6 million
Total Project Cost	$5.9 to $6.9 million	$41.5 to $48 million

Total project costs for overhead construction on the realignment along SH 141 in the Dry Creek Basin would be $6.9 million. The total cost for constructing overhead transmission on the existing alignment (Tri-State's upgrade-in-place Proposed Action) would be $5.9 million. Total costs for underground construction on the existing alignment (Tri-State upgrade-in-place Proposed Action) within GuSG occupied habitat would be approximately $41.5 million. Total costs for undergrounding construction along the realignment along SH 141 in the Dry Creek Basin option would be approximately $48 million. Undergrounding the alignment associated with either alternative would result in approximately 7 times the cost for either alternative.

Due to the construction, operation, maintenance, and cost concerns with the undergrounding alternative, the BLM dismissed undergrounding from further detailed analysis. In addition, Tri-

State has voluntarily agreed to design features as well as EPMs that minimize effects to GuSG and occupied habitat (see Table 9, EPMs GuSG-1 through GuSG-16; also see Draft POD Appendix B-Biological Resource Protection Measures).

2.4.3 Avoidance of Occupied Gunnison Sage-Grouse Habitat

The alternative proposed for routing the transmission line entirely around the occupied GuSG habitat within the Dry Creek Basin was considered but eliminated. The reroute was eliminated from further analysis because it would be economically infeasible and would lead to greater environmental effects than the routing options described above in Section 2.2.1.3. Since this alternative would result in greater environmental effects than the Proposed Action, due to the extensive new ground disturbance needed, it would not address any unresolved conflicts concerning alternative uses of available resources.

The reroute would be substantially longer (a distance of approximately 34 miles of new transmission line) and much of it would occur over challenging terrain, resulting in new resource effects from access road construction in steep, dissected landscapes. A realignment to avoid occupied GuSG habitat would require clearing of an entirely new transmission line ROW, as well as new access roads. New resource effects would include effects to landowners, scenic quality, wildlife habitat, including fragmentation of contiguous habitat, rare plant habitat, soils, and other resource effects.

Approximately 34 miles of new ROW, as well as access roads would be required to realign the transmission line to avoid occupied GuSG habitat. Construction cost (not including ROW, access road, or permitting costs) would be about $21.4 million or about $6 million more than building in the existing alignment. New ROW associated with this alternative would be about 618 acres. New ground disturbance would be substantial; without further design and analysis, no reasonably accurate effect estimates can be made.

2.5 Summary Comparison of Environmental Effects

Table 12 summarizes and compares the effects of the Action Alternatives on the GuSG and visual resource issues that were the basis for developing routing options for the Dolores River crossing and the Dry Creek Basin.

See Table 23 and Appendix E for a comprehensive summary of comparison of the alternatives analyzed and effects to resources.

Table 12. Summary Comparison of GuSG and Visual Resource Effects for All Alternatives

Issue	Alternative A (Proposed Action) Realignment at Dolores River Crossing and Upgrade-in-Place at Dry Creek Basin	Alternative B (No Action)	Alternative C		
			Dolores River Crossing Routing Option	Dry Creek Basin Routing Option	Both Dolores River Crossing and Dry Creek Basin Routing Options
			Alternative A incorporating Upgrade-in-Place at Dolores River Crossing	Alternative A incorporating Realignment at Dry Creek Basin (North side of SH 141 in parentheses)	Alternative A incorporating Upgrade-in-Place at Dolores River Crossing and Dry Creek Basin Realignment
Gunnison Sage-Grouse					
Leks	No effects within 0.6 mile of known leks; distance to known lek is 3.8 miles.	No change from existing condition. Distance to known lek is 3.8 miles.	Same as Alternative A.	No effects within 0.6 mile of known leks; distance to known lek is (4.7) 4.9 miles. Moves line (0.9) 1.1 miles further from the nearest active lek.	No effects within 0.6 mile of known leks; distance to known lek is (4.7) 4.9 miles
GuSG Occupied habitat	Low, long-term beneficial effect to GuSG. New long-term disturbance of 9.5 acres to occupied habitat, including 6.6 acres of critical habitat.	No change from existing condition (72 structures in GuSG occupied habitat).	Same as Alternative A.	Low, long-term beneficial effect to GuSG. New long-term disturbance of (11.5) 11.7 acres to occupied habitat, including (10.0) 10.4 acres of critical habitat. Reclaimed existing roadways total 4.2 acres in occupied habitat.	Low, long-term beneficial effect to GuSG. New long-term disturbance of (11.5) 11.7 acres to occupied habitat, including (10.0) 10.4 acres of critical habitat. Reclaimed existing roadways total 4.2 acres in occupied habitat.
Avian predators	22 fewer structures in Dry Creek Basin relative to baseline and addition of perch discouragers would reduce the presence of avian predators, providing a net benefit to GuSG. Tri-State funding for 500-acre lek preservation and habitat improvement projects. Many existing roads would be used in their current state.	Existing nesting/perching opportunities would remain.	Same as Alternative A.	(15) 18 fewer structures in Dry Creek Basin relative to baseline and addition of perch discouragers would reduce the presence of avian predators, providing a net benefit to GuSG.	(15) 18 fewer structures in Dry Creek Basin relative to baseline and addition of perch discouragers would reduce the presence of avian predators, providing a net benefit to GuSG.
Fragmentation (reduced Habitat Effectiveness [HE])	No change in existing fragmentation or reduced HE levels. Flight diverters would reduce collision risk; possible new effects of increased pole height.	Habitat would continue to be fragmented at existing levels. No new reduction in HE.	Same as Alternative A.	Long-term reduced HE on (607) 645 acres (beyond existing SH 141). With removal of existing line, net improvement of HE on (2,983) 3,011 acres of occupied habitat, including (1,905) 1,932 acres of critical habitat. Co-locating the transmission line disturbance corridor with the existing highway corridor would reduce overall habitat fragmentation for the life of the line. Flight diverters would reduce collision risk; possible new effects of increased pole height.	Long-term reduced HE on (607) 645 acres (beyond existing SH 141). With removal of existing line, net improvement of HE on (2,983) 3,011 acres of occupied habitat, including (1,905) 1,932 acres of critical habitat. Co-locating the transmission line disturbance corridor with the existing highway corridor would reduce overall habitat fragmentation for the life of the line. Flight diverters would reduce collision risk; possible new effects of increased pole height.
Visibility/Aesthetics					
KOP 1 (Dolores River Canyon Developed Scenic Overlook)	KOP about 4 miles from improved line in new alignment (1 mile closer than existing). North rim structure not visible against skyline; South rim structure not skylined. Low/moderate effects.	No change from existing conditions. KOP about 5 miles from existing line.	KOP about 5 miles from line in existing alignment. Low/negligible effects.	Same as Alternative A.	KOP about 5 miles from line in existing alignment. Low/negligible effects.
KOP 2 (Dolores River Canyon Cul-de-sac)	KOP 0.5 miles from improved line in new alignment. North rim structure visible in views to north. South rim structure screened by vegetation. Moderate effects.	No change from existing conditions. KOP about 1.5 miles from existing line.	KOP about 1.5 miles from improved line in existing alignment. Improved line, structure and roads would be visible in views to the east-northeast. Views in other directions would not include the proposed structures, road, and conductors. Moderate effects.	Same as Alternative A.	KOP about 1.5 miles from improved line in existing alignment. Improved line, structure and roads would be visible in views to the east-northeast. Views in other directions would not include the proposed structures, road, and conductors. Moderate effects.

Issue	Alternative A (Proposed Action) Realignment at Dolores River Crossing and Upgrade-in-Place at Dry Creek Basin	Alternative B (No Action)	Alternative C		
			Dolores River Crossing Routing Option	Dry Creek Basin Routing Option	Both Dolores River Crossing and Dry Creek Basin Routing Options
			Alternative A incorporating Upgrade-in-Place at Dolores River Crossing	Alternative A incorporating Realignment at Dry Creek Basin (North side of SH 141 in parentheses)	Alternative A incorporating Upgrade-in-Place at Dolores River Crossing and Dry Creek Basin Realignment
KOP 6 (Basin Store)	Improved transmission line would be slightly more visible from areas in the south and central Dry Creek Basin due to increased structure height. Low/negligible effects.	No change from existing conditions. KOP about 3 miles from existing line.	Same as Alternative A.	Realignment visible for approximately 10 miles along SH 141 and adjacent to Basin Store. Existing line would be removed and no longer visible from the middle of the Dry-Creek Basin. High effect.	Realignment visible for approximately 10 miles along SH 141 and adjacent to Basin Store. Existing line would be removed and no longer visible from the middle of the Dry Creek Basin. High effect.
KOP 9 (Dolores River bottom)	No change in visibility from existing conditions. Line not visible. No effect.	No change from existing conditions. Line not visible.	No change from existing conditions. Line not visible. No effect.	No change from existing conditions. Line not visible. No effect.	No change from existing conditions. Line not visible. No effect.
KOP 10 (Dolores River bottom)	Realignment further from KOP; not visible. Low/negligible effects.	No change from existing conditions. KOP about 3 miles from existing line.	Increased visibility due to larger structures. Moderate effects.	Same as Alternative A.	Increased visibility due to larger structures. Moderate effects.
KOP 11 (Dolores River bottom)	Realignment not visible from KOP; no effect.	No change from existing conditions. KOP about 1 mile from existing line.	Increased visibility with larger structures. Low/negligible effects.	Same as Alternative A.	Increased visibility due to larger structures. Low/negligible effects.
KOP 12 (Dolores River bottom)	View of power line would be to the north rather than to the south. Low/negligible effects.	No change from existing conditions. KOP less than 1 mile from existing line.	Increased visibility with larger structures. Moderate effects.	Same as Alternative A.	Increased visibility due to larger structures. Moderate effects.

Note: KOPs 3, 4, 5, 7, and 8 would have the same effects for all Action Alternatives; larger structures would increase their visibility. Powerline is an expected component of the landscape and is used as a frame of reference for river users. Please see additional detail in Table 23, resource sections, Appendix C and Appendix E.

3 AFFECTED ENVIRONMENT

3.1 Introduction

This section provides a description of the resources (physical, biological, social, and economic) potentially affected by the alternatives. It is organized by resource topics that were identified in internal scoping by the BLM and USFS Inter-Disciplinary Team (IDT); (IDT check lists are part of the Administrative Record) and public scoping. This section focuses on those resources that could be affected by the alternatives and that are relevant to the decision-making process. The affected environment provides the baseline condition for comparison of effects and evaluation of environmental consequences in Section 4. For simplicity, scientific names are included in Appendix B, and not in the body of the EA.

3.2 General Setting

The proposed project area is situated in a variety of physiographic regions, climates, and vegetation types along the existing 80-mile transmission line. Elevation varies from about 5,800 feet above sea level (asl) in the arid valleys along the transmission line route, up to about 9,300 feet asl on the Uncompahgre Plateau. The proposed project area occurs within the Colorado Plateau and Southern Rockies ecoregions (Chapman et al. 2006). The Colorado Plateau ecoregion is found on the northern two-thirds of the proposed project area and consists of pinyon-juniper woodland, sagebrush, and other shrub covered mesas. Interspersed between these mesas are nearly level basins and valleys covered with semi-desert shrublands of saltbush and other desert shrubs and semi-desert grasslands. Fingers of the Southern Rockies extend into the southern and central portion of the proposed project area. These higher peaks (up to 10,000 feet) contain a mixture of mountain shrublands, coniferous forests, aspen forests, and mountain grasslands. Within both the Colorado Plateau and Southern Rockies ecoregions, the rivers and creeks support a variety of riparian woodlands, grasslands, and shrublands. Annual precipitation ranges from about 12 inches in the desert shrub regions to 40 inches in subalpine forests.

Land uses are varied in the proposed project area and include agriculture and grazing; recreation such as hunting, hiking, fishing, and mountain biking; and extractive industries such as oil and gas. The existing 80-mile transmission line crosses 37.4 miles of BLM-managed land and 22.7 miles of USFS-managed land. The remainder of the line (22.6 miles) is located on state, county, and private land.

3.3 Resources/Issues Brought Forward for Analysis

A wide variety of resources were reviewed to identify potential effects from implementation of the Alternatives, as summarized in Table 13. Resources were grouped into three categories, with different levels of analysis depending on the potential for effects and value in comparison of the effects of the Alternatives. Based on internal and external scoping, the BLM and USFS first identified those resources that could be dismissed from detailed consideration in the EA because there would be no or negligible effects under any of the alternatives. These resources are briefly described in Table 13 and dismissed from further discussion in the EA. Second, resources that were determined to have measurable effects and value in comparing alternatives were selected for detailed analysis in the EA. These resources, denoted by a “Y” in Table 13, are described in detail in the affected environment Section 3.5 and in the environmental consequences analysis in

Section 4. Remaining resources that might be affected by implementation of Alternatives, but for which the effects would be minor and similar among all Alternatives, were also identified. These resources are identified in Table 13 by "Y*." For these resources, a brief description of the affected environment and summary of effects is provided in Section 3.4 without further discussion in the environmental consequences section of the EA.

Table 13. Resources Considered for Evaluation in the EA

Resource/Issue	Analyzed in EA? (Y/N)	Justification for Inclusion in/Exclusion from EA Analysis	Applicable Design Features/EPM(s) (see Table 9)
Access, Roads, and Transportation	Y	The Action Alternatives have the potential to affect access during and following construction. Traffic and access could be disrupted for short periods during construction. New roads are needed and some existing roads can be reclaimed and abandoned.	G-4, AR-1 through AR-7, AQ-2, LU-1, LU-2, LU-4, T-1, T-2
Air Quality	N	Effects to air quality from vehicle emissions and fugitive dust would be short-term and negligible, for a total of about 24 months of construction over 80 miles. EPMs would address short-term effects. There would be no long-term effect following construction.	AQ-1 through AQ-6
Areas of Critical Environmental Concern (ACEC)	Y	One designated ACEC is present in the project area and the transmission line corridor under the Action Alternatives intersects with four nominated ACECs.	N/A
Cadastral Survey	N	Cadastral surveys that establish the boundaries of public lands would not be affected because there would be no change in public land boundaries or ownership.	N/A
Cultural Resources	Y	Land disturbance under the Action Alternatives may affect known and unknown cultural resources in the proposed area of potential effect. Consultation with the SHPO and American Indian tribes is being conducted to ensure Section 106 compliance and mitigation of any adverse effects.	CR-1 through CR-8, VG-1
Environmental Justice	N	No minority or low-income populations meet the criteria for being identified as 'environmental justice' populations in the proposed project area. It is not anticipated that minorities or low-income populations in the planning area would be disproportionately affected from the Action Alternatives. See brief description in Section 3.5.10, Socioeconomics.	N/A
Electro-Magnetic Field (EMF)/Safety	N	EMF generated by the improved line would dissipate by the edge of the ROW; risks to human and animal health would be non-existent or negligible. The transmission line ROW width is intended to prevent construction of residences or other structures in the transmission line corridor.	N/A

Resource/Issue	Analyzed in EA? (Y/N)	Justification for Inclusion in/Exclusion from EA Analysis	Applicable Design Features/EPM(s) (see Table 9)
Farmlands (Prime or Unique)	N	No prime farmlands are in the proposed project area.	N/A
Fish Habitat and Aquatic Species	N	Effects to fish habitat and aquatic species would be avoided by locating structures outside of aquatic habitat. With implementation of water quality and other EPMs to protect fish and aquatic habitat, effects would be negligible.	G-1, G-3, AR-1, AR-2, AR-5, AR-7, HM-1 through HM-3, VG-1 through VG-3, VG-6 through VG-8, WQ-1 through WQ-21
Floodplains	N	No transmission line structures would be located in floodplains. Effects to floodplains from access roads would be negligible with implementation of EPMs.	WQ-1 through WQ-21, VG-6
Forest Resources (High-Return Forest Activities [HRFA] Project)/Timber Resources	Y	Analyzed in EA to address timber clearing and lands suitable for timber production associated with a proposed wider transmission line ROW.	A-1, A-2, A-5, A-7, VG-2,VG-4, VG-5
Fuels/Fire Management	N	Fire risk would be minimized through implementation of EPMs and compliance with NERC reliability standard FAC-003-2.	FP-1 through FP-4, VG-2, VG-4
Geology and Minerals	Y	The Action Alternatives could result in effects to geology (geohazards) from proposed project construction.	S-1 through S-5
Invasive Species/ Noxious Weeds	Y*	Construction activities could result in the introduction and spread of invasive plant species in the proposed project area. Implementation of noxious weed control EPMs would minimize the establishment and spread of weeds and provide monitoring and treatment requirements.	NW-1 through NW-8, VG-9
Land Use Authorizations	Y*	Transmission line improvements could temporarily affect grazing on leased lands. Effects to realty authorizations would be negligible with implementation of EPMs, including Tri-State coordination with other leaseholders to minimize or avoid conflict. For the SJNF and TRFO the existing transmission line is located in a designated utility corridor. For the UFO, the line is located in the West Wide Energy Corridor. Also see Section 3.4.2 below.	LU-1 through LU-7
Lands with Wilderness Characteristics	Y	The existing transmission line crosses the Dolores River Canyon, which contains land with wilderness characteristics. Action Alternatives would have no new surface effects in designated wilderness or wilderness study areas.	A-1 through A-8, LU-1
Law Enforcement	N	No noticeable effects were identified for the Action Alternatives to law enforcement.	N/A

Resource/Issue	Analyzed in EA? (Y/N)	Justification for Inclusion in/Exclusion from EA Analysis	Applicable Design Features/EPM(s) (see Table 9)
Migratory Birds	Y*	Effects to migratory birds from noise and human disturbance during construction would be temporary. Long-term effects to raptors and other migratory birds, including the risk of line collisions and electrocutions, are unlikely with implementation of EPMs.	BR-2 through BR-6, BR-9, BR-10
Native American Religious and other Concerns	Y*	The Action Alternatives could affect resources that may be valued by Native Americans for religious or cultural reasons.	G-1, CR-1 through CR-6
Noise	N	Short-term noise effects during construction would be negligible, and would depend on the location of the noise receptor. The new transmission line would not introduce any new long-term elevated noise levels. The corona noise associated with electrical transmission would be negligible at the edge of the ROW. Noise effects would be minimized with implementation of EPMs.	N-1 and N-2
Paleontology	N	Effects to paleontological resources would be negligible with implementation of EPMs.	G-1, CR-7
Rangeland Health Standards and Range Management and Livestock Grazing Management	N	Surface disturbance associated with the Action Alternatives are mostly short-term and would be revegetated following construction to minimize effects to rangeland. Effects to rangeland would be negligible with implementation of EPMs.	NW-1 through NW-6, VG-2, VG-3, VG-7 through VG-9, LU-1 through LU-7
Recreation	Y*	Recreation activities that occur within or across the transmission line corridor would be temporarily affected during construction, due to route closures, truck and equipment access, construction activity, and noise. Implementation of EPMs would minimize recreation effects.	A-1 through A-8, AQ-2, R-1, R-2, AR-4
Sensitive Species – Animals	Y*	Effects to sensitive wildlife from noise and human disturbance would be temporary during construction. Habitat loss would be minor, with temporary disturbance revegetated. Implementation of EPMs would minimize effects.	G-1 through G-3, AR-2, AR-3, A-1, BR-9, VG-1, VG-2, VG-6, VG-9, WQ-5
Sensitive Species – Plants	Y*	Effects in identified sensitive plant species habitat would be avoided and minimized to the extent possible, although small areas of disturbance in occupied habitat have been identified.	G-2, BR-11, VG-1,

Resource/Issue	Analyzed in EA? (Y/N)	Justification for Inclusion in/Exclusion from EA Analysis	Applicable Design Features/EPM(s) (see Table 9)
Socioeconomics	Y	No new permanent employment would be generated, and there would be no change to existing population levels in the proposed project area. The anticipated workforce during construction would range from about 40 to 60 specialized workers (either existing Tri-State employees or contractors based in surrounding Colorado counties) primarily over two 12-month periods in 2017 and 2018.	LU-2
Soils	Y	Construction of the improved transmission line, roads, and substations would result in short and long-term disturbance to soils resources. Soil loss and erosion from soil disturbance would be addressed with implementation of erosion control and revegetation EPMs.	S-1 through S-5, AQ-2, VG-3, VG-7, VG-9
Threatened, Endangered, or Candidate Animal Species	Y	Action Alternatives would result in disturbances in GuSG critical habitat and lynx habitat. No Mexican spotted owls have been recorded in the proposed project area.	BR-2 through BR-10, GUSG-1 through GUSG-17
Threatened, Endangered, or Candidate Plant Species	N	No suitable habitat for threatened, endangered, or candidate plant species is present in the proposed project area.	G-1 through G-3, BR-11, NW-1 through NW-6
Upland Vegetation Excluding Special Status Species and Invasive Species	N	Surface disturbances under the Action Alternatives would result in small permanent vegetation effects associated with new roads and the footprint of new structures. All temporary disturbances would be revegetated. Effects to vegetation would be negligible with implementation of EPMs.	AR-2, S-1 through S-4, VG-2, VG-3, VG-9
Visual Resources	Y	Existing visual resources, including specific scenic views, may be affected as a result of the Action Alternatives from taller structures and possible changes in alignment in Dry Creek Basin and the Dolores River Canyon. Short-term visual and aesthetic effects are expected during construction. Long-term effects to visual and aesthetic setting for recreation would be similar to existing conditions.	A1 through A8 , VG-2, VG-7 through VG-9
Wastes (Hazardous or Solid)	N	No hazardous wastes have been identified in the proposed project area. Hazardous material BMPs would minimize or eliminate risk of adverse effects.	HM-1 through HM-4, A-3
Water – Ground	N	No direct effects to ground water were identified for the Action Alternatives. Effects to ground water would be negligible and avoided through implementation of EPMs.	HM-1 through HM-4, WQ-4, WQ-7

Resource/Issue	Analyzed in EA? (Y/N)	Justification for Inclusion in/Exclusion from EA Analysis	Applicable Design Features/EPM(s) (see Table 9)
Water – Surface (Clean Water Act and others)	N	Surface disturbances under the Action Alternatives would increase the short-term potential for erosion and runoff. Effects would be negligible with implementation of revegetation and water quality EPMs.	G-1, G-3, AR-1, AR-2, HM-1 through HM-4, VG-1 through VG-3, VG-6 through VG-9, WQ-1 through WQ-21
Wetlands/Riparian Zones	Y*	New transmission line structures would be located outside of wetlands. Small wetland effects are possible for new road crossings. Effects to wetlands would be minimized with implementation of avoidance measures and EPMs.	G-1 through G-6, VG-1, VG-6, VG-7, VG-9, WQ-1 through WQ-21
Wild and Scenic Rivers	Y*	The proposed project has the potential to affect suitable Wild and Scenic rivers (Dolores River) in the proposed project area in the TRFO.	A-1 through A-8. LU-1
Wilderness Study Areas	N	There are no Wilderness Study Areas in the project area	N/A
Wildlife – Terrestrial	Y*	Loss of wildlife habitat would result from roads and other permanent disturbances. Temporarily disturbed areas would be revegetated following construction. Effects from noise and human disturbance may temporarily displace wildlife. Effects would be minimized with implementation of EPMs.	G-1 through G-7, BR-1 through BR-10, N-1 and N-2, NW-1 through NW-6, VG-1 through VG-9.

*A brief description of the affected environment, summary of effects, and rationale for not providing a detailed effects analysis, are presented below in Section 3.4. Note: The Colorado PUC sets levels for any project requiring a CPCN. Level is edge of ROW and it varies by land use: Residential 50dbh(A), Commercial 55db(A), Light Industrial 75db(A). Tri-State typically assumes the worst case (residential) for analysis, even though there is little residential associated with the MNC line.

3.4 Resource Topics Dismissed from Detailed Analysis and Rationale

3.4.1 Invasive Species/Noxious Weeds

To prevent the negative effects of noxious weeds on the economic and environmental values of Colorado, the Colorado Department of Agriculture (CDA) maintains lists of noxious weeds categorized by the severity of potential effects and management requirements (CDA 2014). These categories include List A (requires eradication), List B (requires implementation of plans to stop the spread of the species), and List C (requires the development of management plans to provide additional information where control is desired). In conjunction with data provided by the BLM and other agencies, noxious weeds were mapped on all public lands and field-verified. Where noxious weed populations were intermingled, the species were grouped together. Species of primary concern were spotted knapweed, whitetop, sulphur cinquefoil, and yellow toadflax.

No List A species were found in the proposed project area. Ten List B noxious weeds were found within the proposed project area (Table 14), with spotted knapweed, Russian knapweed, and Canada thistle occupying the largest areas. Saltcedar was found in several of the drainages. The remaining List B species – bull thistle, diffuse knapweed, whitetop (or hoary cress), houndstongue, musk thistle, and oxeye daisy – were scattered in the proposed project area. Six List C noxious weeds were observed scattered throughout the proposed project area. Cheatgrass,

field bindweed, halogeton, and redstem filaree were prevalent throughout the proposed project area and were not mapped because of their prevalence. Small populations of common burdock and common mullein were observed. Existing areas of noxious weeds are similar for all Action Alternatives, as is the potential for the introduction or spread of weeds. With implementation of EPMs under all of the Action Alternatives, as well as the Noxious Weed Management Plan (POD Appendix S), adverse effects from the spread of noxious weeds would be minor; therefore, noxious weeds are not analyzed in detail in this EA.

Table 14. Acres of Noxious Weeds Present in the Proposed Project Area by Action Alternative

Noxious Weed	Colorado Noxious Weed Act List	Proposed Action Alternative A	Alternative C with Upgrade in Place at Dolores River and Realignment at Dry Creek Basin
Bull thistle	B	5	5
Canada thistle	B	1	1
Canada thistle/Musk thistle	B	98	99
Canada thistle/Musk thistle/Russian knapweed	B	2	>1
Diffuse knapweed	B	4	4
Musk thistle/Russian knapweed	B	<1	<1
Oxeye daisy	B	<1	<1
Russian knapweed	B	75	75
Saltcedar	B	2	2
Spotted knapweed	B	104	105
Whitetop (hoary cress)	B	<1	<1
Whitetop (hoary cress)/ Russian knapweed	B	<1	<1
Common burdock	C	<1	<1
Mixed Species Treatment Areas	Mixed	32	32
Total		326	327

Information for calculation of noxious weed acreage is from BLM (TRFO and UFO), USFS (GMUG and San Juan) as well as information collected during the biological resource surveys.

3.4.2 Land Use Authorizations

Most of the public lands in the proposed project area are leased for livestock grazing, primarily cattle and sheep. The proposed transmission line improvements could cause temporary disturbance to grazing activities, due to vegetation removal, construction activity, and the periodic removal of fencing. Existing land use plans for the BLM Uncompahgre Basin (BLM 1989) and the GMUG LRMP, as amended, 1991 (USFS 1991) note that utility development would be evaluated on a case-by-case basis. The 2013 RMP for the SJNF and the BLM TRFO (USFS and BLM 2013; USFS 2013; BLM 2015) describes the existing Tri-State transmission line as a designated utility corridor. As discussed below in Section 3.5.8, both of the alternative transmission line crossings of the Dolores River Canyon would avoid surface disturbances within lands with wilderness characteristics. With implementation of EPMs under all of the Action Alternatives (LU-1 through LU-7), impacts to land use authorizations are expected to be minor and therefore are not analyzed in detail in this EA.

Please see Section 1.7.1.2 for County Land Use Plan compliance information. Based on coordination with San Miguel County, the realignment option (either the north or south side of SH 141) in Dry Creek Basin likely would not be in compliance with the County's Land Use Plan, including the West End Master Plan.

For the SJNF and TRFO the existing transmission line is located in a designated utility corridor. For the UFO, the line is located in the West Wide Energy Corridor.

3.4.3 Migratory Birds

Migratory birds, including raptors, and any active nests, are protected under the MBTA. The MBTA prohibits activities that may harm migratory birds, including the loss of eggs or nestlings due to abandonment or reduced attentiveness by one or both adults as a result of disturbance by human activity, as well as physical destruction of an occupied nest. In Colorado, most nongame birds except for European starling, house sparrow, and rock dove (pigeon) are protected under the MBTA (§§ 703-712).

In response to EO 13186, the BLM and USFWS signed an MOU (BLM MOU WO-230-2010-04) that outlines a collaborative approach to promote the conservation of migratory bird populations. The guidance directs Field Offices to promote the maintenance and improvement of habitat quantity and quality and to avoid, reduce, or mitigate adverse effects to habitats of migratory bird species of conservation concern to the extent feasible, and in a manner consistent with regional or statewide bird conservation priorities. In accordance with the 1988 amendment to the Fish and Wildlife Conservation Act, the USFWS (2008) developed a list of Birds of Conservation Concern (BCC). The proposed project area contains potential foraging, nesting, roosting, and winter habitat for seventeen BCC within the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR 16) and a variety of other migratory birds.

Historic data for migratory birds, raptors, raptor nests, and BCC relevant to the proposed project area is limited. According to CPW and the BLM, no known bald or golden eagle nests or communal roost sites occur within the Dry Creek Basin. Eagles are occasionally observed perching or foraging in the basin in both summer and winter. Raptor surveys were conducted within 0.5 mile of the proposed project area in 2014 in compliance with BLM and USFS survey protocols. The following species (nests) were detected within approximately 0.5 mile of the proposed project area: golden eagle (6), peregrine falcon (3), common raven (7), Cooper's hawk (9), red-tailed hawk (3), northern goshawk (1), and unknown (23). All of the peregrine falcon eyries were located in the greater Dolores River Canyon greater than 0.5 mile from the proposed project area.

Effects to migratory birds and raptors from line collisions or electrocution would be negligible with implementation of EPMs. The potential increased risk of eagles colliding with the transmission line while feeding on road kill carrion would likely be negligible because: 1) the density of eagles in the Dry Creek Basin is low during all seasons, 2) for the Dry Creek Basin realignment option, the transmission line would be an average of 150 feet from the roadway, and 3) in all Action Alternatives the transmission line and structure design would conform to APLIC guidelines. Other potential effects to migratory birds include temporary construction effects from noise and human disturbance including helicopter use and loss of foraging/breeding habitat. Habitat-level effects to migratory birds include about 327 acres of potential vegetation

disturbance (potential maximum ROW impact). This habitat acreage includes all the area within the ROW. ROW clearing would only be required in forested areas; shrub cover would not be cleared. Most of the roads required for project access for construction and maintenance are already in place. Some loss of nesting substrate during the nesting period is likely. Although some nests may be destroyed and/or fail as a result of project activities, there would be no population-level impacts. Birds present during the transmission line construction would likely move temporarily to other adjacent habitat to forage and roost. Because of the temporary nature of the construction and implementation of EPMs minimizing effects on nesting birds and their habitat, the overall effect on migratory birds would be low and would be very similar for all Action Alternatives; therefore, effects on migratory birds are not analyzed in detail in this EA. In addition, the project would be implemented in accordance with the BLM-USFWS MOU (BLM MOU WO-230-2010-04; BLM 2010).

3.4.4 Native American Religious and other Concerns

As the lead federal agency responsible for compliance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, the BLM SWDO initiated Native American consultation with 25 tribes via letter on August 12, 2014 (see project scoping report for list of tribes consulted). The BLM is also responsible for maintaining government-to-government consultation per 36 CFR 800.2 of the NHPA. Follow-up consultation has included emails, letters, and in-person meetings. To date, the BLM has responded to requests for continued consultation, additional information, and project updates. The BLM will continue to engage tribes through consultation for the duration of the proposed project and address any concerns expressed during consultations. Consultation thus far has identified no concerns with Native American tribes potentially affected by this project. Government-to-government consultation will conclude with the issuance of the decision documents (DR/DN) and NHPA consultation will conclude with execution of the MOA.

3.4.5 Recreation

The proposed project area includes developed recreation sites as well as dispersed recreational uses associated with BLM-managed and NFS lands. The predominant recreational uses include trail-based recreation (hiking, mountain biking, and equestrian use), off-highway vehicle (OHV) use, camping, hunting, fishing, boating, and scenic driving. As described in Section 3.3.1, the BLM and USFS manage a variety of roads and trails for recreation and other purposes. Specific recreation areas near the proposed project area include the Dry Creek area near Montrose, the Uncompahgre Plateau, Norwood Canyon, the Glade Park area, and the Dolores River Canyon.

Recreation activities that occur within or through the transmission line corridor would be affected for a short time period during construction due to route closures, truck and equipment access, construction activity, and noise. Implementation of EPMs would minimize recreation effects under all of the Action Alternatives. An improvement or reroute of the transmission line across the Dolores River would not directly affect any recreation opportunities along the Dolores River, as the visual effects of any new line would be similar to the effects of the existing line. Because all of the Action Alternatives would have primarily short-term effects during construction with minimal long-term effects that would be addressed by EPMs, recreation is not discussed in detail in the EA.

3.4.6 Sensitive Species – Animals

Sixteen special status species, including BLM/USFS sensitive species (SS), USFS Management Indicator Species (MIS), and State of Colorado species of concern (SOC), potentially occupy forest, riparian, canyon/cliff, low elevation shrubland/grassland, and mountain shrubland/grassland habitats in the proposed project area. Potential effects to special status species in the proposed project area include temporary construction effects from noise and human disturbance and permanent loss of foraging/breeding habitat where forest vegetation was cleared. Overall habitat effects are small in relation to the habitat available within and adjacent to the proposed project area for all of the Action Alternatives. Adverse effects to all sensitive species would be low due to the use of the existing access road network and existing transmission line. Implementation of EPMs would minimize disturbance of sensitive species and their habitat and reclamation of temporarily disturbed areas would revegetate temporarily disturbed areas. New forest clearing would be required. Overall effects on special status wildlife species would be low and are therefore not analyzed in detail in this EA. In the Dry Creek Basin and in other locations with sage brush habitat, Brewer's sparrow nests are at a relatively high density. See Migratory Bird section (Section 3.4.3) for a discussion of potential impacts.

3.4.7 Sensitive Species – Plants

The proposed project area was assessed for potential habitat to support sensitive species. A 200-foot wide corridor in potential habitat was surveyed during 2014 and 2015 during the appropriate survey season. Four BLM sensitive species were found during field surveys within the proposed project area: Naturita milkvetch, Gypsum Valley cat-eye, Payson lupine, and Good-neighbor bladderpod (Colorado Natural Heritage Program [CNHP] 2014). Additional suitable habitat for all four species extends beyond the survey corridor, and other known populations have been documented in the project vicinity. Three populations of Naturita milkvetch with about 366 individuals were observed within the proposed project area in pinyon-juniper woodlands. About 2,093 individuals of the Gypsum Valley cat-eye were observed in four populations in sparsely vegetated areas of either open pinyon-juniper woodlands or salt desert scrublands. Four populations of Payson lupine with about 2,400 individuals were found in pinyon-juniper woodlands in the proposed project area. Three small populations of Good-neighbor bladderpod totaling about 368 individuals were found in pinyon-juniper woodlands and Wyoming big sagebrush shrublands within the proposed project area.

Potential effects to sensitive plant species are possible under all of the Action Alternatives from ground disturbances during construction. However, the potential for effects would be low with implementation of EPMs. Measures used to avoid and minimize adverse effects include presence of a biological monitor to assist with avoidance of known populations and salvage of topsoil for use in revegetation of disturbed areas.

For the Good-neighbor bladderpod, all populations identified during the 2014 and 2015 surveys would be avoidable during construction. Because of the proximity to existing structures and access roads, there is some possibility of inadvertent crushing by vehicle or foot traffic, but the on-site biological monitor would avoid/minimize impacts to this species. Potential impacts to Naturita milkvetch from any of the action alternatives would be about 30 to 70 individuals, which is about 8 to 19 percent of the total population documented within the survey corridor.

About 10 to 50 Payson lupine individuals would potentially be impacted by project construction activities. This represents about 0.4 to 2 percent of the total population documented for this species within the survey corridor. Gypsum Valley cat-eye individuals potentially impacted by the project within the corridor common to all Action Alternatives is about 100 to 200, or about 5 to 11 percent of the total population documented in the survey corridor. One additional population along the Dry Creek Basin realignment (Alternative C) would be impacted. This population has about 115 individuals within the survey corridor, and about 10 percent (about 10 individuals) are anticipated to be impacted during construction.

In summary, effects on sensitive plant species under all of the alternatives would be low with adherence to EPMs; thus this topic is not analyzed in detail in this EA.

3.4.8 Wetlands/Riparian Zones

There are a total of six perennial streams in the proposed project area, as well as a number of unnamed and named intermittent or ephemeral streams, and stock ponds.

Wetlands and riparian areas are very limited within the dry mesas of the Colorado Plateau and lower flanks of the Southern Rocky Mountains. Based on the National Wetlands Inventory (NWI) dataset, there are only a few mapped wetlands within the existing or proposed project ROW (NWI 2014). These include a mixture of herbaceous, shrub, and cottonwood riparian wetlands along streams, agricultural ditches, and stock ponds.

No wetland effects would occur within the areas common to both Action Alternatives. All of the streams within these areas would be spanned by the proposed transmission line and no new access roads are proposed in wetlands. Some existing access roads may require new culverts or low water crossings to replace existing structures in disrepair. Wetlands and waters of the U.S. would typically be avoided. The Dolores River Canyon crossing realignment would span the canyon and would not affect the wetland and riparian areas adjacent to the River. Should unavoidable temporary or permanent effects to wetlands or other waters of the U.S. be identified during final design, appropriate EPMs described in Section 2.3.6.16 would be implemented and a Section 404 wetland permit would be secured from the USACE. Any compensatory wetland mitigation required by the USACE would be implemented. Because the potential for wetland effects would be low, and mitigated, this topic was dismissed from detailed analysis in the EA.

3.4.9 Wild and Scenic Rivers

Under the Wild and Scenic Rivers Act of 1968 (WSRA), designated Wild and Scenic Rivers are selected rivers that possess outstandingly remarkable values (ORVs) including scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values to be preserved in their free flowing condition. Under Section 5(d)(1) of the WSRA, federal agencies undertaking management planning are required to assess whether any of the rivers and streams in the planning area would be appropriate for addition to the National Wild and Scenic Rivers System. The existing transmission line and analysis area crosses two substantial rivers, the San Miguel River and the Dolores River. Neither is currently congressionally-designated as Wild and Scenic; however, the 2015 RMP for the Tres Rios Field Office and Record of Decision (BLM 2015) determined that the Dolores River is suitable for Wild and Scenic designation. This river reach contains many ORVs (including recreation and scenery, fish and wildlife, geology,

ecology, and archaeology), has relatively few conflicts between river protection and other uses, and primarily involves federal land (USFS and BLM 2013).

An improvement or reroute of the transmission line across the Dolores River would not directly affect any recreation opportunities, geologic, biological, or archaeological resources, because no surface disturbance is proposed within 0.25 mile of the Dolores River while the effect of any realignment would be similar to the effects of the existing line. Because all of the Action Alternatives would have primarily short-term effects associated with construction and minimal long-term effects on ORVs, the subject of Wild and Scenic rivers is not discussed in detail in the EA.

3.4.10 Wildlife – Terrestrial

The San Miguel and Dolores river canyons provide a combination of vegetation and topography that supports a diverse wildlife community of birds, mammals and reptiles. However, the habitat conditions at the south rim of the Dolores River Crossing comprise an area with many County graded and maintained roads, existing road access to Tri-State's existing 115-kV transmission line, and casual use areas and roads. Forest communities at higher elevations within the proposed project area are characterized by a mosaic of patchy and intermixed forest types. Pinyon-juniper dominates lower elevation forests. Grassland and shrubland habitats within the proposed project area include mountain shrubland/grassland, and low elevation shrubland/grassland habitat including sagebrush shrubland, semi-desert shrubland, and semi-desert grassland.

The proposed project area provides wintering, summering, and/or production area habitat for mule deer and elk (CPW 2016c). CPW-mapped Elk Production Areas, Elk Severe Winter Range, Elk Winter Concentration Areas, Mule Deer Severe Winter Range, and Mule Deer Winter Concentration Range are present in the proposed project area (Table 15, CPW 2016c). Many of these habitat ranges overlap with portions of the Uncompahgre Plateau and/or adjacent basins, including Dry Creek Basin and Big Gypsum and Disappointment valleys. Agency guidance on SJNF, GMUG NF, TRFO, and portions of the Uncompahgre field office recommend that management activities should be limited or avoided in critical winter range, severe winter range, winter concentration areas, and winter range for elk and mule deer from December 1 through April 15 or 30 (timing constraint end in April depends on the agency; BLM 2015; Guideline 2.4.49; USFS 2009). If construction was necessary during winter in elk or mule deer severe winter range or winter concentration areas in the USFS- or TRFO-managed lands, Tri-State could request a waiver of the timing restrictions in coordination with CPW, BLM, and the USFS (see POD Appendix G, Environmental Compliance and Monitoring Plan).

Effects to terrestrial wildlife under all of the Action Alternatives include temporary construction effects from noise and human disturbance and permanent loss of foraging/breeding/wintering habitat where forest habitat is cleared. Wildlife present during transmission line construction would likely move temporarily to other adjacent habitat for protection, cover and feeding. After construction is complete, terrestrial wildlife would resume use of habitat within the proposed project area similar to current use.

Based on the small amount of habitat that would be directly disturbed and the short proposed project duration, transmission line improvement activities would have negligible direct effects on

habitat for small mammals and reptiles for both Action Alternatives. Direct effects on big game habitat would be less than 1 percent of the total habitat available within the effected Game Management Units (GMUs) (Table 15). Effects to terrestrial wildlife would be minimized through implementation of EPMs, such as restricting construction during the elk calving season in elk production areas, minimization of vegetation clearing, and implementation of a vegetation management plan. Overall, effects on terrestrial wildlife would be negligible with implementation of EPMs and are not discussed in detail in this EA.

Table 15. Direct Effects on Big Game Habitat by Action Alternative

Big Game Habitat	Habitat Available in GMU (acres)	Alternative A: Proposed Action (Preferred Alternative)		Alternative C: Dolores River Crossing Routing Option		Alternative C: Dry Creek Basin Routing Option**		Alternative C: Dolores River Crossing and Dry Creek Basin Routing Options**	
		Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
		Acres (% effect to habitat in GMU)*							
Elk production area	249,805	44.3 (<0.1%)	107.1 (<0.1%)	44.3 (<0.1%)	107.1 (<0.1%)	44.3 (<0.1%)	107.1 (<0.1%)	44.3 (<0.1%)	107.1 (<0.1%)
Elk severe winter range	1,154,760	125 (<0.1%)	686.7 (<0.1%)	125 (<0.1%)	686.7 (<0.1%)	146.8/145.1 (<0.1%)	687.6/690 (<0.1%)	146.8/145.1 (<0.1%)	687.6/690 (<0.1%)
Elk winter concentration area	561,933	63.7 (<0.1%)	131.2 (<0.1%)	63.7 (<0.1%)	131.2 (<0.1%)	70.5/70.5 (<0.1%)	147.4/150.4 (<0.1%)	47.2/47.4 (<0.1%)	156.1/159 (<0.1%)
Mule Deer Migration Corridors	94,663	2.8 (<0.1%)	47.3 (<0.1%)	2.8 (<0.1%)	47.3 (<0.1%)	2.8 (<0.1%)	47.3 (<0.1%)	2.8 (<0.1%)	47.3 (<0.1%)
Mule deer severe winter range	983,439	121.6 (<0.1%)	490.2 (<0.1%)	121.6 (<0.1%)	490.2 (<0.1%)	143.4/141.7 (<0.1%)	491/493.4 (<0.1%)	143.4/141.7 (<0.1%)	491/493.4 (<0.1%)
Mule deer winter concentration area	551,836	127.8 (<0.1%)	495.4 (<0.1%)	116.7 (<0.1%)	503.1 (<0.1%)	147.3/145.5 (<0.1%)	499.4/502 (<0.1%)	136.2/134.4 (<0.1%)	507.1/509.7 (<0.1%)

Notes: Percentage of effect to habitat available in parentheses. Habitat available is the sum total of the specific habitat type available within the four Game Management Units (GMUs 61, 62, 70, and 711) affected by the alternative. Permanent effects include structures, substations, roads and potential forest clearing within the ROW. Temporary effects include removal of vegetation around structures and displacement from the transmission line ROW and work areas during construction. **For Alternatives including the Dry Creek Basin Routing Option, the first acreage value before the "/" represents effects if the alignment is along the north side of SH 141, and the second acreage value for the south side of SH 141.

3.5 Resource Topics Evaluated in Detail

3.5.1 Access, Roads, and Transportation

Access to the existing transmission line is on BLM, USFS, county, state, and private roads. Tri-State currently uses about 251 miles of existing access roads, not counting state highways and including 146 miles requiring agency authorization, for periodic inspection and maintenance of the existing 115-kV transmission line (Table 16). This includes about 63.5 miles of road on BLM land, 82.5 miles on NF, 73 miles of county roads, 29.7 miles on private land, and 2.1 miles on state land. About 71 miles of these roads are down-line access roads located below the existing 115-kV line that Tri-State maintains. Tri-State maintains about 36 miles of spur roads outside of the ROW that are typically closed to the public.

Tri-State holds a ROW grant for the portion of the existing transmission line and access roads located on federal lands. The ROW includes roads that cross land administered by the BLM UFO and the BLM TRFO, the GMUG NF and the SJNF (BLM 2007a). In 2006, an EA was completed (BLM 2006) for the re-authorization of Tri-State's 115-kV transmission line ROW grants and permits, including maintenance of access roads for the transmission line between the Montrose and Cahone substations. The EA included different levels of maintenance depending on the type of access required and the location and condition of the road. Based on the EA, the ROW grant was approved, including the associated POD, in 2007.

The ROW width for existing access roads outside of the transmission line ROW is 30 feet. Access roads are generally "two-tracked," and with relatively level cross-slopes to allow safe travel by trucks with a high center-of-gravity. Roads are typically maintained using native rock and soil found at the site without adding gravel. Over the past decade, Tri-State has inspected the transmission line primarily using all-terrain vehicles (ATVs), although larger vehicles are used for repairs. Vegetation is cleared (as authorized by BLM/USFS) to a minimum width of 15 feet to allow passage by large boom and bucket trucks.

Following re-authorization of the ROW and permits for the transmission line and roads in 2007, Tri-State has implemented minor road maintenance work.

Table 16. Existing Roads used for Accessing Tri-State's MNC Transmission Line

Land Ownership	Miles	Percent of Total Road Length
BLM Uncompahgre Field Office	36.4	14%
BLM Tres Rios Field Office	27.1	11%
Uncompahgre National Forest	44.1	18%
San Juan National Forest	38.4	15%
State of Colorado (Dry Creek Basin State Wildlife Area [SWA])	2.1	1%
County	73.0	29%
Private	29.7	12%
TOTAL	**250.8**	**100%**

The BLM and USFS manage access and transportation on federal lands for a variety of motorized and non-motorized activities including recreation, livestock, wildlife management, resource exploration and development, and utilities and transmission lines in accordance with travel management plans. The portion of the transmission line located in SJNF is administered under the Boggy-Glade Travel Management Plan (USFS 2011). The Uncompahgre Travel Plan (USFS 2000) provides management direction for roads in the GMUG NF. Forest Service roads consist of NFSRs open to the public, NFSR administrative roads closed to the public, and special use routes that include downline access roads under the transmission line and other spur roads used for transmission line access that are also closed to public access. The Resource Management Plan Amendment/EA (BLM 2009a) and the Dry Creek Traffic Management Plan (BLM 2009b) addresses management of motorized and mechanized travel on public lands administered by the UFO. Travel management for roads in the TRFO is managed under the current LRMP (USFS and BLM 2013; USFS 2013; BLM 2015).

Both federal agencies routinely maintain roads in accordance with designated uses. BLM and USFS road maintenance levels and objectives vary with the road type and anticipated vehicle types, and include paved roads accessible by all vehicles, gravel-surfaced roads, and native surface roads. Native surface roads are typically suitable for high clearance vehicles. Roads used by Tri-State for transmission line access includes both roads open to the public and administrative roads that are closed to public access. Tri-State maintains transmission line access on BLM and NFSRs in accordance with the five maintenance levels approved by the 2007 ROW grant. Maintenance levels vary from roads in good condition with minimal maintenance required to those requiring grading, drainage, and vegetation clearing to provide vehicle access. Tri-State maintenance level classifications differ from those used by the USFS and BLM, but, in general, include a similar range of maintenance actions. Many currently-maintained roads are in poor condition and present a safety concern; in particular, the access to the north rim of the Dolores River crossing.

County- and state-owned roads are maintained by these agencies in accordance with the designated road classification and traffic. Tri-State use of county and state roads follows applicable permitting requirements. Private roads used by Tri-State are maintained by Tri-State in accordance with easement agreements with the landowner.

There are no Roadless Areas in the proposed project area. The transmission line crosses SH 141 near the SH 145 intersection. SH 141 and SH 145 are the Unaweep-Tabequache Colorado Scenic Byway from Whitewater to Palcerville. The Horsefly Canyon Roadless Area is southeast of the existing transmission line corridor.

3.5.2 Cultural Resources

Section 106 of the NHPA of 1966 as amended and its implementing regulations under 36 CFR 800 require all federal agencies to consider effects of federal actions on historic properties. Historic properties are those cultural resources that are either listed or eligible for listing on the National Register of Historic Places (NRHP).

During the Section 106 review, the federal agency considers effects on historic properties within the area of potential effect (APE). The APE is defined as “the geographic area or areas within

which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist (36 CFR 800.16)." Undertaking activities that may affect historic properties include structure removal and replacement; expansion of the ROW width from 100 feet to 150 feet that will require tree cutting and brush removal; and the new construction or upgrade of new access roads. Indirect effects to historic properties could occur if the construction of new access roads facilitates public access to historic properties, and from the visual effect of constructing taller structures. For the Tri-State transmission line, the APE for cultural resources was established as a 200-foot survey corridor centered on the existing transmission line and 50 to 100 feet for access roads, depending on the agency jurisdiction of the access road (Reed et al. 2014). An agency may use the NEPA process to fulfill its obligations under Section 106 of the NHPA (36 CFR800.8{c}). The standards for identifying and considering potential effects are the same as those provided under the 36 CFR regulations, including consulting with Native American tribes to identify traditional cultural properties, which can include entire landscapes, traditional gathering places, and other aspects of cultural significance.

Cultural resources can take the form of a building, structure, object, or site and can include districts, cultural landscapes, and traditional cultural properties. The NPS has established an age criteria guideline of 50 years in order for a cultural resource to be evaluated as potential historic property (but see criteria consideration (g) for exceptions to the age criteria). The NRHP defines an archaeological site as "the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains" (Little et al. 2000). Within the context of the proposed project, all potential historic properties are archaeological sites.

3.5.2.1 Cultural History

The cultural context provided below is intended to provide the reader with a basic overview of the cultural history of the northern and southern Colorado River basins, which encompass the proposed project area. The reader should refer to *Colorado Prehistory: A Context for the Northern Colorado River Basin* (Reed and Metcalf 1999) and *Colorado Prehistory: A Context for the Southern Colorado River Basin* (Lipe et al. 1999) for in depth overviews. The historic era is summarized under *Colorado History: A Context for Historical Archaeology* (Church et al. 2007).

3.5.2.1.1 *Prehistoric Era*

The Paleoindian period covers the time from about 13400 before present (B.P.) to 7500 B.P. Paleoindian hunter-gatherers were highly mobile, leaving few cultural imprints on the landscape. Subsistence strategies focused on big game, which included now-extinct megafauna such as mammoth and *Bison antiquus*. Evidence for Paleoindian use of the proposed project area has not been documented.

The Archaic Stage (7500 B.P. to 2000 B.P.) is a temporally extensive period marked by broad spectrum hunting and gathering. Aside from a decreased emphasis on large game and an increased emphasis on the gathering and processing of vegetal food, as evidenced by ground stone in the archaeological record, settlement strategies appear to have remained similar to that of the late Paleoindian era when "settling in" to the local landscape took place.

The Formative Era (2400 B.P. to 700 B.P.) is a period when horticulture became a major subsistence focus in western Colorado. The Fremont practiced horticulture in far northwest

Colorado and into Utah, and evidence of Ancestral Puebloan use extends from southwest Colorado, but was of limited intensity and is restricted to the area associated with the Dolores River drainage. The Formative Era saw the introduction of the bow and arrow and distinctive ceramic traditions. Structures generally became more permanent, and rock art was a major ideological element (Reed and Metcalf 1999).

The Protohistoric Era (700 B.P. to 200 B.P.) begins with the end of horticultural subsistence practices of the Formative Era and ends with the expulsion of the various Ute bands to reservations. The primary group to occupy the northern Colorado River Basin was the Numic-speaking Ute. Before contact with the Spanish in the early 1600s, the Ute were mobile hunters and gatherers who constructed wickiups for shelter, produced a particular brown-ware ceramic tradition (Uncompahgre brown-ware), and crafted small side-notched (Desert) and unnotched triangular (Cottonwood) projectile points (Reed and Metcalf 1999).

3.5.2.1.2 *Historic Period*

Historic settlement of western Colorado occurred during the early 1800s with the arrival of government survey expeditions. Fur trappers and traders had entered the area shortly after Anno Domini (A.D.) 1800. The Colorado Territory was established in 1861. With the relocation of the Ute to reservations in 1881, Euroamerican settlers built towns and established mineral mines and lumber mills. Land was cleared for crop cultivation, cattle ranchers moved into the area, and railroads were eventually built to move goods in and out of the region. Sheep and cattle herding became the dominant industry in the early 1900s in west-central Colorado. Historic occupation of the Dry Creek Basin has been limited to homesteading, mining, and livestock grazing. Carnotite ore was first mined in 1919 as part of the Uravan Mining Belt. Oil and gas exploration began in 1948 and continues to the present day (Paulson and Baker 2006).

3.5.2.2 File and Literature Review

The file search was conducted through federal agency records and through the Colorado Office of Archaeology and Historic Preservation prior to the 2013 survey (Reed et al. 2104) and again prior to recent addendum survey (Reed 2015). The 2013 file search identified a total of 93 previously conducted surveys within 300 feet of the transmission line centerline and existing access roads, documenting a total of 2,124 sites and isolated finds within 1 mile of the project area. The most notable previous survey project was for the existing Tri-State 115-kV Montrose to Cahone transmission line (McGuire 2004), which was limited to the existing ROW or 100 feet. The 2003 survey took place to disclose potential effects to historic properties for the 2006 EA, which documented 84 cultural resources, 31 of which were determined to be historic properties (McGuire 2003). No new surveys were conducted or sites documented within 300 feet of the project area between the 2013 survey and the recent addendum survey conducted in 2015.

The 2014 survey conducted to identify potential historic properties recorded 160 sites and 95 isolated finds within the variable area of potential effect (APE) for the transmission line and access roads (Reed et al. 2014). The 2015 addendum survey documented 15 previously recorded sites, 11 newly documented sites, and 16 isolated finds.

3.5.2.3 Summary Findings

Cultural resource inventory undertaken by Alpine Archaeological Consultants (Alpine) included 79.5 miles of existing transmission line ROW and 16.5 miles of associated access roads (Reed et

al. 2014). Inventory took place on public lands managed by the BLM TRFO and UFO, SJNF and GMUG NF land, CPW land, and privately owned lands (Reed et al. 2014). Because of the prior survey of the existing 115kV transmission line, only the outer 50 feet on either side of the previous 100-foot ROW was surveyed for cultural resources. Some privately owned parcels of land were unable to be surveyed due to landowner denial of access. An addendum survey was completed in 2015 that covered additional access roads on federal and private lands (about 10 miles) and additional transmission line corridor (about 2.5 miles). The proposed Cahone (about 41 acres) and Maverick substations (about 38 acres) were also surveyed.

To date, the cultural resource inventories have resulted in the documentation and evaluation of 160 cultural resources within the APE. Of the 160 evaluated cultural resources, 127 are prehistoric including 106 lithic scatters, 16 open camps, and 5 quarry sites. Historic sites include 4 artifact scatters, 3 roads, 2 transmission lines, and 3 arborglyphs (referred to as "aspen art" or carvings in aspen trees). Ten sites are multicomponent archeological (sites that have both prehistoric and historic components) (Reed et al. 2014; Reed 2015).

Of the 160 cultural resources, 54 have been determined to be "historic properties"—a regulatory term that denotes those cultural resources that are eligible or potentially eligible for listing on the NRHP. Historic properties require an assessment of project effects by the federal agencies with review and concurrence provided by the SHPO. The technical reports for the project are the vehicles for evaluating cultural resources for NRHP significance and assessing overall project effects to historic properties; the Memorandum of Agreement (MOA) is the legal document for addressing adverse effects to historic properties prior to project construction. One historic roadway has been previously documented (Old Montrose to Paradox Road) and is eligible under Criterion C; however the segment within the project area has been determined non-supporting. An additional historic roadway (SH 141) has not been evaluated within the project area; however, other segments of SH 141 documented within Montrose County have been evaluated and are officially eligible under Criterion A as supporting segments. Based on the evaluation of other segments, the segment of SH 141 within the project area is assumed to be eligible/supporting and is evaluated in this EA as a potential historic property.

3.5.3 Forest and Timber Resources

Timber management and harvesting is a tool used for managing ecosystem diversity, forest insect and disease populations, tree growth and yields, recreation settings, wildlife habitat, and wildfire hazard. Timber harvesting provides forest products that may help support local wood processing industries and associated communities.

Identification of lands suitable for timber production is one of the key elements of forest plans and delineates where timber production may occur on NFS lands. Timber harvests may also occur on other lands. "Other lands" is a classification regarding lands where commercial timber production is not compatible with desired conditions and objectives, but that are physically capable and administratively available, for purposes other than the production of wood fiber (e.g., hazardous fuels reduction, ecosystem restoration, visuals, scenic vistas, and habitat improvement). Lands not suitable for timber harvest, due to various physical and administrative factors (i.e., slope, soil characteristics, productivity, and/or administrative withdrawals) are also identified.

Currently, approximately 17,800 acres (42 percent) of the NFS lands on the GMUG NF and 11,100 acres (49 percent) on the SJNF within the planning area (2 miles each side of the existing transmission line) are identified as suitable timberland. On the GMUG NF, forests are categorized as suitable or nonsuitable, with the "suitable" category further subdivided into aspen or conifer resources. The SJNF timber classification includes "suitable," "tentatively suitable," and "generally unsuitable" categories. Timber harvesting or thinning on BLM-managed lands occurs primarily in the ponderosa pine vegetation community type (see the Character Regions Section 3.5.7.3) and is seldom commercial in nature.

Past timber harvesting and fire suppression are the principal factors that have influenced forest vegetation throughout the proposed project area. That is, the majority of forest vegetation types are in the mature stage due to lack of disturbance (e.g., fire or harvesting) with dense stand conditions. At the same time, areas that have been treated (i.e., thinned or harvested) more recently may not be available for harvesting activities in the near term.

Dense stand conditions found in the proposed project area are vulnerable and have been recently subjected to significant levels of insect and/or disease attack. High levels of mortality have occurred, or are ongoing, in all but the ponderosa pine vegetation type described in the Character Regions Section (3.5.7.3). Timber management is generally not effective in stopping or inhibiting ongoing insect epidemics, but may be used to alter stand conditions in order to reduce ongoing insect and disease activity, as well as the risk for future outbreaks. Timber management trends in recent years have been to restore timber stands to conditions more resilient to insect outbreaks, disease, and catastrophic wildfire.

Long-term drought conditions have facilitated insect- and disease-related effects on timber resources and are associated with declining forest health in all forest vegetation types. In general, silvicultural prescriptions have been designed in recent years to favor drought-resistant species (e.g., ponderosa pine) while focusing removal of drought-susceptible species (e.g., white fir). Additionally, forest thinning projects have been implemented, particularly in lower-elevation areas, to substantially reduce tree densities and improve forest health.

Within the proposed project area, timber management (i.e., demand for timber resources) is largely dependent on the Colorado timber industry. The demand for timber resources, particularly demand for conifer-based products, has decreased in recent years. At the same time, the capacity of the timber industry has declined with recovery of the industry expected to be slow. Further reductions in the industry may severely decrease demand for timber resources and restrict timber management as a tool used to accomplish desired changes in vegetation conditions (USFS and BLM 2013; USFS 2013; BLM 2015).

In contrast to the conifer-based product industry, the aspen-product industry has remained relatively stable. Aspen has been managed throughout the proposed project area for over 60 years. Many of the aspen stands thinned or harvested in the 1940s and 1950s are approaching maturity (USFS and BLM 2013; USFS 2013; BLM 2015).

3.5.4 Geology and Minerals

3.5.4.1 Geology

The proposed project area is within the Colorado Plateau physiographic region, a high desert of relatively undeformed flat-lying rocks with deeply incised canyons. The north end of the proposed project area is on the east side of the Uncompahgre Plateau, a large northwest-southeast-trending upland dome of sedimentary rocks underlain by Precambrian granite. The existing transmission line crosses through the Cretaceous Dakota and Burro Canyon formations and Mancos Shale and the Jurassic Brushy Basin Member of the Morrison Formation as it passes over the plateau. On the west side of the plateau the transmission line crosses drainages with exposures of the Jurassic Summerville and Entrada formations and the Salt Wash and Brushy Basin Members of the Morrison Formation. The transmission line heads south from the Nucla substation, continuing in the Dakota and Burro Canyon formations, with exposures of the Brushy Basin Member of the Morrison in drainages. It then crosses the Mancos Shale in Dry Creek Basin and runs up the northeastern edge of the northwest-southeast-trending Disappointment Valley, a collapsed salt dome anticline overlain primarily by the Mancos Shale. The line runs above the east side of the Dolores River through the Morrison, Burro Canyon, Dakota, and Mancos Shale Formations, crossing over Dolores Canyon and continuing across the same formations, with some Quaternary eolian (windblown) deposits, to the terminus at the Cahone substation.

There are no known metallic mineral resources, coal-bearing formations, or other industrial mineral deposits near the study area (Colorado Division of Reclamation, Mining, and Safety [CDRMS] 2014). Eight producing oil and natural gas wells and one plugged and abandoned well are within 0.25 mile of Proposed Alternatives (Colorado Oil and Gas Conservation Commission [COGCC] 2014).

3.5.4.2 Geologic Hazards

Geologic hazards of potential concern in the proposed project area include landslides, corrosive soils, shallow bedrock, expansive soils and bedrock, faults and folds, and seismicity.

Landslides are the downward and outward movement of earth materials on a slope. Because records for historical landslides are limited, the most important factor in evaluating the landslide hazard is susceptibility. The United States Geological Survey (USGS) ranked areas throughout the nation into low, moderate, and high susceptibility areas, based on the soil/rock types, slope angles, precipitation, and other factors (Radbruch-Hall et al. 1982; Godt 2001). According to the USGS map, areas with a high susceptibility for landslides have been identified throughout the proposed project area, especially in areas with steep slopes or crossed by canyons. Landslides are a primary concern and the focus of the analysis in Section 4.

Corrosive soils are a concern because of their potential effects on buried infrastructure, such as metal transmission poles and guy wires. Soil corrosion is an electrochemical process that is responsible for the corrosion of metals in contact with soil. Soils with high moisture content, high electrical conductivity, high acidity, and high dissolved salts would be most corrosive. Potentially corrosive soils have been identified throughout the proposed project area. Construction in corrosive soils would need to be managed at a greater level of detail through the structural engineering design process.

Shallow bedrock in the proposed project area is defined as competent bedrock (solid rock that underlies unconsolidated deposit which displays limited evidence of weathering throughout the rock mass) that is less than 79 inches (201 centimeters) from the ground surface. Areas with shallow bedrock could create difficulties with installing transmission line poles and excavating substation foundations. Areas of shallow bedrock have been identified throughout the proposed project area. Construction in areas of shallow bedrock would need to be managed at a greater level of detail through the structural engineering design process.

Expansive soils and bedrock, geologic faults, and seismic hazard areas are either stable in the proposed project area or limited in extent (Hart 1974; Morgan et al. 2014; USGS 2014). Expansive soils within the project area can be found in Mancos Shale bedrock or soils derived from Mancos Shale as well as the Morrison Formation. Construction in expansive soils would need to be managed at a greater level of detail through the structural engineering design process.

3.5.5 Soils

Soils in the proposed project area developed in a range of various land forms including plateaus, rolling mountains, alluvial plains, and canyons (see Table 17). Parent material is primarily interbedded layers of sandstone and shale, with areas of igneous rock, volcanic ash, and other sedimentary rock. Soils in the proposed project area consist mainly of residuum from weathering of parent bedrock material with colluvium along and below steep slopes and alluvium at the toes of slopes, on alluvial fans, and along drainages. Soils derived from eolian blown soil material are also present.

Table 17. General Soil Characteristics by Land Form

Land Form	General Soil Description
Mesas	Formed in alluvium, residuum and eolian material derived dominantly from sandstone, shale and a few areas of igneous rocks
Canyons	Formed in residuum and colluvium material derived from sandstone and shale with around 40 percent being rock outcrop of exposed sandstone, found on sloping to very steep mesa edges, on terraces and landslides
Mountains	Formed in residuum, alluvium, colluvium, glacial drift and landslide material derived dominantly from sandstone, shale and mixed sources
Valleys	Formed in alluvium derived from shale

Source: Natural Resource Conservation Service (NRCS) 1995, 2003.

Deeper soils are found on alluvial valley floors such as the Dry Creek Basin and Disappointment Valley, with shallow soils present on steep mesa and mountain side slopes. Slopes range from near zero in alluvial plains to near-vertical in Dolores Canyon and plateau sideslopes. Soil textures derived from shale parent material are typically loams, clay loams, and silt loam, with sandy loams dominant where sandstone is the parent material. Soils in the proposed project area support a variety of native vegetation communities including forests, pinyon-juniper woodlands, shrubland, and rangelands that provide forage for livestock grazing and wildlife. Soil productivity varies depending on soil depth, texture, moisture holding capacity, depth to rock, slope, topographic aspect, precipitation, and land use. Revegetation of disturbed areas depends on soil depth and texture, slope, organic matter content, rock content, and other chemical and physical properties

Previous soil disturbances in the proposed project area include road construction, mineral exploration, oil and gas well pads, timber harvesting, scattered commercial and residential developments, existing transmission lines and pipelines, agricultural activities, and other land use development. Accelerated erosion is currently a concern near the existing transmission line structure on the south rim of Dolores Canyon where steep unstable slopes are severely eroded.

3.5.6 Threatened, Endangered, or Candidate Animal Species

Species listed as threatened and endangered species are protected under the ESA, as amended. The ESA requires the BLM and the USFS ensure that any actions it approves will not jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat. The USFWS Information, Planning, and Conservation System (IPaC) lists 14 species which could occur in the proposed project area vicinity (USFWS 2014a; Table 18). Of these, USFS and BLM biologists determined that only Mexican spotted owl, GuSG, and Canada lynx potentially occur in the proposed project area. There is no wolverine habitat in the project area. There is no suitable habitat for the western yellow-billed cuckoo in the proposed project area, and the nearest proposed critical habitat is about 4 miles from the north end of the proposed project area. The proposed project area is outside of the habitat range for the New Mexico meadow jumping mouse. Potential habitat for the Mexican spotted owl occurs only in the Dolores River Canyon. Mexican spotted owl surveys were negative in 2012, 2013, and 2014; therefore the entire project area, including the Dolores River Canyon is considered unoccupied.

No construction activities are anticipated in habitat suitable for the four Colorado River endangered fish species and greenback cutthroat trout. This project falls under BLM Colorado's Programmatic Biological Assessment (PBA) for water depleting activities (excluding fluid minerals development) on BLM lands in the Colorado River basin in Colorado (BLM 2008). In response to BLM's PBA, the USFWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0010) on February 25, 2009. Water depletions associated with dust suppression would be less than 100 acre-feet (AF). The PBO issued by the USFWS determined that relatively small water depletions (less than 100AF) would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts to the Upper Colorado River Basin. The western yellow-billed cuckoo, Mexican spotted owl, fish species, and jumping mouse are not discussed further.

Table 18. Federally Listed Animal Species Occurring in the Proposed Project Area or Potentially Affected by Project Activities

Common Name	Federal Status	Habitat Description	Potentially Occurring in Proposed Project Area?	Critical Habitat in Proposed Project Area?
Gunnison sage-grouse	Threatened	Sagebrush communities (especially big sagebrush) for hiding and thermal cover, food, and nesting; open areas with sagebrush stands for leks; sagebrush-grass-forb mix for nesting; wet meadows for rearing chicks	Yes	Yes

Common Name	Federal Status	Habitat Description	Potentially Occurring in Proposed Project Area?	Critical Habitat in Proposed Project Area?
Mexican spotted owl	Threatened	Mixed-conifer forests and steep-walled canyons with minimal human disturbance	Documented unoccupied	No
Canada lynx	Threatened	Spruce-fir, lodgepole pine, willow carrs, and adjacent aspen and mountain shrub communities that support snowshoe hare and other prey	Yes	No

3.5.6.1 Gunnison Sage-Grouse

3.5.6.1.1 *Range-wide Status*

GuSG inhabit sagebrush ecosystems in southwestern Colorado and southeastern Utah. On November 12, 2014, the USFWS issued a final rule that listed the GuSG as threatened under the ESA in addition to designating critical habitat (USFWS 2014b, 2014c). The regulatory setting, including BLM and CPW guidelines, is provided in greater detail in Section 1.7.

GuSG require large contiguous areas of undisturbed or minimally disturbed sagebrush habitat for long-term persistence. The birds exhibit site fidelity (or the tendency to continually return to the same geographical areas) to seasonal habitats, although habitat quality can vary depending on annual precipitation and drought conditions. Seasonal habitats are largely defined by vegetative cover percentage and type and localized water regimes, and include early spring mating or lekking habitat, spring and summer nesting and brood-rearing habitat, and winter foraging habitat.

Each spring, GuSG perform elaborate mating displays in an area known as a lek. Leks are typically small open areas adjacent to sagebrush. Lek habitat is generally present in relatively open areas where the vegetation is low or clear with adjacent sagebrush. Other seasonal habitats such as breeding and summer-fall habitat typically exist within 4 or more miles of an active lek. Good nesting and brood rearing habitat requires sagebrush with sufficient canopy cover as well as substantial grasses and forbs in the understory. In a study by CPW, 85.2 percent of all GuSG nests were located within 4 miles from the lek (GuSG Rangewide Steering Committee [GSRSC] 2005). Nesting season typically begins in April and continues into July (USFWS 2014d).

Approximately 4,000 GuSG exist across seven populations. About 87 percent of these birds belong to the Gunnison Basin population. The other six populations account for the remaining 13 percent of the total population. In 2009, 83 leks were surveyed for breeding activity in the Gunnison Basin population, including 42 active, 6 inactive, 9 historic (inactive for at least 10 consecutive years), and 26 for which the status was unknown (USFWS 2014b). The San Miguel population (which overlaps the project area), is the second largest and comprises six fragmented subpopulations and nine leks. Range-wide, GuSG occupied habitat covers an estimated 951,061 acres (USFWS 2014b). Critical habitat for GuSG has been designated on 1,429,551 acres in six

units in Delta, Dolores, Gunnison, Hinsdale, Mesa, Montrose, Ouray, Saguache, and San Miguel Counties in Colorado, and in Grand and San Juan Counties in Utah (USFWS 2014c).

Lek count estimates from 1996 to 2014 show that the Gunnison Basin population, while showing variation from year to year, has been relatively stable (USFWS 2014b). In contrast, the six smaller populations were generally in decline until 2010. Recent population increases observed in several of the smaller populations could be a product of numerous factors including but not limited to population cycles, translocation efforts (i.e., moving Gunnison Basin individuals to one of the smaller, satellite populations), and increased access to leks (USFWS 2014b).

3.5.6.1.2 *Range-wide Threats*

In the final rule for listing GuSG as a threatened species (USFWS 2014b), the USFWS identified the most substantial threats to GuSG as habitat loss, degradation, and fragmentation, primarily due to human disturbance associated with residential and infrastructure development, small population size and structure, drought, climate change, and disease. Other threats to GuSG to a lesser degree or in localized areas include grazing practices inconsistent with local ecological conditions, fences, invasive plants, fire, mineral development, pinyon-juniper encroachment, and large-scale water development. Although equipped with adaptations such as camouflaged plumage and behavior that minimize predation, GuSG may be increasingly vulnerable to effects of predation due to human influence, habitat change and small population size (USFWS 2014b).

3.5.6.1.3 *Status and Distribution in the Project Area*

San Miguel Basin Population

The San Miguel Basin population is composed of six small subpopulations using different areas (Dry Creek Basin, Hamilton Mesa, Miramonte Reservoir, Gurley Reservoir, Beaver Mesa, and Iron Springs) on a total of 101,750 acres of occupied designated critical habitat in Montrose and San Miguel counties (Figure 23; USFWS 2014b). Some of these six areas are used year-round by GuSG, and others are used seasonally (USFWS 2014e). In 2001, CPW researchers estimated 392 total birds inhabited the San Miguel Basin, decreasing to 186 birds in 2013 (CPW 2013).

GuSG in the San Miguel Basin move widely between the six subpopulation areas (USFWS 2014f). The area encompassed by the San Miguel population is believed to have once served as a migration corridor between populations to the north (Cerro Summit–Cimarron–Sims Mesa) and to the south (Monticello-Dove Creek) (Oyler-McCance et al. 2005; San Miguel Basin Gunnison Sage-grouse Working Group 2009), 2009), but gene flow among these populations is currently very low (Oyler-McCance et al. 2005).

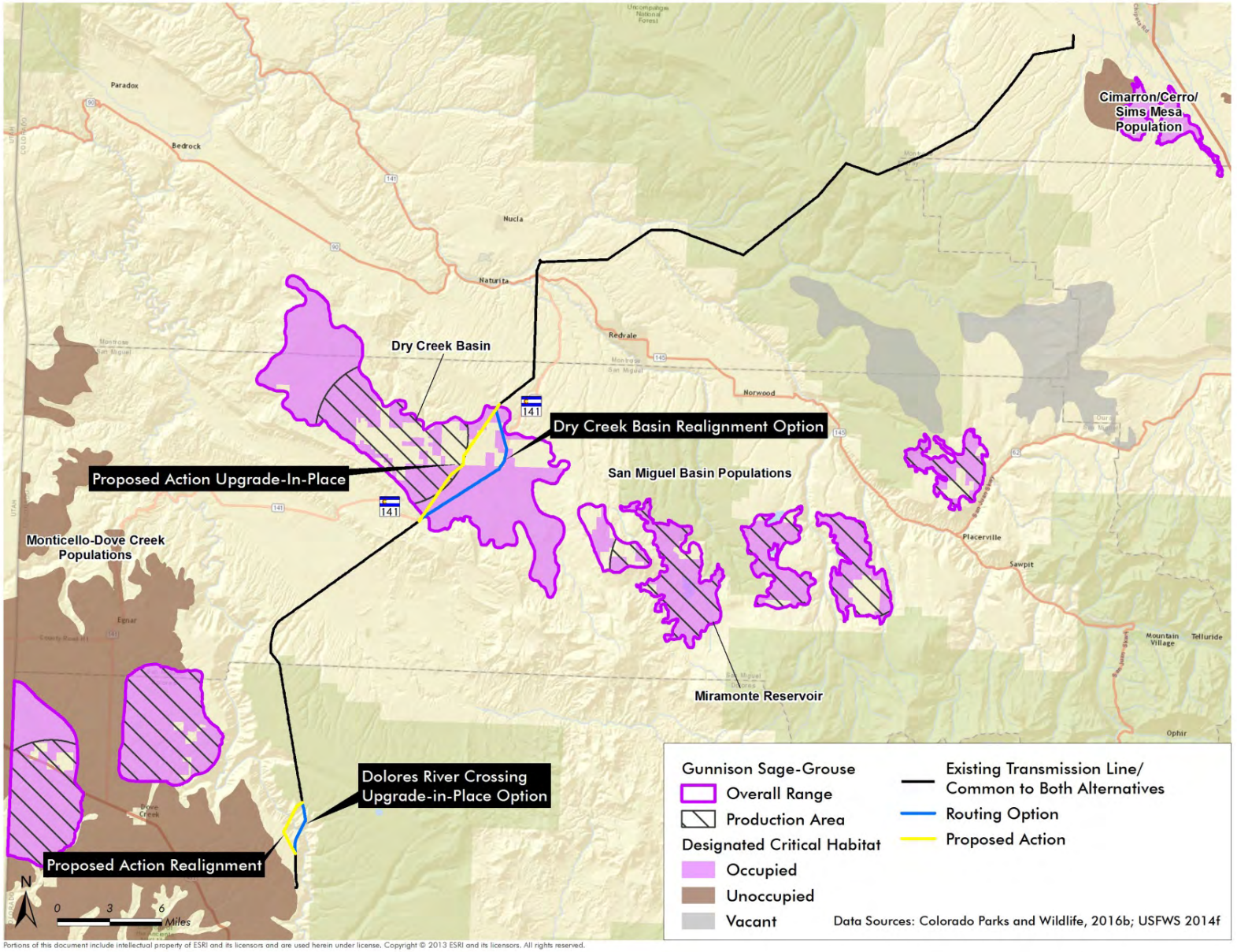


Figure 23. Gunnison Sage-Grouse Range and Critical Habitat in the Project Area

Factors potentially affecting habitat characteristics essential to GuSG conservation for the San Miguel Basin population include residential and commercial development and associated access roads, utilities, and fences; increased recreational use of roads and trails; increases in GuSG predators; effects of drought; the spread of invasive plant species and associated changes in GuSG habitat; grazing that degrades or eliminates vegetation structure; and oil and gas development and associated infrastructure, all of which can result in the loss, degradation, or fragmentation of sagebrush plant communities (USFWS 2014d. Habitat conditions vary among the six subpopulation areas of the San Miguel Basin population. The following subsections describe habitat conditions for the three subpopulations in the project vicinity: Dry Creek Basin, Miramonte, and Monticello-Dove Creek.

Dry Creek Basin Subpopulation

About 62 percent of the San Miguel Basin population area (approximately 62,100 acres) occurs in the Dry Creek Basin subpopulation area (San Miguel Basin Gunnison Sage-grouse Working Group 2009). A portion of the project area crosses occupied habitat of the Dry Creek Basin subpopulation, some of which has been designated as critical habitat (Figure 23). Designated critical habitat in the Dry Creek Basin and other subpopulations resembles a patchwork, because some private lands within occupied habitat were excluded from critical habitat designation. Private lands were excluded where landowners had enrolled in a Candidate Conservation Agreement with Assurances (CCAA) prior to the species being listed as threatened. By enrolling into a CCAA, the landowners agreed to comply with or implement conservation measures that would provide direct GuSG population and habitat conservation benefits sufficient to preclude designation or those private lands as critical habitat.

The Conference Opinion for the TRFO RMP (USFWS 2014e) considers that three GuSG leks are active in the Dry Creek Basin (Figure 24). However, annual GuSG monitoring in the Dry Creek Basin has only documented GuSG at a single lek about 4 miles west of the existing transmission line since 2010 (CPW 2016a). GuSG were first surveyed in the Dry Creek Basin in 1959 with nine birds recorded at a single lek. Reliable and consistent data was not collected in the Dry Creek Basin again until 1992 (CPW 2014). Since then, surveys and monitoring data show that total GuSG population numbers in the Dry Creek Basin are shown in Figure 25.

From 1992 to 2001, total lek counts fluctuated between 15 and 31 total males counted at between 2 and 3 leks. In 2002 and 2003 total lek counts declined to 15 and 7 total males counted at three active leks. From 2004 to 2016 total male counts fluctuated between 0 and 5 males recorded at 2 or fewer leks (Figure 28). Since 2012 only a single lek has been active. The spring 2014 GuSG population estimate for the Dry Creek Basin was fewer than 70 individuals. In 2014, CPW augmented the existing population with an additional 29 birds from the Gunnison Basin. In 2015, CPW again augmented the population by releasing birds from the Gunnison Basin on both sides of SH 141 (CPW 2015 and 2016a).

Lek surveys and presence-absence surveys, conducted in compliance with USFWS, CPW, and BLM survey protocols, were completed within 1.25 miles of each side of the proposed project area in spring 2014. No GuSG or signs of the species were detected during the surveys. Although GuSG were not observed in the Dry Creek Basin during the lekking season, they may use the habitat in the proposed project area occasionally at other times of the year.

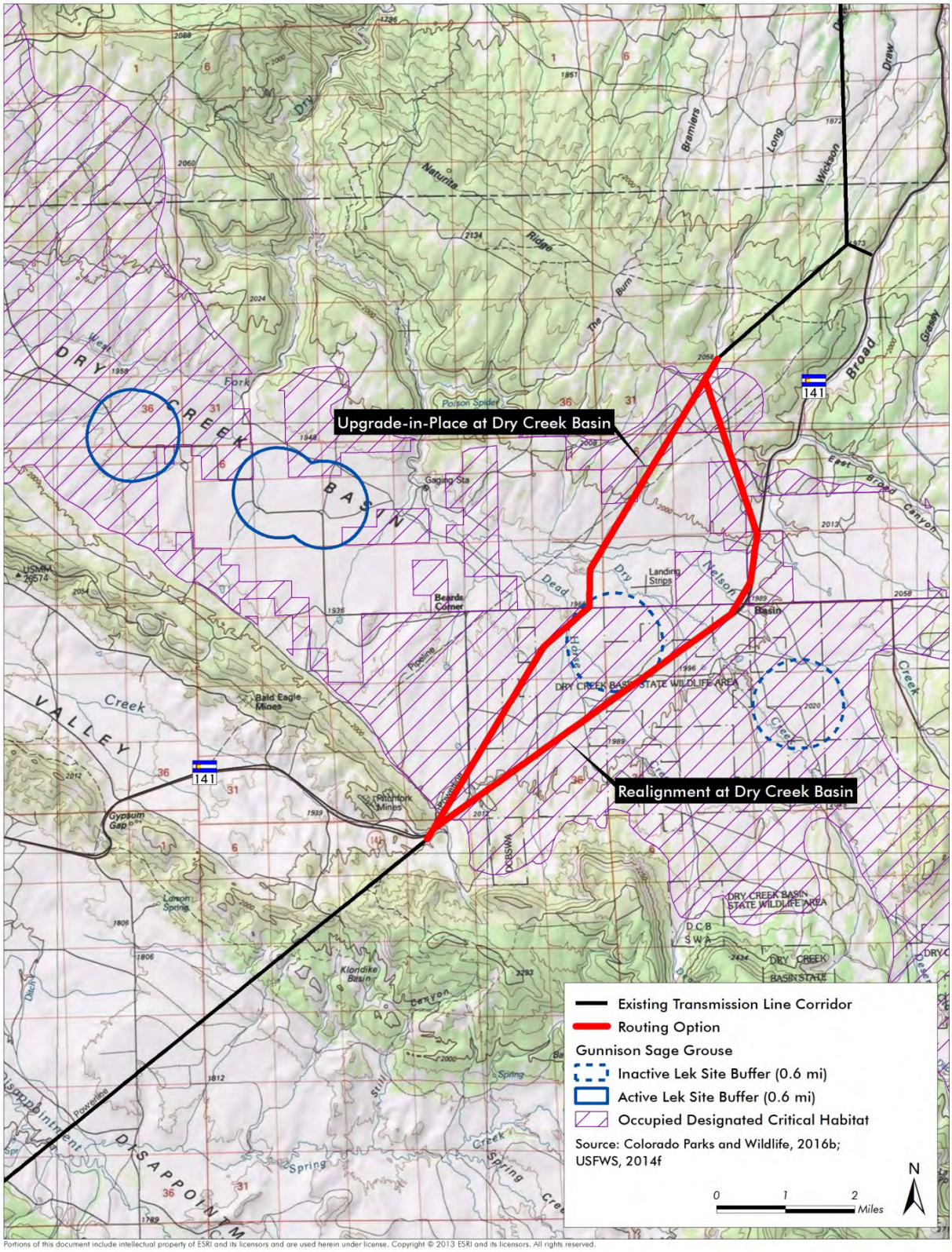
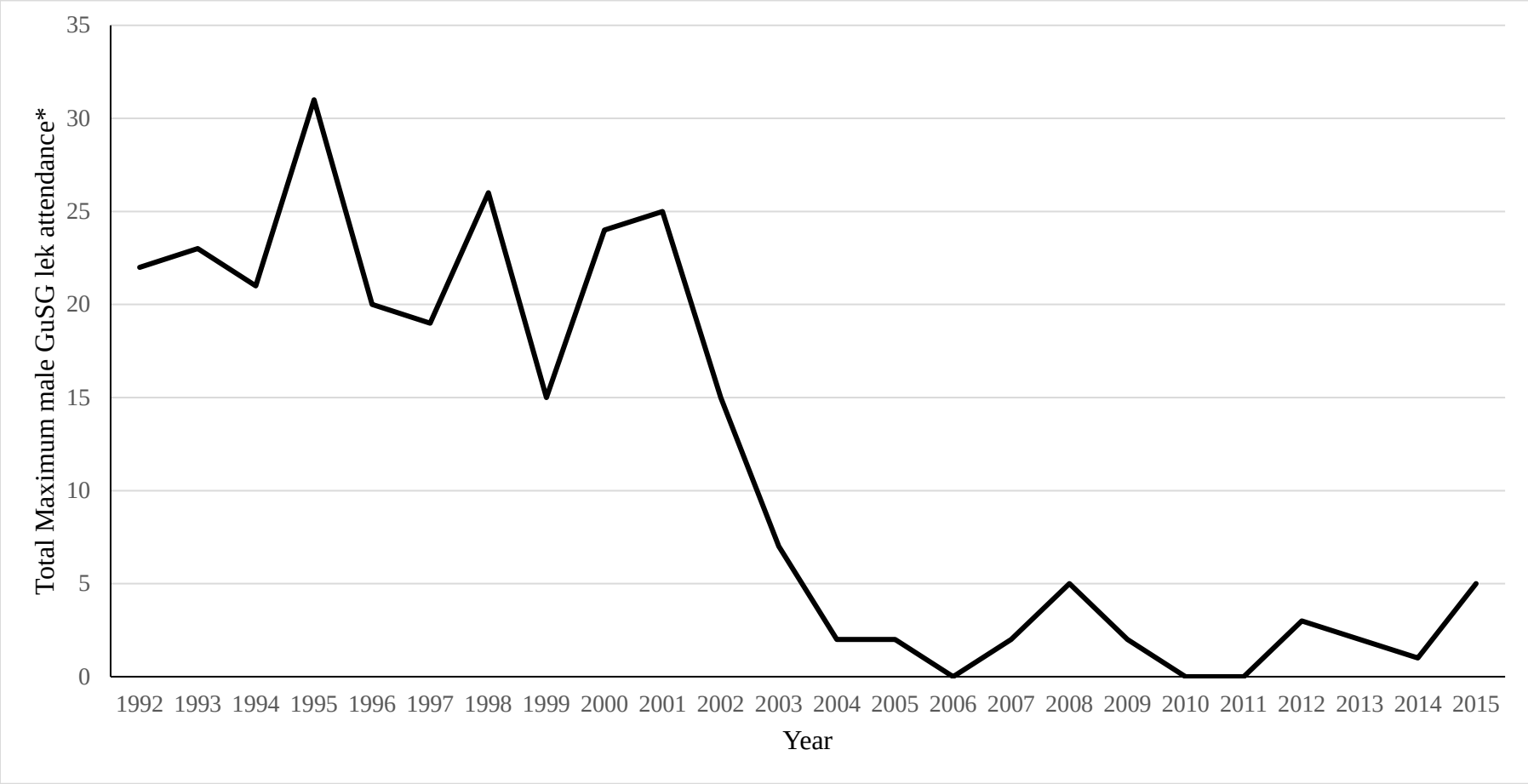


Figure 24. Active and Inactive Leks and Occupied Critical Habitat in the Dry Creek Basin



*Note: No data collected from 1960 to 1977, 1986, or 1988 to 1991

Figure 25. Total Lek Counts in Dry Creek Basin from 1992 to 2015 (Maximum Male Attendance)

CPW has been collecting telemetry data on radio-collared GuSG in the Dry Creek Basin since 2008 primarily to monitor survival of translocated grouse. CPW also has used the telemetry data to monitor hens for nesting success. A small amount of the data are collected from native GuSG. Although not the primary monitoring objective, the telemetry data may provide an indication of GuSG movement in the Dry Creek Basin. For all individual translocated birds, the first six months of data were excluded. Per a non-disclosure agreement, these data can be used only to assist with the preparation of the EA for conservation purposes and cannot be displayed or distributed to any other party. The information represents data and features that are variable both over time and over the landscape. These data indicate that radio-collared GuSG concentrated in the general area of the active lek and have been using habitat on both sides of the existing transmission line in recent years (CPW 2016a). CPW telemetry data also show GuSG using habitat within 1 mile of the existing transmission line in 2002, 2010, 2011, 2012, and in 2015. Birds released on both sides of the SH 141 in 2015 were recorded crossing the highway corridor (CPW 2015 and 2016a).

Fifteen mortalities of collared birds have been recorded since 2002. Of the 15 known mortalities, 11 are from unknown or un-recorded causes, one chick died from exposure after the hen was killed, two showed evidence of predation or scavenging by mammals and one was a suspected raptor kill next to a fence and distribution line east of the Basin Store. No signs of electrocution or collision with the transmission line were evident (CPW 2015 and 2016a).

BLM has been tracking several satellite telemetry-collared birds in the Dry Creek basin, one of which uses the area in the vicinity of the existing transmission line. Figure 26 shows a kernel density estimation of this bird's habitat use based on telemetry data collected from October 2014 through January 2015. Kernel density estimation is a widely used tool for evaluating spatial patterns, such as home range. Figure 26 illustrates the probability of the telemetered bird using an area along a gradient of low to high use areas, and indicates that the bird used the area within 1 mile of the existing transmission line. This data is a snapshot in time for a single bird over a four month period and does not represent high and low use areas for all GuSG in the Dry Creek Basin subpopulation as a whole (BLM 2016).

Seasonal habitat for the species has not been mapped in the Dry Creek Basin. As a result, seasonal habitat use data is incomplete and specific threats and stressors to the GuSG in the Dry Creek Basin are difficult to quantify.

Miramonte Reservoir Subpopulation

The Miramonte Reservoir area is about 15 miles east of Dry Creek Basin. About 11,000 acres of occupied GuSG critical habitat occur around Miramonte Reservoir (GuSG Rangewide Steering Committee [GSRSC] 2005). Two active leks occur in the Miramonte Reservoir area; one of which is in the TRFO (Figure 27). Attendance at both leks has declined in the last 10 years (Figure 28). The two leks are about 2 miles apart, and brood mixing may occur between them (USFWS 2014e). Movements of up to 35 miles have been observed in individual GuSG in the Gunnison Basin population (USFWS 2014b) and movement of GuSG between the Dry Creek Basin and Miramonte Reservoir subpopulations is possible. According to the CPW, 13 GuSG were translocated from Gunnison Basin to Miramonte in the fall of 2013 and 10 more in the spring of 2014 (CPW 2016b).

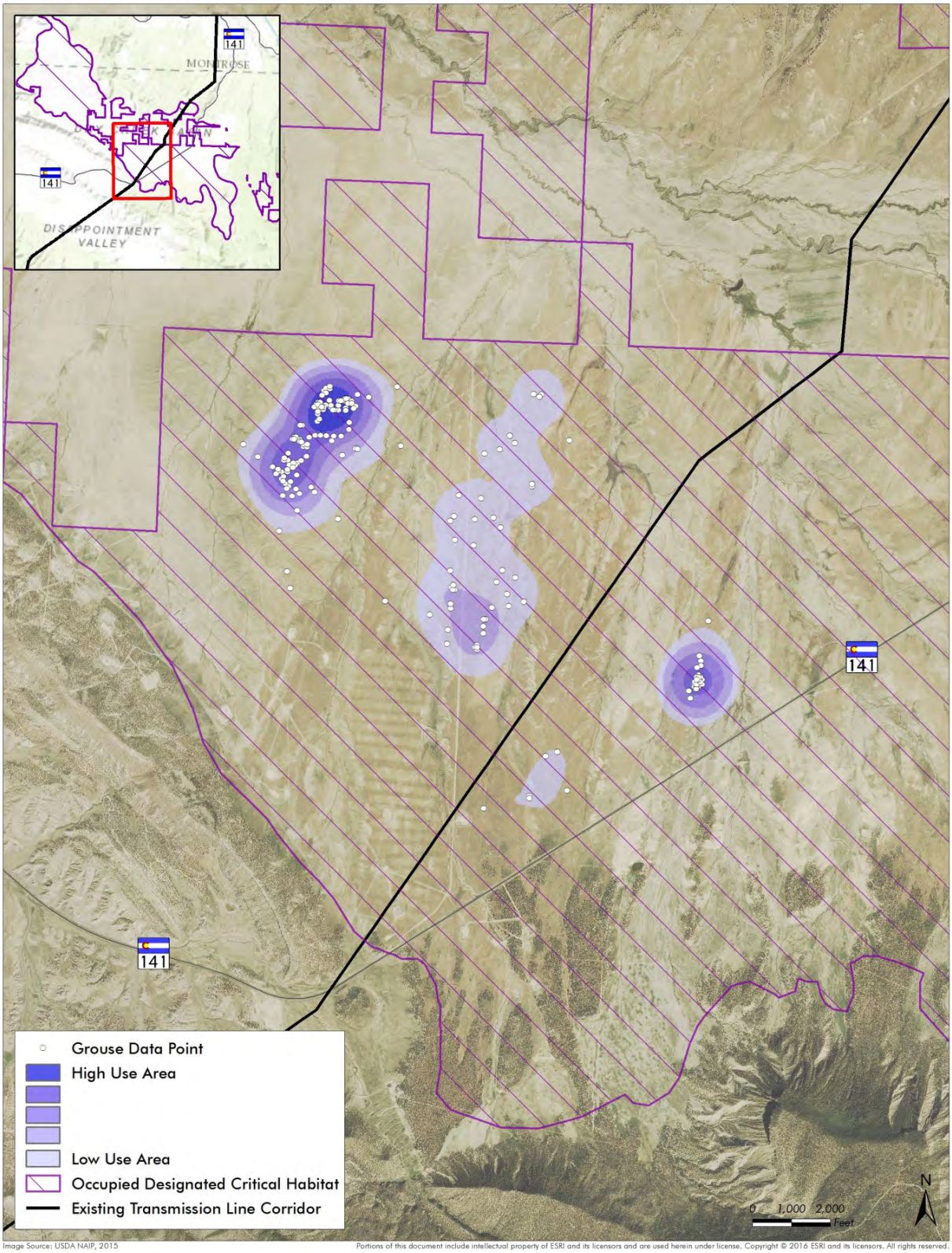


Figure 26. Kernel Density Estimation of Movement of BLM Radio-Collared Gunnison Sage-grouse

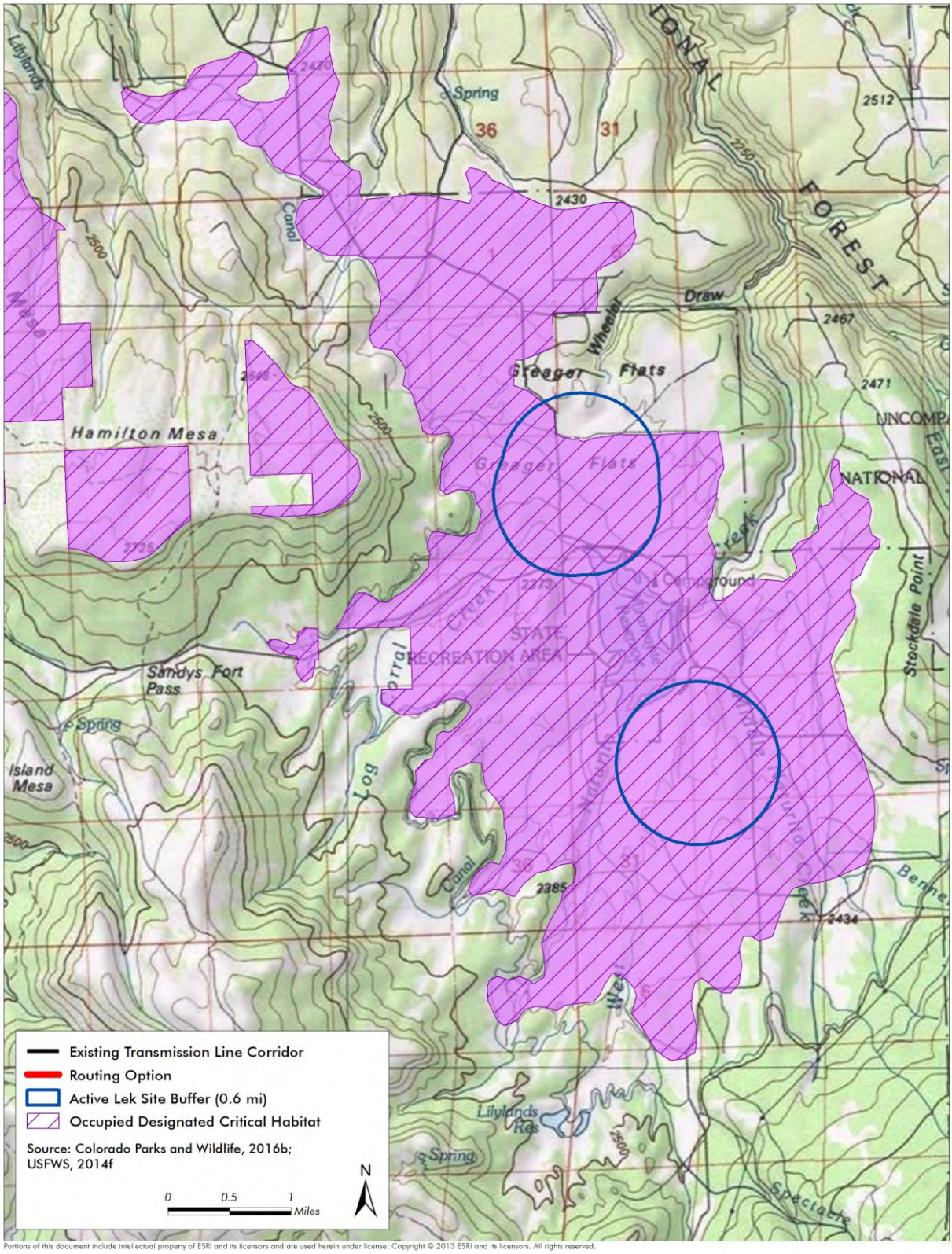


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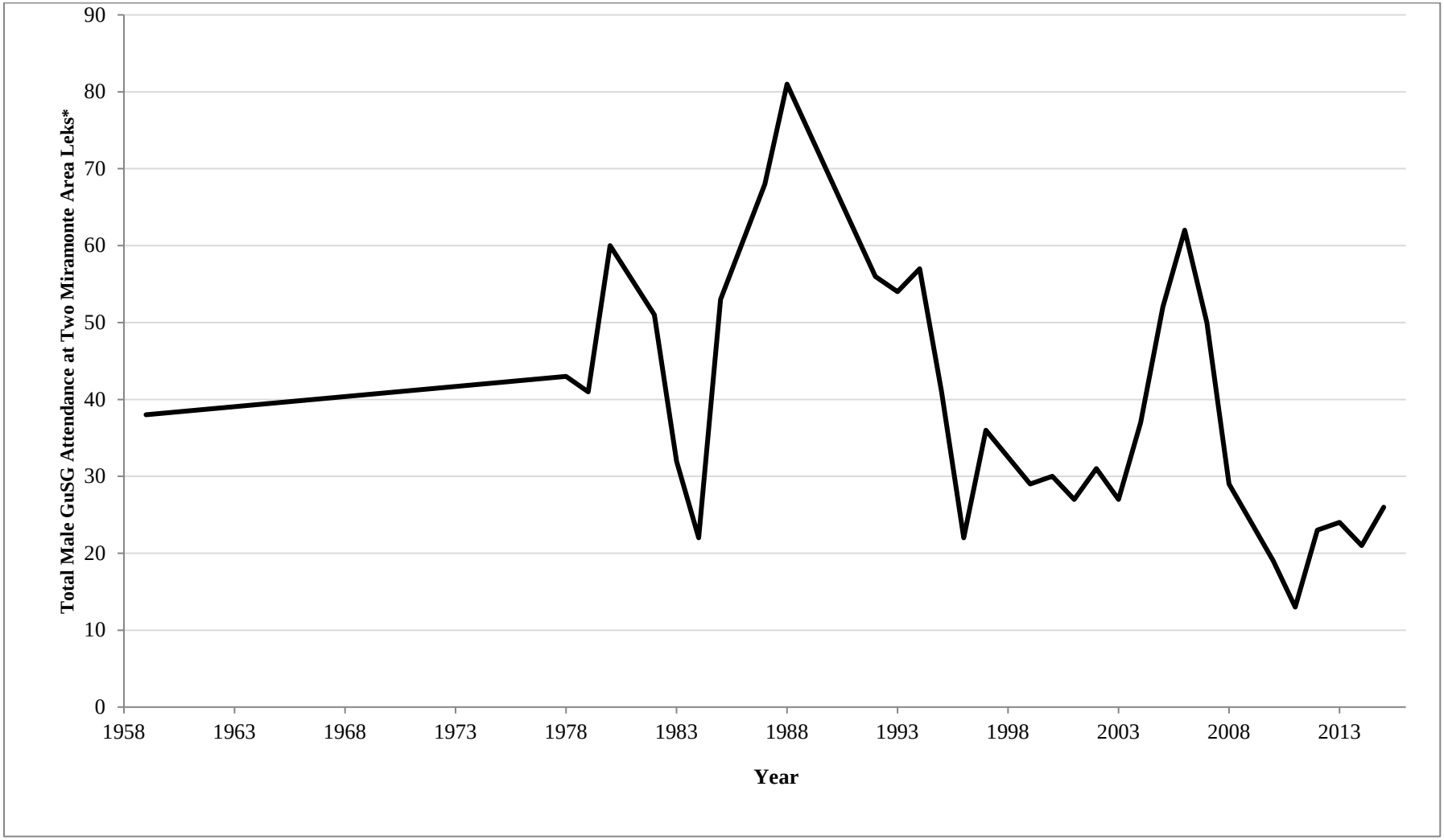
Figure 27. Active and Inactive Leks and Occupied Critical Habitat in the Miramonte Reservoir Area



*Note: No data collected from 1960 to 1977, 1986, or 1988 to 1991

Figure 28. Total Male GuSG Lek Attendance at Two Leks in the Miramonte Area

The current population estimate for the Miramonte portion of the San Miguel Basin is 103 GuSG based on the high male count of 21 for only those leks in the Miramonte area and the population calculation currently uses in the 2005 RCP. (Note that the sub areas of the San Miguel Basin are not discrete isolated populations and there may be some movement of birds between the sub population areas.) From 2010 to 2015, CPW documented 72 mortalities of collared GuSG. Mortalities were due to various events including exposure and potential predation.

The 429-acre Miramonte Reservoir is located adjacent to the Dan Noble SWA. GuSG critical habitat encompasses 11,102 acres of the area occupied by the Miramonte Reservoir Subpopulation and consists of various public and private land ownership and management. The 11,102 acres of critical habitat comprises 2,458 acres of SWA, 217 acres of BLM land, 777 acres of USFS land, and 7,650 acres of private land. The public lands are popular for boating, fishing, camping, and other recreational activities. According to USFWS, impacts to GuSG from recreational activities on BLM land in the Miramonte Reservoir area are unlikely to occur given the limited public access (USFWS 2014e). Development in the last 10 years in the Miramonte area consists of the O.A. Greager Boy Scout camp and one new residence. San Miguel County recently acquired the Boy Scout camp with an objective to preserve GuSG habitat.

Surrounding sagebrush stands in the Miramonte Reservoir area are generally contiguous with a mixed-grass and forb understory (GuSG Rangewide Steering Committee [GSRSC] 2005). Detailed information about conditions of sagebrush habitat in the Miramonte reservoir area is not available.

Monticello-Dove Creek Population

The southern end of the proposed project area is along the eastern border of critical habitat for the Monticello-Dove Creek population of GuSG (Figure 23). The critical habitat for the Monticello-Dove Creek population of GuSG near the project area is classified as unoccupied, and the proposed project area is highly degraded or surrounded by degraded habitat that lacks components important for GuSG. Much of this area consists of an existing substation, paved roads, and other man-made structures that are not considered critical habitat. The final rule designating GuSG critical habitat states: “In all other areas, lands covered by buildings, pavement, and other manmade structures, as of the effective date of this rule, are not included in this designation, even if they occur inside the boundaries of a critical habitat unit, because such lands lack physical and biological features essential to the conservation of Gunnison sage-grouse, and hence do not constitute critical habitat as defined in section 3(5)(A)(i) of the Act.” (USFWS 2014).

3.5.6.1.4 *Dry Creek Basin Habitat Conditions*

Dry Creek Basin Vegetation

The Dry Creek Basin contains some of the poorest habitat and the fewest total grouse in the San Miguel population (San Miguel Basin Gunnison Sage-grouse Working Group 2009). The Dry Creek Basin is generally characterized by large expanses of desert scrub and sagebrush habitat, minimal precipitation, and multiple land uses including agriculture (farming and ranching) and industrial, as well as a SWA. GuSG habitat suitability throughout the Dry Creek Basin has been assessed since 2006 using the BLM Sage-grouse Habitat Assessment Framework (Stiver et al. 2015). The goal of the BLM habitat assessment framework is to assess habitat suitability in the

Dry Creek Basin in order to proactively implement conservation in priority landscapes to provide the greatest benefit to GuSG. The data collected provides a look at habitat conditions at that particular time.

Table 20 shows data for six habitat parameters: height and percent cover of grasses, forbs, and sagebrush. In 2015, average grass height at points measured was 2.68 inches, 68% of the minimum RCP guideline. Average grass cover was 32% which is 2% greater than the amount recommended in the RCP. Blue grama is the dominant grass throughout the basin and may have a substantial impact on the ability of sites to meet the minimum grass height requirement because it is a naturally short-statured grass species. Sagebrush in the basin is mostly in the mature age class (70%). Throughout the basin sagebrush height is meeting or exceeding RCP habitat guidelines. On average, throughout the basin, sagebrush % cover is below RCP habitat guidelines. This data is most likely due to sampling design including Ecological Sites that do not have the potential to meet canopy cover requirements. Sites where the ecological potential supports sagebrush are largely meeting the sagebrush requirements. Data for forbs are highly variable since changes have been made to sampling protocols and sampling time frames, and no useful habitat information can be inferred.

Table 19. Gunnison Sage-Grouse Habitat Conditions in the Dry Creek Basin

Habitat Parameter	Rangewide Conservation Plan Guideline	2015 Dry Creek Basin Average
Grass height	3.9 – 5.9 inches	2.68 inches
Grass % cover	10 – 30%	32%
Forb height	2 – 3.9 inches	2.42 inches
Forb % cover	5% – 15%	3.3%
Sagebrush height*	9.8 – 19.7 inches	16.8 inches
Sagebrush % cover*	15% – 25%	9.1%

*Data collected in 2013; BLM 2016.

Many factors can influence habitat conditions for sage-grouse any given year; therefore, caution should be exercised before assigning values to habitat based on limited data. In addition, the assessment framework evaluates habitat suitability on a basin-wide scale and does not provide for analysis or comparison of fine scale vegetation conditions, such as comparing habitat suitability between the transmission line and SH 141 corridors. Much of the Dry Creek Basin vegetation data should be viewed as a snapshot in time while recognizing the constraints and limitations of the data. For example, in the early 1990s the BLM conducted herbicide treatments to remove sagebrush in areas of Dry Creek Basin. Data in these areas may have been included in and may have a substantial impact on the overall percent canopy cover for sagebrush. Grass height measurements are an average across the basin and have not been separated out by ecological site. Measurements in areas dominated by sagebrush with little or no grass understory may have a substantial impact on grass height values across the basin.

Climate

Aptly named, Dry Creek Basin receives little precipitation. Based on data collected from 1992 to 2015 from the seven stations 14 to 27 miles from Dry Creek Basin, average annual precipitation in the region is about 12 inches (Colorado Climate Center Website 2016, State Climatologist Association website 2016). Since the development of the 2010 Drought Mitigation and Response Plan (Colorado Water Conservation Board 2013), Colorado has been impacted by a significant drought, particularly in the project area. This event, which started in

2011 and continued as of July 2013 (heretofore referred to as the 2011-2013 drought), has had a severe impact in certain parts of Colorado (Colorado Water Conservation Board 2016). The U.S. Drought Monitor program identifies droughts by intensity from abnormally dry to exceptional drought, the most severe level of drought (U.S. Drought Monitor website 2016). Notable droughts in recent years included conditions that ranged from severe to exceptional drought in 2002 to 2004 and from abnormally dry to extreme drought from 2011 to 2014 (U.S. Drought Monitor website 2016). During the 2011-2013 drought, average annual precipitation in the region where Dry Creek is located ranged from 5 inches in 2012 to 11 inches in 2013 (Colorado Climate Center Website 2016, State Climatologist Association website 2016). The USFWS listed drought among the primary threats to GuSG recovery (USFWS 2014b) and drought conditions may have contributed to declines in GuSG in the Dry Creek Basin.

Dry Creek Basin is located at about 6,300 feet above sea level. For comparison, the Miramonte Reservoir, located about 18 miles southwest of Dry Creek Basin at 7,700 feet above sea level, receives substantially greater annual precipitation. Based on data collected from 1992 to 2015 from 8 climate stations located 11 to 36 miles from Miramonte Reservoir, average annual precipitation in the area ranges from 13 inches to 20 inches, with a median annual precipitation value of 16.8 inches and a mean annual precipitation value of 16.6 inches (State Climatologist Association website 2016). This value is substantially higher than the Dry Creek Basin area, which has a mean annual precipitation value of 12.1 inches, and a median annual precipitation value of 11.9 inches. Precipitation in the Miramonte Reservoir area between 2011 and 2014 ranged from about 12 inches (2012) to about 19 inches (2013). Between 1992 and 2015, the Miramonte Reservoir area received between 1.5 and 8.5 more inches of annual precipitation than Dry Creek Basin, with the exception of 1995 to 1997, when dryer than normal conditions were experience in Placerville, one of the climate data stations used to determine the Miramonte area's precipitation.

3.5.6.1.5 *Threats in the Project Area*

Threats to GuSG in the project area include direct anthropogenic disturbance resulting from surface disturbance or land use practices, predation by avian and mammalian predators, mortality or injuries caused by collision with powerlines and structures, and indirect anthropogenic disturbance such as noise, increased predation, and habitat loss and avoidance/fragmentation due to construction activities and the presence of oil and gas development, roads, powerlines, and other man-made features (USFWS 2014e).

Direct Surface Disturbance

Table 20 shows the types and extent of existing surface disturbance within the Dry Creek Basin analysis area, based on aerial photo interpretation and field verification. Existing human disturbance in the project area consists primarily of ranch buildings and associated agricultural lands (500 acres), roads (190 acres), and oil and gas and mineral development (151 acres combined) (Figure 29 and Table 20). Although pipeline corridors also exist in the basin, these do not appear to inhibit or restrict GuSG movement and therefore are not quantified.

Table 20. Extent of Existing Disturbance in the Dry Creek Basin

Disturbance Type	Extent (Acres)
Agricultural activity	500
Existing transmission line ROW*	92
Oil and gas well pads and infrastructure and Minerals development	151
Roads	190
Abandoned Airfield	9
Structures/development	42
Total for all disturbance types	982

A detailed analysis of existing transmission line access road conditions was done to accurately characterize existing surface disturbance in the Dry Creek Basin (see Figure 29). Existing access road conditions were established using 2015 Google Earth imagery, photos provided by Tri-State, and road segment centerlines mapped with a GPS unit. To determine the area of surface disturbance, a disturbance width of 2 feet was applied to segments of existing access corridor that are predominantly vegetated. Photo analysis revealed that these segments vary from completely vegetated to 2-track roads with bare areas extending 4-feet or more. The 2-foot disturbance width represents the range of low level disturbance within the predominantly vegetated segments. For segments where vegetation in the access corridor ranges from nonexistent to minimal, 8-foot, 10-foot, 12-foot, 16-foot, and 20-foot disturbance widths were applied, depending on the degree density and distribution of vegetation cover. Access roads for Tri-State's existing transmission line in the Dry Creek Basin total 8.6 miles. About 6.2 acres of disturbance are associated with these existing access roads. The methods used to evaluate transmission line access road disturbance are described in more detail in the project record.

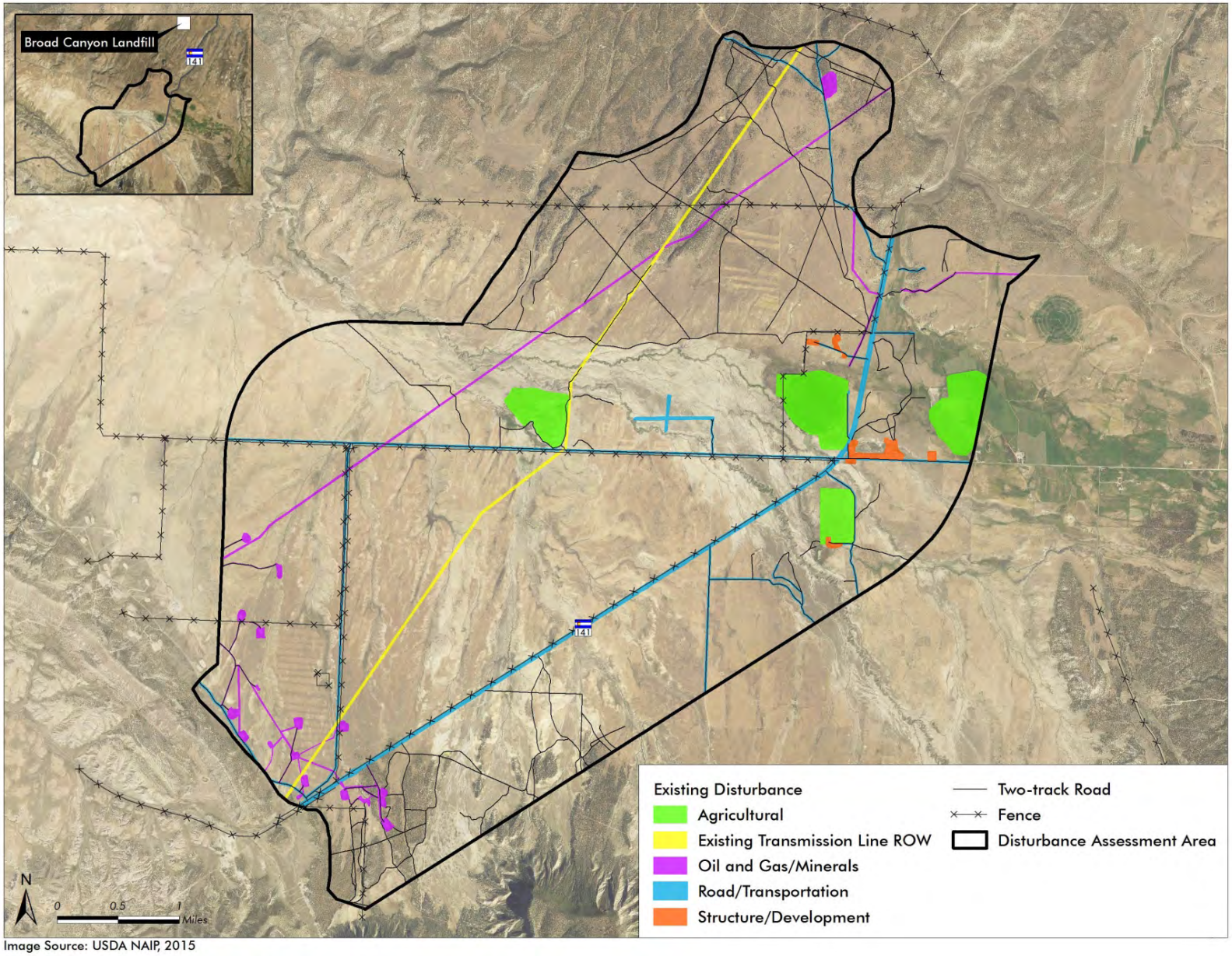


Figure 29. Existing Disturbance in the Dry Creek Basin

Predation

Avian predators, such as eagles, hawks, and common ravens and other corvids, frequently forage on the young, eggs, and adults of many animals, including sage-grouse (Schroeder and Baydack 2001). In general, raven populations in desert environments are increasing (Sauer et al. 2008) and, therefore, pose an increased threat to sage-grouse nest success. Breeding ravens hunt live prey an average of 0.44 mile (707 meters) from their nests (Howe et al. 2014). Coates and Delehanty (2010) showed that an increase in raven density of 1 raven per 2,471 acres (10 square kilometers) increased greater sage-grouse nest depredation by 26 percent. Manzer and Hannon (2005) also found that sage-grouse nest survival was eight times greater in landscapes with less than three corvids/741 acres (1 square kilometer) when compared with areas with greater than three corvids/741 acres (1 square kilometer). In general, sage-grouse that nest within or near areas with unnaturally high raven numbers may be especially vulnerable to nest depredation.

The increased presence of avian predators associated with powerlines may affect GuSG use of habitat near powerlines. Ravens commonly select man-made features, such as tall structures (e.g., transmission line towers), for building nests (Knight and Kawashima 1993; Knight et al. 1995; Coates et al. 2014; Howe et al. 2014; Bui et al. 2010). Dinkins et al. (2012; 2013) documented that greater sage-grouse avoid areas with high levels of avian predator activity, and Howe et al. (2014) discovered that raven nesting decreased with every 0.62-mile (1-kilometer) increase in distance from a transmission line. Also, the probability for raven nesting was found to increase where the transition between intact, undisturbed habitat and disturbed habitat, known as edge habitat, such as linear right-of-way, increased.

Little information about the presence or effects of avian predators in the Dry Creek Basin is available. Although no nesting by avian predators currently occurs directly in the existing transmission line ROW, eagles, hawks, and ravens were observed within the proposed project area during 2014 and 2015 field surveys (see Section 3.4.3). Flocks of up to 100 ravens have been observed by BLM personnel on multiple occasions between 2013 and 2015 (West pers.com. 2016). Colorado Breeding Bird Atlas data for the Basin Southeast block indicated a "probable" breeding status for ravens and a "possible" status for golden eagles (COBBA II 2016). Other man-made disturbances, such as the Broad Canyon Landfill, located 2.5 miles northwest of Dry Creek Basin, may attract ravens. However, it is possible that the existing transmission line contributes to an increased use of the Dry Creek Basin by ravens and other avian predators by providing perches and potential nest sites.

Predation by coyotes and other mammalian predators may be affecting the Dry Creek Basin GuSG population; however, no data exists to justify clear conclusions about current or past coyote populations or predation of GuSG. There is no known relationship between power lines and coyote behavior or abundance.

Indirect Anthropogenic Disturbance

Research indicates that GuSG may avoid habitat in proximity to certain types of human structures, development, and activity. Indirect anthropogenic disturbance including habitat fragmentation and decreased habitat effectiveness related to anthropogenic disturbance and structures has been described as a threat to GuSG (USFWS 2014b). Habitat effectiveness is defined as the percent of area or percent of time that habitat is fully usable by a species (Lyon

and Christensen 1992). Decreased habitat effectiveness is the indirect habitat loss that occurs when wildlife avoid areas immediately adjacent to a disturbance or physical infrastructure that extends beyond the physical footprint of individual projects. Many human disturbances in the Dry Creek Basin include or are associated with linear footprints or physical infrastructure that decrease habitat effectiveness, such as highways and roads, overhead power lines, and oil and gas well pads.

Although little research has been published on GuSG spatial movements in relation to high-voltage transmission lines (greater than 69-kV), many recent studies have documented that other prairie grouse species avoid human disturbances and predator-dense habitats in proximity to transmission lines. Dinkins et al. (2014) found that greater sage-grouse hen survival was negatively associated with power line density. The avoidance of manmade structures, particularly vertical structures such as transmission lines, buildings, and wind turbines, has been documented to increase fragmentation of prairie-chicken habitat (Hagen et al. 2004; 2011; Pruett et al. 2009b). In both greater and lesser prairie-chicken populations, birds tend to avoid otherwise suitable habitat that contains vertical manmade structures (USFWS 2012). This avoidance behavior results in a reduction of "effective habitat" (Hagen et al. 2011; USFWS 2012). Avoidance behavior and reduction of "effective habitat" in various grouse species is often attributed to behavioral avoidance of overhead structures that may be perceived by GuSG to increase predation risk by providing perch opportunities for avian predators (Hagen et al. 2004; Pruett et al. 2009a, 2009b; Dinkins et al. 2014). In addition to grouse species avoiding tall structures, several studies have reported that anthropogenic infrastructure such as powerlines, highways and oil and gas development, can have far reaching negative population effects on grouse, including decreased lek attendance, lek persistence and lower survivability (Holloran 2005; Connelly et al. 2004; Dinkins et al. 2014). Avian predators can fly great distances and may have life history effects on grouse that extend several miles from tall structures that provide nesting and perching opportunities (Coates et al. 2014; Howe et al. 2014; Gibson et al. 2015 in review). No site-specific data exists that can be used to determine any cause and effect on population level effects from these types of indirect impacts on GuSG in the Dry Creek Basin.

BLM conducted a thorough review of available literature related to GuSG avoidance of human disturbance, which is available in the project record. The analysis focused on the use of studies of effects on individual sage-grouse behavior and sage-grouse nest locations. Studies that evaluated impacts based on lek population trends were not used to determine avoidance buffers for the following reasons:

- Indirect impacts to leks are addressed in the analysis of impacts to active leks.
- Lek-based studies measure population-level effects and not individual avoidance of structures.
- GuSG that attend leks more than 4 miles from anthropogenic disturbances may nest and use habitat closer to those disturbances.

The analysis of GuSG avoidance of anthropogenic disturbance focuses on effects of the transmission line and roads (SH 141, CR U29 and R25 Road) to allow the most direct comparison of the relative effects of the alternatives. Overlapping zones of influences from other anthropogenic features, such as oil and gas development and county roads, are not

quantified because the relationship of these features relative to each alternative would not change based on alternative. The overlapping zones would not substantially differ between alternatives for other features on the landscape. Although based on the best available science, selection of a definitive habitat avoidance "buffer" for any anthropogenic disturbance is based on limited data and professional judgement. Thus, avoidance effects are quantified for transmission line alternatives and SH 141 for comparative purposes only in Section 4.3.6.

Little applicable data are available on GuSG avoidance of roads and highways. Studies conducted on greater sage-grouse are sometimes contradictory. Modeling conducted by Aldridge et al. (2012) demonstrated that at a patch-scale, the probability of nest occurrence was low up to a distance of approximately 8 km from high-volume roads. Aldridge found no avoidance of two-track roads in the Gunnison Basin. In a study that statistically compared greater sage-grouse radiotelemetry locations in west-central Idaho to the locations of anthropogenic features, Gillan et al. (2013) found that greater sage-grouse exhibited no detectable avoidance of major and minor roads. Studies currently being conducted on the influence of county and local roads on the Crawford GuSG population (Ouren 2016) may be the most applicable to county roads in the Dry Creek Basin. Based on preliminary results, Ouren (2016) found that GuSG avoid roads with the most consistent use and that the average distance to a high-use county road was between 600 meters and 1,500 meters for females and between 500 meters and 1,200 meters for males, depending on season of use. Traffic volumes were greatest during hunting season. Average traffic volumes on roads evaluated by Ouren (2016) was 10 vehicles per day. As described in Section 3.5.10, average annual daily traffic count (AADTC) on SH 141 in the project area is 260 vehicles for the southern section and 560 AADTC north of U29 Road (CDOT 2015). Based on best available science, limited data on GuSG rangewide, a small sample size of birds in the Dry Creek Basin and considering SH 141 traffic volumes, a 600-meter avoidance buffer was assigned to SH 141. This buffer distance is supported by recorded locations of a GuSG hen tracked by BLM that indicates avoidance of CR U29 (Figure 26), with the greatest effect dropping off at 100 meters.

Research on the influence of tall structures, such as powerlines, is inconclusive; however, some research indicates that GuSG may avoid transmission line structures. Movements of a GuSG hen tracked by BLM (Figure 26) support the use of a 600-meter buffer. Gillan et al. (2013) found that greater sage-grouse avoided transmission lines by up to 600 meters. Holloran et al. (2010) found that yearling female greater sage-grouse avoided nesting within 965 meters of the infrastructure of natural gas fields with powerlines. Based on pellet transects, Braun (1998) concluded that sage-grouse use of areas near powerlines increased with distance from the powerline for up to 600 meters. In a study in the Wyoming, the presence of anthropogenic features (e.g., power lines) negatively affected sage-grouse occurrence, as indicated by significantly lower number of sage-grouse pellet piles within 500 meters of power lines (Hanser et al. 2011). Several studies of other prairie grouse species indicate that these species may avoid tall structures such as transmission line structures ((Hagen et al. 2004, 2011; Pruett et al. 2009b). Based on available information, this analysis uses an avoidance buffer of 600 meters for the transmission line.

Based on available applicable literature, it is likely that the existing transmission line and SH 141 are reducing the effectiveness of GuSG habitat. Based on the above analyses, avoidance effects

of the existing transmission line and SH 141 would occur on 6,478 acres of occupied GuSG habitat, including 5,293 acres of Critical Habitat.

Besides roads and the transmission line, GuSG may also be avoiding habitat near other anthropogenic disturbances in the Dry Creek Basin. Numerous studies have documented the avoidance of infrastructure associated with oil and gas development by greater sage-grouse (Carpenter et al. 2010; Doherty et al. 2008; Holloran et al. 2010), but were conducted in locations and under conditions very different from the Dry Creek Basin. Yearling female greater sage-grouse avoided nesting within 0.6 mile (950 meters) of oil and gas infrastructure, including producing well pads, drilling rigs, and main haul roads (Holloran et al. 2010). Based on a their literature review, Manier et al. (2014) concluded that nesting females avoid areas within approximately 1 km of infrastructure, that nests closer to infrastructure are at a higher risk of nest failure, and that brood-rearing females avoid areas within approximately 0.5 km of infrastructure; however, in most of the studies examines, effects of oil and gas wells and other structures were not separated from the effects of access roads.

The Electromagnetic Field (EMF) is the physical field produced by the combination of the electric field and magnetic field. It is associated with all transmission lines. The EMF is highest immediately surrounding a transmission line; it decreases rapidly with distance away from a transmission line (Fernie and Reynolds 2005). The EMF strength is directly proportional to the voltage of the transmission line (e.g., a 230-kV transmission line generates a stronger EMF than a 115-kV transmission line).

GuSG exposure to EMFs related to the existing conditions around the transmission line is negligible, because the EMF diminishes rapidly with distance away from a transmission line (Fernie and Reynolds 2005). There is also evidence that birds and some mammals can see ultraviolet (UV) light, part of the electromagnetic spectrum, with varying capabilities and sensitivities (Douglas and Jeffery 2014; Tyler et al. 2014). Some literature suggests the UV discharge may potentially increase the visibility of transmission lines to wildlife at night (Douglas and Jeffery 2014; Tyler et al. 2014). Most of the available literature describes the physiological ability of mammals and some birds to observe UV light and the advantage of installing markers that emit or reflect UV light to aid birds in detecting structures to avoid collisions. Overall, information from the literature remains inconclusive about UV avoidance behavior on various wildlife species, including sage-grouse. The UV light effect on GuSG is potentially one of several factors contributing to the reduction in habitat effectiveness.

Corona is the phenomenon when the electric field at a particular point reaches a sufficiently high value to cause ionization of the surrounding air. When this ionization, or corona, does occur, it can be both visual (sparks) and audible (popping, hissing), potentially increasing visual disturbance to GuSG and contributing to the reduction in habitat effectiveness. On transmission lines, conductors, insulators, and hardware can all serve as sites for corona. In most cases, conductor corona is more prevalent than insulator or hardware corona. The point at which corona occurs on conductors depends primarily on the voltage (higher voltage, more potential for corona), conductor diameter (increased diameter decreases the potential for corona), and conductor spacing (increased spacing reduces the possibility of corona). Conductor surface condition and atmospheric conditions can also have an effect on the potential for corona. It is generally acknowledged that the audible noise resulting from corona is more noticeable at higher

voltages (345-kV or higher) and that the phenomenon is rarely noticed in fair weather conditions (APLIC 2012).

3.5.6.2 Canada Lynx

The Canada lynx is a secretive forest-dwelling cat that inhabits much of Canada, the forests of the northern U.S., and subalpine forests of the central and southern Rocky Mountains (Fitzgerald et al. 1994). Colorado is the southernmost distribution of the lynx (Fitzgerald et al. 1994). The Canada lynx was federally listed as threatened in 2000 (65 FR 16052). In 2014, the USFWS revised the definition of the Distinct Population Segment of Canada lynx listed as threatened to extend throughout the lower 48 states to encompass lynx wherever they are found (79 FR 35303). Detailed information about Canada lynx status, including critical habitat designation, can be found in the Federal Register published on June 20, 2014 (79 FR 35303).

Lynx habitat is generally described as climax boreal forest with a dense understory of thickets and windfalls (DeStefano 1987). In the southern Rockies, primary lynx habitat is found in the subalpine and upper montane forests between 8,000 and 12,000 feet (Interagency Lynx Biology Team [ILBT] 2013). Subalpine forest habitat is dominated by subalpine fir and Engelmann spruce, while the upper montane forest supports lodgepole pine and aspen. Lower elevation montane forests of ponderosa pine, Douglas fir, and riparian corridors provide connective habitat that may facilitate dispersal and movement between primary habitats and provide additional foraging opportunities (Lynx Biology Team 2000). Lynx habitat in Colorado is naturally fragmented by elevation, dry south and west exposures, alpine tundra, open valleys, and shrubland (McKelvey et al. 2000).

In 2008, all forest plans in the southern Rockies were amended to add objectives, standards, and guidelines to conserve Canada lynx while implementing a variety of resource management programs and activities (USFS 2008). The Southern Rockies Lynx Amendment (SRLA) includes the applicable or similar conservation measures for Canada lynx from the Canada Lynx Conservation Assessment and Strategy (LCAS) which was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands in the conterminous United States. The SRLA (through incorporation of the LCAS) indicates that project planning should evaluate the effects to lynx habitat within designated Lynx Analysis Units (LAU) that are generally greater than 25,000 acres in the Southern Rocky Mountain Geographic Area. LAUs do not represent actual lynx home ranges, but their scale approximates the size of an area used by an individual lynx. Approximately 752,435 acres of suitable lynx habitat and 24,479 of unsuitable habitat (habitat in the stand initiation stage) are currently mapped across the SJNF. The majority of primary lynx habitat is located in subalpine forests in designated wilderness areas (Lizard Head, Weminuche, and South San Juan) and other protected areas (BLM 2015; USFS 2013). The proposed project area does not include any LAUs on the SJNF.

In the GMUG NF, the proposed project area includes portions of two LAUs: Spring Creek and Traver Mesa. Habitat within these two LAUs has been classified as suitable, unsuitable, or is not mapped (Table 21). Most of the transmission line corridor was excluded from habitat type designation. Habitat within the existing ROW in the LAUs is mostly unsuitable or is not mapped. Unmapped habitat is assumed to be unsuitable given that it is in mountain grassland areas or within the existing ROW and subject to vegetation management (i.e., tree removal and debris clearing). The project area is generally below the elevation range for Canada lynx and

does not contain the boreal forest habitat typically associated with the species. The forested stands within the project area are generally low density and are not likely to support snowshoe hare populations, the primary prey species. While sagebrush communities adjacent to or integrated with coniferous or conifer/aspen stands may provide an important alternate prey resource for lynx (e.g., jackrabbits) (ILBT 2013), suitable denning habitat does not exist within the project area, and the project area is not located adjacent to suitable lynx denning or foraging habitat. Canada lynx habitat is generally unsuitable or marginal in the project area, and it is unlikely that any lynx home range would include the project area.

Table 21. Lynx Habitat Types within Existing ROW in Spring Creek and Traver Mesa LAUs (GMUG NF)*

Habitat Type	Spring Creek LAU (acres)	Traver Mesa LAU (acres)
Suitable	3.4	0.4
Unsuitable	37.8	0.0
Not Mapped	20.3	0.04
Total	61.5	0.44

*Primary Suitable and Secondary Suitable Habitat Combined.
Source: Howe 2012.

3.5.7 Visual/Aesthetic Resources

Visual resources include the natural and human modified landscape. The visual quality of the landscape is influenced by vegetation, slope, topography, rocks, water bodies, man-made structures, and landscape modifications. The existing visual quality of the proposed project area is influenced by the presence of roads, oil and gas development including pipeline corridors, well pads, and evaporation facilities, power transmission lines, agricultural land uses, and towns and communities including Montrose, Norwood, Redvale, and Cahone. Twelve KOPs with a potential view of the transmission line were identified (described in greater detail in Section 3.5.7.3).

3.5.7.1 Visual Resource Classification

The BLM, GMUG NF, and SJNF each use a different system to assess and categorize visual resources. The BLM uses the Visual Resource Management system (VRM) to objectively and systematically evaluate scenic values and appropriate levels of management. The VRM system was used for the proposed project area in the UFO and TRFO. Proposed project areas within the UFO and TRFO jurisdictions are categorized as Visual Resource Class II (Christiansen pers. comm. 2014). The objective of Class II is to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes to the landscape must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

The USFS uses two methods for managing visual resources, the Visual Management System (VMS) and the Scenery Management System (SMS). Prior to 1995, the VMS was used in National Forests to assess visual resources and provide measurable scenery management standards (USFS 1974). This system is currently used in the GMUG NF. Forest plans updated since 1995 use the SMS to assess visual resources. The SMS is used in the SJNF. According to

the SMS, all operations are required, to the extent practicable, to harmonize proposed actions and operations with scenic values through measures such as the design and location of operating facilities, including roads and other means of access, vegetative screening of operations, and construction of structures and improvements which blend with the landscape (36 CFR 228.8(d)). The SMS is applied to establish Scenic Integrity Objectives (SIOs) (USFS 1995). The SIOs for the SJNF in the project area have a "moderate" rating. As defined by the NFS, the moderate rating allows changes with a "slightly altered" appearance to remain visually subordinate to the surrounding landscape. The Visual Quality Objective (VQO) for the GMUG is "Modification". As noted previously, the GMUG uses the VMS, which utilizes VQO; the map (Figure 30) displays the equivalent Scenic Integrity Objectives (SIO). See map key for equivalences between the three visual management systems operative for this project. The SIO location shown on the map closely approximates the VMS location for this existing utility corridor as identified in the GMUG Forest Plan, as Amended 1991. The VMS is assumed to be Modification or Maximum Modification, but henceforth this analysis will refer to it under the SIO classification of "low".

3.5.7.2 Key Observation Points

Twelve representative KOPs were selected for this assessment by the BLM and USFS visual resource specialists and HLA during site visits in June and July 2014. KOP selection included concentrations of users or viewers, or representative views for travelers or drivers. KOP selection was based on the recreational uses of BLM roads, scenic overlooks, campgrounds, a trailhead, locations in the bottom of the Dolores River Canyon, and USFS roads and trails. (Appendix C - Visual Resources Report; [HLA 2015]). No KOPs were identified by the SJNF within forest boundaries, although six of the KOPs are near the forest boundary on TRFO land. Table 22 lists the selected KOPs, and Figure 30 shows the KOP locations.

Table 22. Key Observation Points in the Proposed Project Area

	Location	View	Amenities	Landowner	Special Designation*
KOP 1	South Rim of the Dolores River Canyon	Dolores River Canyon	Parking, toilet, trail, scenic overlook	BLM TRFO	SRMA
KOP 2	South Rim of Dolores River Canyon	Dolores River Canyon	Parking	BLM TRFO	SRMA
KOP 3	County Road 90 at the entrance to the GMUG NF	GMUG NF	None	GMUG NF	N/A
KOP 4	Unaweep Tabaguache Scenic and Historic Byway	Representative view of transmission line and poles visible on the GMUG NF	None	GMUG NF	N/A
KOP 5	NF Road 402 intersection with high-use ATV trails on the Uncompahgre NF	ATV trails on the GMUG NF	ATV trails, campground	GMUG NF	N/A
KOP 6	Near Dry Creek Basin Store, Colorado	SH 141 Dry Creek Basin	None	Private	N/A
KOP 7	Cottonwood Ledges Campground	Cottonwood Ledges Campground	Campground	BLM UFO	N/A

	Location	View	Amenities	Landowner	Special Designation*
KOP 8	Lower Spring Creek Trailhead	Lower Spring Creek	Trailhead	BLM UFO	N/A
KOP 9	Dolores River Canyon bottom	Dolores River	Dispersed camping site	BLM TRFO	LWC, SRMA, W&S Rivers
KOP 10	Dolores River Canyon bottom	Dolores River	Dispersed camping site	BLM TRFO	LWC, SRMA, W&S Rivers
KOP 11	Dolores River Canyon bottom	Dolores River	Dispersed camping site	BLM TRFO	LWC, SRMA, W&S Rivers
KOP 12	Dolores River Canyon bottom	Dolores River	Dispersed camping site	BLM TRFO	LWC, SRMA, W&S Rivers

*Lands with wilderness characteristics (LWC); Special Recreation Management Area (SRMA); Wild and Scenic Rivers (W&S Rivers).

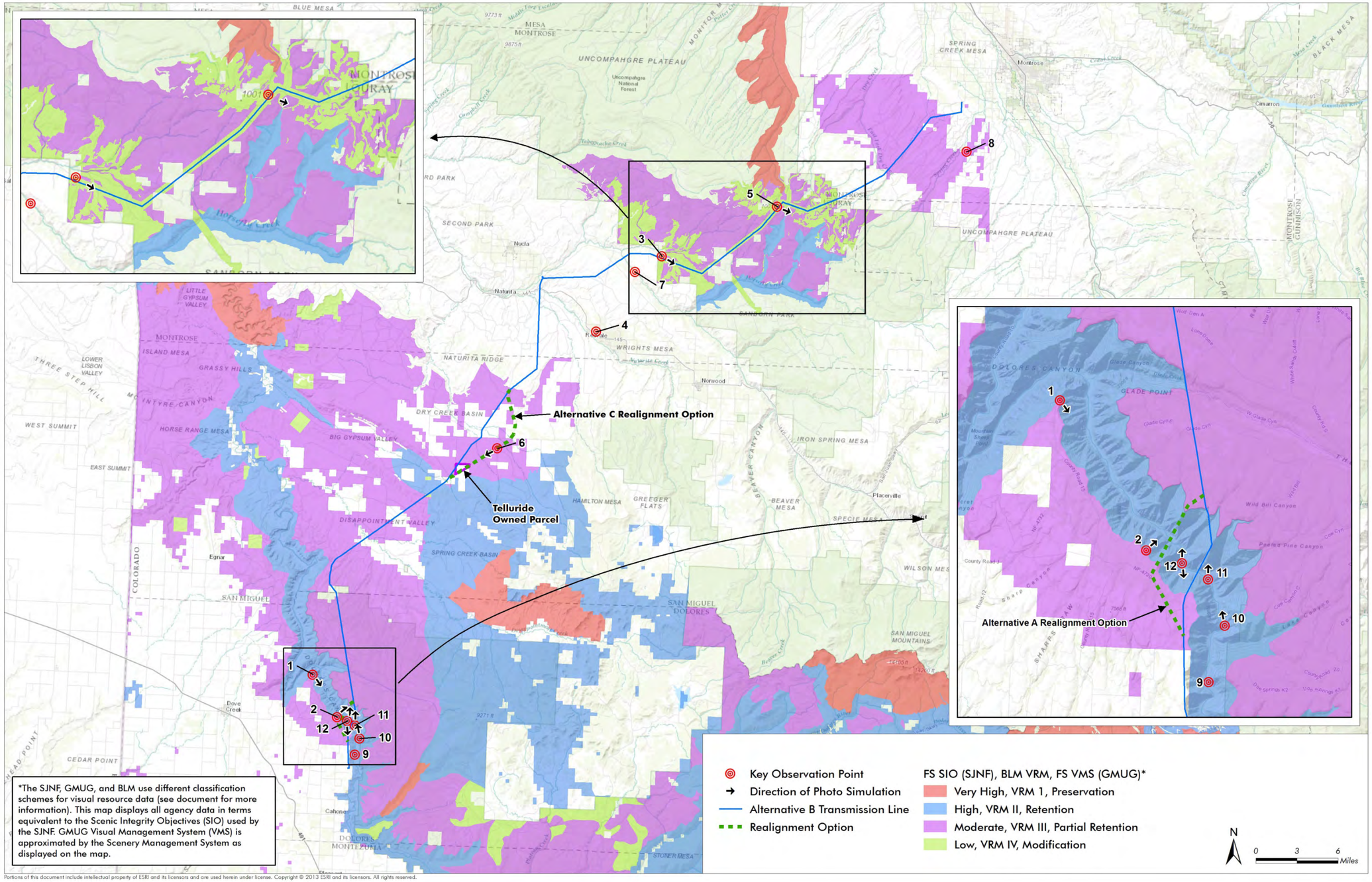


Figure 30. Key Observation Points, Location and Direction of Photo Simulations, Visual Resource Management Classification

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3.5.7.3 Character Regions

To determine if the Proposed Action met the BLM Visual Resource Class II criteria and USFS VQO and SIO standards as viewed from the twelve KOPs, landscape character regions were identified and referenced during the field observations.

A region's appearance, or landscape character, is based on the region's physical characteristics consisting of the visible physical, biological, and cultural attributes. A landscape character may range from predominantly natural landscapes to those with highly visible cultural features. The existing landscape character description includes the natural scenic attributes of the landscape with the existing land use pattern. There are four definable character regions in the proposed project area including pinyon-juniper forest, montane forest, montane valley, and arid canyon described as follows:

1) The Piñon-Juniper forest region is prevalent in the project area near the Dolores River, San Miguel River, and Spring Creek canyons and in multiple locations between basins and valleys. Long distance views are unobstructed or partially obscured when the viewer is in close proximity to the low-growing trees and large rocks or rock outcrops. The mostly-unobstructed views are of large areas of rock outcrops, native piñon and juniper trees 10 to 15 feet tall, boulder fields and vertical rock cliffs in canyons, and areas of bare soil sparsely populated with low-growing native shrubs, grasses, and forbs. In some locations, other than the canyons, small amounts of man-made forms in some views include fences, roads, rural residences or agricultural structures, and a few utilities. Although the power line is typically visible due to the absence of tall obstructions, most views from highways and roads include fences, rural residential and agricultural buildings, and other overhead utility lines. The ROW clearing corridor is visible from some locations, but does not create strong contrasts with the surrounding landscape because the ground colors and textures in the clearing corridor typically match the adjacent undisturbed ground surfaces.

2) The Montane Forest region is throughout the entire project area, although not continuously. It is mostly in the GMUG NF along the Divide Road, NF Road 402, in the SJNF along most of the north rim of the Dolores River Canyon, and in the BLM TRFO jurisdiction along most of the south rim of the Dolores River Canyon. Views are typically relatively short distance due to the high density of deciduous and evergreen trees. Some long distance but narrow views are present along roads, trails, and the existing power line clearing corridor. However, the existing clearing corridor is not visible from most recreation facilities, such as the Iron Springs Campground, where the edge of the clearing corridor is not noticeable only 0.5 mile from the nearest campsite. Montane Forest views include relatively small portions of sky, and are therefore heavily shaded and mostly monochromatic, except for some rock outcrops, creeks, and low-growing herbaceous plants, such as native wildflowers. The power line typically has very low visibility due to the screening effects of forest trees and mountainous topography. However, the clearing corridor is highly visible from some locations, and frequently for long distances. The clearing corridor through the forest produces strong contrasts of color, texture, line, and form with the surrounding trees when visible.

3) The Montane Valley region is in the southern portion of the project area along the Unaweep Tabaguache Scenic and Historic Byway, and in the central portion of the project area including Disappointment Valley, Big Gypsum Valley, and Dry Creek Basin. The region is visually characterized by mostly unobstructed views of the sky, distant mountain ranges, and sparsely-vegetated open areas of sages, grasses, wildflowers, rock outcrops, and bare soil. Views are mostly unobstructed in all directions, with any man-made forms extending above the horizon highly visible. Some views include agricultural land development, very low-density residential areas with highly visible man-made forms of fences, paved and unpaved roads, overhead utilities, and small communities including Redvale, Coventry, and Norwood. This region is exemplified by the Dry Creek Basin and includes a large amount of visual variety with Piñon-Juniper forests in the southeast portion, Sage shrublands in most of the valley floors, and Ponderosa Pine forests visible in the distance, with unobstructed views of mountains beyond the valley in all directions. The existing power line is highly visible near the town of Montrose and in the southwest corner of the Dry Creek Basin within the Montane Valley region. The existing clearing corridor on the GMUG NF is visible to the northeast from CR 90 and the Unaweep Tabaguache Scenic Byway near Redvale. Other existing power line locations with high visibility are isolated and relatively short in length. These isolated locations are visible from nearby trails and rural roads.

4) The Mixed Forest Canyon region is the Dolores River Canyon in the southern portion of the project area, and the Spring Creek Canyon in the northern portion. Both canyons have extensive visual variety in large rock outcrops, diverse landforms, rivers, arroyos, forests, and meadows. Many colors are present in both canyons, and change seasonally due to the presence of deciduous trees and a large variety of herbaceous plants. Views from the canyon rims are long distance and include surrounding forests, plains, and mountain ranges. Most views within the canyons are short distance and contain a large variety of plant species, rocks, landforms, and water. The power line and clearing corridor typically have weak contrasts with the surrounding landscape due to the large variety of color, texture, line, and form in the existing landscape. However, the power line structures are highly visible if viewed against a background of sky because of the strong color and line contrasts with the sky and strong form contrasts with the horizon line.

3.5.8 Lands with Wilderness Characteristics

The existing conductor spans the Snaggletooth Unit of lands with wilderness characteristics boundary (USFS 2013 and BLM 2015), specifically where the existing line crosses the Dolores River canyon. The Snaggletooth Unit of lands with wilderness characteristics takes into account the existing transmission line corridor, and specifically excludes all ground disturbance associated with the existing transmission line, including tower structures and pads and access roads.

BLM-managed lands with wilderness characteristics provide opportunities for a range of uses and benefits as part of the BLM's multiple use mission. Per BLM Manual 6310, in order for lands to qualify as lands with wilderness characteristics, the area must possess sufficient size, naturalness, and outstanding opportunities for either solitude or primitive and unconfined

recreation (BLM 2012). In addition, it may also possess supplemental values. Therefore, some of the lands inventoried for wilderness characteristics are not managed for wilderness characteristics; the decision regarding management was made in the RMP (BLM 2015).

The TRFO RMP directs that lands managed to protect wilderness characteristics are not available for location of new ROWs, and that the modification of existing authorizations that would add new disturbance outside the boundary of the existing ROW is prohibited. However, adjustments to existing ROWs or other authorizations may be allowed *if effects to wilderness characteristics are reduced or eliminated* (emphasis added) (RMP, Section 3.2; BLM 2015).

3.5.9 Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) are areas where special management attention is needed to protect, and prevent irreparable damage to important historical, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards (BLM 1988, BLM 2005, BLM 2011). One designated ACEC (Gypsum Valley) is in the project area, and TRFO is evaluating eighteen nominated ACECs, including four that intersect with the project area (Figure 31). The TRFO is considering amending the RMP (BLM 2015), and has begun the scoping process to determine if any or all of the 18 nominated areas should be designated, and if so, what management prescriptions are necessary to protect the relevant and important values of each area. The BLM would not approve projects that would impair relevant and important values until such time that a determination can be made. The four nominated ACECs in the project area are described below.

3.5.9.1 Dry Creek Basin Nominated ACEC

The 34,785-acre nominated ACEC meets the relevance criteria because it contains the GuSG and populations of a rare plant, the Gypsum Valley cat-eye. The importance of the GuSG and the Gypsum Valley cat-eye in this area is due to the listing on the BLM State Director's sensitive species list; in addition, both are considered high-priority species in the San Juan Biodiversity Model, which gives them "special worth, meaning, distinctiveness and cause for concern, and which recognizes them as warranting protection in order to carry out the mandates of the FLPMA" (BLM 2015, Appendix U). The GuSG was listed as threatened in 2014 (see additional information in Section 3.5.6.1). The project area crosses the eastern edge of the Dry Creek Basin nominated ACEC, near the existing transmission line and SH 141 (Figure 31). Section 3.4.6 contains a detailed discussion regarding the current status of the GuSG in the Dry Creek Basin. In 2014 and 2015, surveys for rare plant populations and potential habitat were conducted within portions of the nominated ACEC adjoining the project area. Surveys were conducted in suitable habitat consisting of sparsely vegetated areas of either open pinyon-juniper woodlands or salt desert scrublands. During the surveys in the Dry Creek Basin ACEC, no existing populations or potential habitat for the Gypsum Valley cat-eye were discovered. A previously documented population of Gypsum Valley cat-eye is located approximately ¼ mile west of the existing alignment (CNHP 2014). This population of 497 individual plants (outside of the project area) was mapped along SH 141 just outside the boundaries of the nominated Dry Creek Basin ACEC on land owned by CPW, and managed as a SWA. See Section 3.4.7 for more detailed information about sensitive plant species in the project area.

Protections including LRMP direction and BLM and FWS listings (for the GuSG) protect the relevant and important values of the nominated ACEC.

3.5.9.2 Gypsum Valley Designated/Nominated ACEC

The current Gypsum Valley Designated ACEC (13,135 acres) does not intersect with the existing transmission line, as the boundaries for designation were deliberately drawn to exclude the existing transmission line. About 7.4 acres of the designated ACEC overlaps with the current 115-kV ROW. The 19,867-acre nominated Gypsum Valley Nominated ACEC has a larger geographic extent, and intersects with the existing transmission line corridor south of the Dry Creek Basin (Figure 31). This ACEC meets relevance criteria because it contains rare terrestrial plant species including the Gypsum Valley cat-eye, Naturita milkvetch, *Lecanora gypsicola* (which is a lichen flora), nodule cracked lichen, flex-stemmed mariposa lily, Nealley's dropseed, and short-stem penstemon. The nominated ACEC also meets the relevance criteria because it contains unique gypsum outcrops, considered a rare geological feature. These rare plants, along with the gypsum outcrops, also meet the importance criteria because they have qualities or circumstances that make them sensitive, rare, unique, and vulnerable to adverse change, and therefore they have "more than locally significant qualities" (BLM 2015, Appendix U). All of the rare plants that contribute to this area's relevance and importance are at high risk of global extinction or state extirpation because they have such few occurrences (BLM 2015, Appendix U). In addition, Gypsum Valley cat-eye and Naturita milkvetch are on the BLM State Director's sensitive species lists, and Gypsum Valley cat-eye, (*Lecanora gypsicola*), nodule cracked lichen, Naturita milkvetch, short-stem penstemon, and flex-stemmed mariposa lily are high-priority species because of their rarity.

The project area intersects a small portion of the nominated ACEC at the far eastern edge. The project area was surveyed in 2014 and 2015 for Gypsum Valley cat-eye and Naturita milkvetch; no known or suitable habitat for the other rare plant species listed previously is in the project area. No Naturita milkvetch populations were found, but a population of Gypsum Valley cat-eye was observed within the boundaries for the Gypsum Valley Nominated ACEC. Gypsum outcrops may exist in the project area but are expected to not be present within close proximity to the existing alignment structures or proposed new structures, or existing roads.

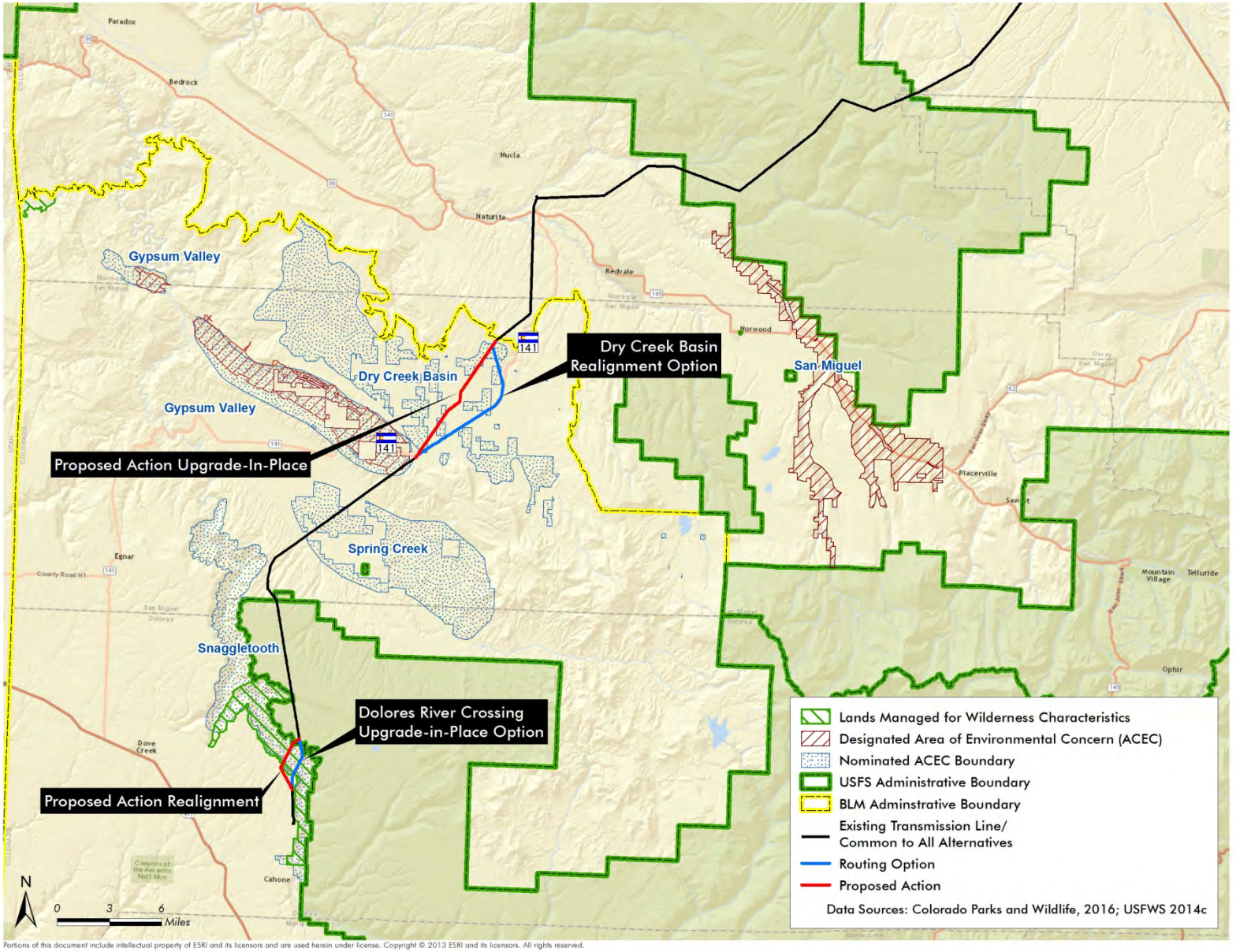

Figure 31. Designated and Nominated Areas of Critical Environmental Concern

3.5.9.3 Spring Creek Nominated ACEC

The Spring Creek Nominated ACEC overlaps with the project at the western edge of the ACEC. Of the total acreage in the nominated ACEC (about 25,286 acres), about 39 acres intersect with the project area. The site's relevance is due to Gypsum Valley cat-eye, as well as (*Artemisia pygmaea*) and flex-stemmed mariposa lily with importance as described for the Gypsum Valley Nominated ACEC (BLM 2015, Appendix U). A Gypsum Valley cat-eye population of about 418 plants was documented in the nominated ACEC where it overlaps the project area during surveys in 2014 and 2015.

3.5.9.4 Snaggletooth Nominated ACEC

The Snaggletooth Nominated ACEC is near the south end of the project area, in the Dolores River Canyon. The relevance of the nominated ACEC is due to the scenic values of the Dolores River Canyon, and rare wildlife species (the Peregrine falcon and habitat, as well as three species of fish including the roundtail chub (*Gila robusta*), the flannelmouth sucker (*Catostomus latipinnis*), and the bluehead sucker (*Catostomus discobolus*)). All three species of fish and the Peregrine falcon are listed on the BLM State Director's sensitive species lists and are also designated as high-priority species in the San Juan Biodiversity Model, and therefore meet the ACEC criteria for importance.

Although fish could be present in the river below, the existing conductor spans the river far above and does not affect the fish or the waters of the Dolores River. During surveys for migratory birds, three Peregrine falcon nests were located in the greater Dolores River Canyon area, at a distance of more than 0.5 mile from the proposed project area (see Section 3.4.3). The importance of the scenic values in the nominated ACEC are due to the diverse and extreme topography of the Dolores River Canyon, with colorful sedimentary geology, substantial depth and large size (BLM 2015, Appendix U). The existing transmission line is within the nominated ACEC, and is an expected feature when in view. See Section 3.5.7 for a detailed discussion of the existing view from five KOPs within or around the canyon area. Of the total acres in the nominated Snaggletooth ACEC (23,826 acres), about 30 acres overlap with the project area.

3.5.10 Socioeconomics

Colorado counties in the proposed project area include Dolores, Montrose, Ouray, and San Miguel. Population centers within about 10 miles of the transmission line include incorporated municipalities (Montrose, Nucla, Naturita, and Dove Creek) and Cahone (unincorporated community). The proposed project area is largely rural and agricultural with few residences. Most of the transmission line corridor (about 72 percent, or 57.4 out of 80 miles) crosses public lands in unincorporated areas, with limited populations. Primary industries and employers in the project area include dryland and irrigated agriculture, mining, and recreation/tourism. Unemployment rates vary from about 4.6 percent to 9.8 percent. Income (per capita personal and household) were lower than state average in Dolores and Montrose counties and higher in San Miguel County (Colorado Department of Labor and Employment Labor Market Information Gateway 2014). For Ouray County, per capita personal income is slightly lower than the state average, while median household income is higher (U.S. Census Bureau 2013a and b; U.S. Bureau of Economic Analysis 2013). Vacant housing for all project area counties except Montrose, Colorado are much higher (about three times the state average), while Montrose County is slightly lower.

An Environmental Justice evaluation was conducted as required by EO12898 and in accordance with Council on Environmental Quality (CEQ) guidance. The evaluation considered both county- and census block- level population data sets. The following criteria was used to determine whether the low-income populations or minority populations residing in the project area constitute an "environmental justice population": at least one-half of the population in the project area is of low-income or minority status, or the percentage of population that is of minority or low-income status in the project area is at least 10 percentage points higher than a comparable geographic area. None of the populations of individual minority race categories, two or more races, Hispanic of Latino origin, total minority, or poverty status in project area counties meet the criteria to be identified as environmental justice populations when compared to the State of Colorado (U.S. Census Bureau 2013a and b). Additionally, none of the populations of individual minority race categories, two or more races, Hispanic or Latino origin, total minority, or poverty status in the pertinent block groups meet the criteria to be identified as environmental justice populations when compared to the block group's associated county (e.g., block group 1, census tract 1, Dolores County compared to the overall population of Dolores County).

4 ENVIRONMENTAL EFFECTS

The resource effects described in this section are based on the alternatives described in Chapter 2 in accordance with 40 CFR 1502.16. The effects analysis considered the benefits associated with the project design criteria and EPMs incorporated into the Action Alternatives to reduce and avoid adverse effects. An environmental effect is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project-related activities. Effects may be beneficial or adverse, may be a primary result (direct) or secondary result (indirect) of an action, may be localized or regional, and may be permanent and long-term or temporary and short-term. CEQ regulations (40 CFR 1500-1508) define the effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process. This includes direct, indirect, and cumulative effects:

- Direct effects are caused by the action and occur at the same time and place (40 CFR 1508.8).
- Indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on natural systems (40 CFR 1508.8).
- Cumulative effects are the incremental effects to the environment from the Proposed Action added to effects associated with other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). In order for a cumulative effect to occur, the effects of one project overlap in space and time with the effects of another project (see Chapter 5).

Effects may vary in degree from a slight discernible change to a considerable change in the environment. If a change would be indiscernible or immeasurable, it is described in this section as no effect. For this EA, the magnitudes of environmental and social effects were defined as high, moderate, low, negligible, and no effect (please note that these terms of magnitude do not relate to visual contrast rating determinations or other resource-specific determination language). Beneficial effects are indicated as such; if not specified, effects are adverse.

- High level effects are obvious and readily detected and measured.
- Moderate effects are easily detected or measured.
- Low effects are measurable but limited in magnitude.
- Negligible effects are barely discernible and not easily measured.
- A “No effect” magnitude is not measurable or discernible.

Regulatory standards, literature research, and best professional judgment guided the effects determinations.

The duration of an effect was also considered for each resource. Short-term effects occur during and immediately after project-related activities. Duration of effects are either short-term or temporary (less than 3 years) or long-term (greater than 3 years). The impact analysis area for most resources analyzed in detail is the boundary of the proposed ROW. For GuSG, the impact analysis area is about 4 miles. Visual effects were considered non-detectable beyond 5 miles.

4.1 Introduction

The level of detail in the analysis of effects is related to the anticipated magnitude of the effect and the identification of issues during agency and public scoping. Those issues that were identified during scoping and retained during the general internal analysis process are: access, roads and transportation; cultural resources; forest and timber resources; geology; soils; threatened, endangered or candidate animal species; visual resources, lands with wilderness characteristics, and socioeconomics. Consideration of effects to nominated ACECs has been added based on comments received on the Preliminary EA. Other resources have a less rigorous level of analysis, and effects are summarized in Chapter 3. In many cases, EPMs have been incorporated into the Action Alternatives that serve to avoid or minimize the effects. In those cases, the reader may be referred back to Chapter 2 and Tables 8 and 9.

4.1.1 General Analysis Assumptions and Guidelines

Analytical methods are described briefly per NEPA requirements (40 CFR 1502.24). Because the proposal is to improve an existing transmission line, quantification of effects are mostly expressed based on the acreage of the resource effects within the ROW, clearing, or direct disturbance (i.e., grading) limits. For cultural resources, effects are based on the number of historic properties potentially affected. Visual resource effects are based on potential effects to visual quality's contrast and views from KOPs. The following general assumptions were used to evaluate resource effects from the Proposed Action and alternatives:

- Access – new roads for realignment areas have been identified and evaluated at widths described in Chapter 2 (specifically, 30-foot total width was evaluated except at the north rim of the Dolores River Canyon upgrade-in-place, where 75-foot total width was evaluated).
- Reclamation – in realignment areas, existing roads no longer required for transmission line access, as well as existing structure footprints, would be reclaimed as described in Section 2.
- Clearing – Forested Areas–in pre-cleared areas (existing ROW), assumed 25 feet of clearing effects on either side of existing 100-foot ROW corridor. In fully forested areas (new ROW) assumed full 150-foot clearing corridor (75 feet either side of new centerline). For canyon spans: no effects calculated beneath line.
- Grading – Direct ground disturbance calculated for pole/structure locations and new access roads. For canyon span: no grading effects calculated. Pole Structures: assumed 6,500 square feet of disturbance and used existing pole locations where design is not yet completed for new/reroute locations. (Note that this results in a slight overestimate of effects, because wood H frames would only have a 4,800 square foot disturbance footprint, and fewer new structures would be needed.) Exception: Dolores River Crossing structures and dead-end structure footprints assumed 30,000 square feet of disturbance. Where the pole footprint overlaps the road footprints, effects would be

calculated as "pole" effects and double-counting would not occur.

The analysis in this EA tiers to the analysis completed in the 2006 EA for the access right-of-way and transmission line maintenance (BLM 2006). The effects from maintenance and improvements of existing access roads were disclosed in a FONSI (BLM 2007b) and ROW Grant (BLM 2007a). The current EA incorporates, by reference, the 2006 EA and includes summary analysis of the resource impacts from the 2006 EA. Assumptions for analyzing and disclosing those previously-authorized impacts are as follows:

- Existing road impact width ranges from about 8 feet to about 30 feet, depending on the location. For purposes of analysis, the existing impact evaluation was based on an average of a 16-foot wide road.
- Future average construction footprint of the authorized access road improvements (throughout the entire project) would be 30 feet. This is the dimension authorized under the DR associated with the 2006 EA (BLM 2006), and represents the maximum impact Tri-State could currently implement.
- Revegetation activities following construction would return the existing authorized access road disturbance footprint to the existing footprint of about 16 feet. This is the average width that Tri-State needs to accommodate bucket trucks and other vehicles needed to access the ROW for maintenance activities (including replacement of existing structures under the No Action Alternative), maintenance activities following construction (after line improvement to 230-kV), and wreck-out of the existing line under any Action Alternative. For purposes of analysis, impacts to all vegetation resources except Forest and Timber Resources are assumed to be short-term. For Forest and Timber Resources, the construction footprint for authorized access road improvements is assumed to be long-term, due to the time required for forest regeneration.

4.1.2 Gunnison Sage-grouse Specific Effects Analysis Assumptions

A site-specific roads analysis was developed for the Dry Creek Basin due to the sensitive resources in this area. Evaluation of the existing on-the-ground disturbance conditions was completed using aerial photos and ground photos, as described in Section 3.5.6.1.5. Necessary road improvements were reviewed in the field and temporary and permanent impact disturbance widths were identified. A maximum anticipated disturbance/clearing width of 16 feet was assigned. All calculations are anticipated to be an overestimate of actual temporary and permanent disturbance, because Tri-State plans to avoid surface grading wherever possible, and to re-seed all access roads in the Dry Creek Basin under all Action Alternatives to restore vegetation cover in access roads. The methods used to evaluate transmission line access road disturbance are described in more detail in the project record. Non-road related analysis of surface impacts for the Dry Creek Basin was completed using the same methods described in the sections above.

4.1.3 Organization of the Effects Analysis

Analysis of effects for this section is arranged by alternative. The Action Alternatives (Alternative A - Proposed Action and Alternatives C, with different combinations of the routing options) as well as the No Action-Alternative B and associated effects are in the sections that follow with specific resource effects presented for each alternative. Effects that are common to

all Action Alternatives (i.e., are along the transmission line corridor, in substation footprints, or staging areas that all routes would follow) are described in the Alternative A analysis. Those effects include disturbance and clearing in all areas except those associated with realignment and routing options.

4.2 Summary of Effects

The summary of effects for resources analyzed at the Dolores River crossing and Dry Creek Basin is shown in Table 23. See Appendix E for more information including a complete summary and basis for determination.

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Table 23. Summary of Effects for Routing Options in the Dry Creek Basin and Dolores River Crossing

	Access, Roads, and Transportation	Forest and Timber Suitable Timber	Geology*	Lands with Wilderness Characteristics & Nominated ACECs	Soils	Gunnison Sage-Grouse Occupied Habitat	Socioeconomics	Visual
Dolores River Crossing Routing Options								
Dolores River Crossing realignment only (Alternative A)	1.4 miles new permanent access road; 0.5 mile of new temporary access road; 3.6 miles reclaimed access road	37.3 acres clearing in suitable timber	14.3 acres of effect to high landslide hazard areas. Flat slopes (<10%) for construction and maintenance.	Move structure away from canyon and reduce ROW width in Dolores River Canyon. Decrease in time visible to river user. Nominated ACECs: No impairment to R&I values for Snaggletooth nominated ACEC.	Total 14.3 acres of new surface disturbance	Not applicable	Short-term and low effects Additional approximately $90,681,900 in construction-related spending Potential increase in short-term housing demand and secondary effects from spending on local goods and services.	Moderate, long-term effects due to taller structures. Low/moderate: KOP 1, view of north rim Moderate/high: KOP 2, view of north rim Low/negligible: KOP 10, 11, 12 Effects offset by removal of powerline from existing position; also, powerline is an expected component of the landscape and used as a frame of reference for river users. Consistent with VRM class II and III.
Dolores River Crossing upgrade-in-place only (Alternative C)	0.5 mile new access road; 1.3 miles reclaimed access road	4.1 acres clearing in suitable timber	10.3 acres of effect to high landslide hazard areas. Extreme slopes (>30%) for construction and maintenance.	Move structure away from canyon and reduce ROW width in Dolores River Canyon. Increase in time visible to river user. Nominated ACECs: No impairment to R&I values for Snaggletooth nominated ACEC.	Total 8.0 acres of new surface disturbance	Not applicable	Short-term and low effects Potential increase in short-term housing demand and secondary effects from spending on local goods and services.	Moderate, long-term effects due to taller structures and new access road. Low/negligible: KOP 1, low due to distance; KOP 12, difference in direction of view. Moderate: KOP 2: view to east over the long-term due to new structures/road. Low beneficial: KOP 10 and 11, visual screening. Powerline is an expected component of the landscape and used as a frame of reference for river users. Consistent with VRM class II and III.
Dry Creek Basin Routing Options								
Dry Creek Basin upgrade-in-place only (Alternative A)	0.2 mile new access road; 0.3 mile reclaimed access road	Lands generally not suitable for timber production	5 acres of effect to high landslide areas	Lands with wilderness characteristics not applicable. Nominated ACECs: No impairment to R&I values for Dry Creek Basin nominated ACEC.	Total 10.3 acres of new surface disturbance	Long-term beneficial effect to GuSG. New long-term disturbance of 9.5 acres to occupied habitat, including 6.6 acres of critical habitat. 22 fewer structures relative to baseline, and addition of perch discouragers would reduce the presence of avian predators, providing a net benefit to GuSG. No change in HE. Tri-State funding for preserving 500 acres with a lek, and habitat improvement projects. Many existing roads would be used in their current state. Flight diverters would reduce collision risk; possible new effects of increased pole height.	Short-term and low effects Additional approximately $90,681,900 in construction-related spending Potential increase in short-term housing demand and secondary effects from spending on local goods and services.	Low/negligible long-term effects due to taller structures. Negligible effects to KOP 6 due to distance. Consistent with VRM class III.
Dry Creek Basin realignment only (Alternative C) **(calculations are for "north/south" side of SH 141)**	7.3/8.5 miles new access road; 7.8/7.8 miles reclaimed access road	Lands generally not suitable for timber production	8.6/9.1 acres of effect to high landslide areas	Lands with wilderness characteristics not applicable. Nominated ACECs: No impairment to R&I values	Total 4.4/12.5 acres of new surface disturbance	Long-term beneficial effect to GuSG. New long-term disturbance of 11.5/11.7 acres to occupied habitat, including 10.0/10.4 acres of critical habitat. Reclaimed	Short-term and low effects Potential increase in short-term housing demand and secondary	High long-term effects at KOP 6 to residents and to SH 141 travelers due to relocated transmission line. Beneficial effect to U29 Rd travelers in middle of basin. Consistent with VRM class III.

	Access, Roads, and Transportation	Forest and Timber Suitable Timber	Geology*	Lands with Wilderness Characteristics & Nominated ACECs	Soils	Gunnison Sage-Grouse Occupied Habitat	Socioeconomics	Visual
				for Dry Creek Basin nominated ACEC.		existing roadways total 4.2 acres in occupied habitat. 15/18 fewer structures relative to baseline and addition of perch discouragers would reduce the presence of avian predators, providing a net benefit to GuSG. Long-term reduced HE on 607/645 acres. With removal of existing line, net improvement of HE on 2,983/3,011 acres of occupied habitat, including 1,905/1,932 acres of critical habitat. Collocating the transmission line disturbance corridor with the existing highway corridor would reduce overall habitat fragmentation for the life of the line. Flight diverters would reduce collision risk; possible new effects of increased pole height.	effects from spending on local goods and services.	

NOTE: See Appendix E for additional detail on effects to cultural resources. *Note that landslide hazard data is at very broad scale; therefore, slope information is also provided. No residual effects requiring mitigation have been identified.

4.3 Alternative A: Proposed Action (Preferred Alternative)

4.3.1 Access, Roads, and Transportation

4.3.1.1 Effects Common to All Action Alternatives

Overall effects to access, roads, and transportation are expected to be negligible to low from the short-term use of existing public access roads and several new roads during construction and maintenance. Removal of the existing 115-kV transmission line/structures and construction of the new 230-kV transmission line would use existing roads as much as possible to minimize construction of new access roads. New pole structures would be located at the same location as existing structures to the extent possible. In some areas, the wider span between poles on the new 230-kV line would require construction of new spur roads to access new pole locations, except where downline roads are used. Roads no longer needed to access transmission line structures would be decommissioned, reclaimed, and revegetated if there is no government agency benefit to keeping them open.

Road improvements on federal land would follow applicable USFS and BLM road standards for the specific road classification within the existing 30-foot ROW. The Dry Creek Travel Management Plan would be followed (BLM 2009b). Transport of long poles may require widening of road curves or other improvements that exceed the existing ROW. Where widening is not feasible, helicopters may be used to transport poles. It is anticipated that much of the existing road system requires minimal improvements to accommodate construction of the new transmission line. However, brush and tree removal and minor to extensive grading would be required on some of the existing roads prior to construction of the new transmission line.

Effects to existing access roads from transport of equipment and materials required for construction are expected to be negligible and short-term, because anticipated use would be limited, of short duration and damaged roads would be restored (see Table 9). Existing transmission line access roads would be improved as necessary for construction and maintenance vehicles under the permitted 2007 ROW grant. The effects of road improvements and maintenance activities within the existing ROW were disclosed in the 2006 Transmission Line Maintenance EA (BLM 2006) and are not addressed further in this document. New roads and actions outside of the existing road and transmission line ROW are addressed by this EA.

New roads constructed to access new pole locations would typically consist of short spurs off of existing roads and in most cases would be closed to public access. Stringing and pulling electrical conduit between structures would require off-road vehicle travel with temporary effects. Ground disturbances from off-road activities would be restored and revegetated as needed. Roads no longer needed would be reclaimed and revegetated per BLM/USFS decommission requirements. EPMs (AR-1 through AR-7), as summarized in Table 9, would be implemented to minimize environmental effects associated with road work.

No new roads are needed for expansion of the Montrose substation. The Cahone substation expansion would require approximately 0.01 mile of new road. Construction of the Maverick substation likely would use an existing short driveway off SH 141 for access.

Helicopters would be used to deliver poles or install transmission line structures where access by road is not feasible and to expedite construction. Helicopters would deliver workers and/or

materials from staging areas to the construction site. The number of transmission line structures that need to be delivered or installed by helicopter would be determined during final design. Helicopter access would also be needed periodically over the life of the proposed project for transmission line inspection (similar to current operations).

New roads required for construction access and long-term maintenance of transmission line facilities would be special use routes closed to the general public. Designated motor vehicle use by vehicle class and time of year restrictions on BLM roads and NFSRs would not change. Existing public access for recreation activities would be maintained and would not change from existing conditions. Roads that are no longer needed for access to transmission line structures and that would be decommissioned would not affect existing public access on state and federal lands. Access to private in-holdings within federal lands would not be affected. Planned new administrative roads and decommissioning of existing administrative roads would be consistent with existing USFS and BLM Travel Management Plans and LRMPs (Boggy-Glade Travel Management Plan [USFS 2011]; Uncompahgre Travel Plan [USFS 2000]; UFO Resources Management Plan Amendment/EA [BLM 2009a]; and the TRFO LRMP [USFS and BLM 2013; USFS 2013; BLM 2015]). There would be no effect to any Roadless Areas or Scenic Byways.

Construction activities would result in a short-term increase in traffic for delivery of equipment, materials, and workers. Total construction duration including substation upgrades would be between 2 and 3 years, with about 12 months for each section (see schedule summary in Proposed Action description, Table 7. Because the majority of the proposed project area is located in rural areas with low traffic volumes, effects to public traffic are expected to be negligible. Detours or traffic delays may be necessary in some locations to facilitate construction activities. Road improvements and ROW tree clearing for the Nucla to Cahone section transmission line in 2017 would increase traffic slightly on SH 141, CR 19Q, and NFSR 504 for about 8 weeks. Expansion of the Montrose 345-kV yard in 2016 would also increase traffic slightly on SH 62, SH 550, and SH 491 for about 12 weeks. Construction activities in 2017-2018 would increase traffic primarily along CR 90 and NFSR 504 for about 12 months. In 2018-2019, with work on the Nucla to Cahone section of transmission line, increased traffic would occur from January to December on a variety of state, county, NFSR, and BLM roads. Primary travel would occur on SH 141, CR 19Q, CR 29W, CR 15, CR 16, CR M, CR J, and NFSR 504. Worker travel from Ridgeway, Montrose, Cortez, and Norwood to the project area would slightly increase traffic along SH 62, SH 550, SH 491, and SH 145. Expansion of the Montrose substation would require access from SH 50 and CR 90 over about 6 months, but only a small workforce would be involved. Tri-State would be responsible for applicable permitting and traffic control for work on public roads. There would be no long-term change in traffic volumes or access on public roads following construction.

Future maintenance of the road system supporting the 230-kV line would be similar to ongoing maintenance on the 115-kV line. Routine inspection would require access by pick-up trucks and ATVs. The road prism for access routes would be maintained to allow for travel by a bucket truck or other maintenance vehicle. Access routes would be graded periodically as necessary in accordance with BLM and USFS maintenance requirements. Construction and operation of the new 230-kV line access roads would comply with all seasonal restrictions and EPMs required for routine construction and maintenance activities.

4.3.1.2 Effects unique to Proposed Action (Preferred Alternative)

The existing downline access road through the Dry Creek Basin would require minor improvements for construction access with effects as disclosed in the 2006 EA (BLM 2006). A new Dolores River Canyon transmission line crossing would require construction of about 1.4 miles of new access roads on SJNF and TRFO land on both the north and south rims. These special use routes would be closed to public access. A total of about 4.5 miles of existing transmission line access roads would be decommissioned and reclaimed. Transportation effects in the Dolores River crossing area and the Dry Creek Basin are expected to be negligible and short-term. For Alternative A, a total of 2.6 miles of new access road and 5.2 miles of reclaimed access road are anticipated.

4.3.2 Cultural Resources

The cultural resource assessment considers the effects of the proposed undertaking on historic properties within the APE. During the project consultation process, the "historic properties" require an assessment of proposed project effects by the federal agencies with review and concurrence provided by the SHPO. The technical reports for the project are the vehicles for evaluating cultural resources for NRHP significance and assessing overall project effects to historic properties; the Memorandum of Agreement (MOA) is the legal document for resolving adverse effects to historic properties prior to project construction. During the assessment of effects, agencies must consider whether "an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" (36 CFR 800.5 {a}{1}).

Adverse effects to historic properties may occur directly from the construction of new pole structures, construction of new or improvement of existing access roads, construction of a new substation, and brush clearing to accommodate the enlarged ROW for safe operation and maintenance activities. Direct effects could also occur to historic properties from on-going road maintenance activities. These effects may occur during the construction of new access roads and new transmission line and associated ground disturbances and activities. Indirect effects to historic properties could occur from increased human presence and activity in the vicinity of unknown historic properties in the project area.

Effects to historic properties that were disclosed under the 2006 EA and plan of development were limited to proposed access road maintenance and included 31 historic properties. As noted in Section 3.5.2, cultural resources inventories would be complete prior to construction activities for all Action Alternatives.

4.3.2.1 Effects common to All Action Alternatives

Adverse effects common to all action alternatives include 50 historic properties, which are predominantly prehistoric archeological sites. Five multicomponent sites also would be affected. Direct effects include ongoing access road maintenance analyzed under the 2006 EA (n=29), vegetation clearing to accommodate the larger ROW (n=43), new pole structures (n=32), and reclamation of an existing access road (n=1). (Please note that some sites may be affected by several different activities, and therefore summing the affected sites does not total 50 as expected.) Thirty-eight (38) non-eligible sites would be destroyed during construction activities.

Based on the Visual Resource study (HLA 2015), which identified areas where rerouting and additional tower height would change the visibility of the transmission line, an assessment of potential visual effects to historic properties was undertaken. This study identified all historic properties within 1 mile of any Action Alternative that was within the visual impact area. Changes to the visual setting of historic properties can constitute an adverse effect if the cultural resource is eligible for the NRHP under Criteria A, B, or C, where integrity of setting or association is an important aspect of site significance. One historic roadway that is eligible under Criteria C (Old Montrose to Paradox Road) was identified within the area of potential visual impact to historic properties. The affected segment of the Old Montrose to Paradox Road (5MN2991.2) has been determined non-supporting and does not require further assessment of visual effect. No Traditional Cultural Properties which may also be impacted by changes in visual setting are known to exist within 3 miles of the Proposed Action.

All adverse effects, for all Action Alternatives, would be avoided, minimized, or mitigated through EPMs CR-1 to CR-8 (see Table 9), which includes treatment implemented through an MOA. For all Action Alternatives, effects to historic properties would be low to high, localized, adverse, and long-term after treatment. Specific effects would vary dependingon the historic property; some effects would be low due to avoidance, and some effects would be high due to impacts from data recovery efforts. Mitigation of potential adverse effects to historic properties would be provided for under an MOA and its appended Treatment Plan(s), and may include data recovery in the form of scientific excavation of archaeological properties and construction monitoring. Historic properties discovered during construction monitoring would be subject to an effects determination and may require data recovery following consultation between the land managing agency and the SHPO.

4.3.2.2 Effects unique to Proposed Action (Preferred Alternative)

Because portions of Alternative A remain to be surveyed for cultural resources, potential unknown historic properties must be extrapolated from existing data. The reroute of the transmission line at the Dolores Canyon crossing includes about 3.4 miles (13.3 ac) of transmission line (which includes the 1.2 miles of span across the Dolores River) and requires the construction of about 2 miles of new access road. Previous survey in the area of the crossing (about 5.4 miles of transmission line and access roads or about 33 acres) documented seven cultural resources, none of which were evaluated as eligible for the NRHP. Based on this data it is expected that the remaining survey of about 2 miles of transmission line and about 1.5 miles of new access road would result in the documentation of 4 to 5 cultural sites and no new historic properties. Two not eligible resources would be affected by the transmission line reroute.

4.3.3 Forest and Timber Resources

4.3.3.1 Effects common to all Action Alternatives

In areas common to both Action Alternatives, the increase in the ROW width would result in clearing of 48 acres of suitable timber lands including 13.8 acres of aspen timber resources and 34.2 acres of conifer timber resources on the GMUG NF. There would be no effects to timber resources from the improvements to the existing Montrose and Cahone substations or the new Maverick 230-kV substation and associated double circuit structures between the new Maverick 230-kV substation (Reams property) and the existing 115-kV substation at the Nucla power plant, because there are no timber resources in this area.

The increase in the ROW width also would result in 176 acres of additional clearing on the SJNF. Most (112.9 acres) of the area that would be cleared are designated as lands *generally not suitable for timber production or harvest*. The remainder of the ROW that would be cleared consists of 34.4 acres of land designated as *suitable for timber harvest* and 28.7 acres of *tentatively suitable lands*.

Effects to forest and timber resources are expected to be moderate and long-term for all Action Alternatives due to the acres of timber cleared.

4.3.3.2 Effects unique to Proposed Action (Preferred Alternative)

Dry Creek Basin Upgrade-in-Place. In the Proposed Action, the increase in the ROW width associated with the Dry Creek Basin improvements would result in 20 acres of clearing in sparse stands of Pinyon-Juniper, in addition to the acres described above in "impacts common to all action alternatives". All of the areas that would be cleared are designated as *lands generally not suitable for timber production or harvest*. There would be no effect on existing or future timber resources.

Dolores River Canyon Crossing Realignment. In the Proposed Action, the new 150-foot ROW associated with the Dolores River Canyon crossing realignment within the SJNF would result in approximately 46.8 acres of new clearing including 8.6 acres of *lands suitable for timber production*; 28.7 acres of other *tentatively suitable lands where timber harvest may occur*; and 9.4 acres of lands *generally not suitable for timber production or harvest.* Removal of the existing access road would result in 6.4 acres of reclamation (Table 24). Timber resource recovery is very slow, but about 1.5 acres would eventually (20+ years) be suitable for timber harvest. Timber resource effects in the Dolores River Canyon realignment would be low and long-term.

Table 24. Proposed Action Effects to Timber Resources Based on Timber Suitability Classifications at the Dolores River Canyon Crossing Realignment

Component	Timber Suitability Designation (SJNF)	Acres
Clearing		
150-foot New ROW	Lands Generally Not Suitable for Timber Production or Harvest	9.4
	Lands Suitable for Timber Production	8.6
	Other Tentatively Suitable Lands Where Timber Harvest May Occur	28.7
Reclamation		

In total, Alternative A would have about 13.8 acres of new clearing in aspen and about 34.2 acres in conifer on the GMUG NF and about 34.4acres of new clearing in Lands Suitable for Timber Production (SJNF). The loss of lands suitable for timber production from ROW clearing and road construction under Alternative A would be moderate and long-term. In addition, Tri-State is authorized to disturb up to a maximum 79 acres of suitable timber along existing access roads within the ROW, although this disturbance is not anticipated for the project.

4.3.4 Geology and Minerals

No mineral resources would be affected by Alternative A or any of the alternatives.

4.3.4.1 Effects common to all Action Alternatives

Geologic hazards including landslides, corrosive soils, and shallow bedrock could have negligible to low and long-term effects to proposed project construction and maintenance activities for all Action Alternatives. Small areas of expansive soils are present in some locations, but would have negligible effects on proposed construction.

4.3.4.2 Effects unique to Proposed Action (Preferred Alternative)

The Proposed Action includes about 62 acres with high susceptibility to landslides, and 14.3 acres near the Dolores River crossing. In addition, Tri-State is authorized under the existing ROW to disturb up to 298.2 acres of lands with a high susceptibility to landslides along existing access roads, although this disturbance is not anticipated for the project.

4.3.5 Soils

4.3.5.1 Effects common to all Action Alternatives

Construction activities for all Action Alternatives would result in soil disturbance, with the potential for erosion, soil loss, and soil compaction. Soil disturbances would occur from improvement of existing roads, construction of new roads, vegetation removal, excavation and drilling for new poles, removal of the existing transmission line, vehicle travel, wire stringing, expansion and construction of a new substation, establishing staging areas, and other construction disturbances. Many of the soil disturbances would be short-term, with revegetation following construction, while others, such as construction of new roads and substations would result in a long-term loss of soil productivity.

Planned use of existing roads to the extent feasible would minimize soil disturbance. New roads would be designed according to designated maintenance levels with adequate drainage and erosion control measures to minimize effects to soils and water. New roads would remain long-term access routes for long-term maintenance. Existing access roads to abandoned pole sites would be reclaimed and revegetated. Specific roads for reclamation would be determined during final design when all new pole sites have been identified.

Effect assumptions are described in Section 4.1.1. Construction disturbances at pole structures mostly would be temporary except for the actual footprint of the poles and foundation. Soil compaction is likely from construction equipment at each pole site and vehicle travel for stringing operations. Soil disturbance and erosion from installation of pole structures would have a short-term minor effect on soil resources, with minimal potential for effecting soil stability and long-term productivity. Restoration and revegetation measures following disturbance (see Section 2.3.6.14.2) would avoid or minimize soil effects.

Staging areas, construction pads, and “pull sites” for stringing wire would result in temporary soil disturbances. Temporary construction staging areas would be needed to store poles, equipment, and vehicles, in addition to helicopter staging areas. Staging areas would be located within existing disturbed areas on private lands to the extent possible (see Section 2.3.6.5.1). Upon completion of construction, these areas would be reclaimed and revegetated unless part of an active road or other land use. Construction pads needed for work on steep slopes would

temporarily disturb soils until construction is completed and the sites are restored. Construction pads would be located within the ROW. Grading and earth work would be limited to the minimum necessary to provide a safe work area. Prior to any earthwork, erosion and sediment control measures would be implemented to minimize erosion and soil loss. Helicopter staging areas needed for storing fuel and landing would have temporary effects on soils from compaction. Specific staging and construction sites would be identified during final design, but would be located in existing disturbed areas where possible. Incidental soil disturbance or compaction from timber cutting and vegetation removal would have short-term effects on soils.

Expansion of the Montrose substation would result in soil disturbance on about 21 acres and the Cahone substation would result in soil disturbance on about 1 acre at each site. The Maverick substation would affect about 20 acres. Grading and site work for the substations along with construction of the facilities would result in a long-term loss of soil productivity. Temporarily disturbed portions of the sites would be stabilized and revegetated.

Implementation of planned stormwater management BMPs (Section 2.1.12) and restoration and revegetation measures (Section 2.1.13.2) would minimize soil loss and long-term effects. Specific EPMs that would reduce soil effects include those for soils (S-1 to S-4) and water quality and erosion (WQ-1 to WQ-21) in Table 9. Revegetation success for disturbed areas would depend on site specific soil types, slope, and aspect. All of the soils in the proposed project area have varying degrees of limitations affecting potential erosion and revegetation. Shallow depths to bedrock on mesa and canyon soils are more difficult to revegetate because of the limited water holding capacity. A high percentage of rocks in canyon and mountain soils can also affect revegetation success. Clayey and alkaline soils in valleys also have limitations in revegetation. Temporary soil disturbance and compaction from off-road vehicle travel would be minor and localized. Temporarily disturbed areas would be scarified prior to revegetation to reduce compaction. No work would be conducted when soils are excessively wet to minimize compaction, rutting, and effects to vegetation cover.

Ongoing maintenance including clearing woody vegetation around pole structures or under lines would result in minor short-term disturbance to soil resources. Vegetation root structures would generally remain intact and soil stability would not be adversely affected. Vehicle access for maintenance of facilities would occur along designated roads, which would be maintained to minimize erosion and soil loss.

4.3.5.2 Effects unique to Proposed Action (Preferred Alternative)

Under Alternative A, about 138.6 acres of direct soil disturbance would have a low long-term effect on soil resources with implementation of EPMs. In addition, Tri-State is authorized to disturb up to 474.5 acres of soils along existing access road ROWs, although this disturbance is not anticipated for the project.

4.3.6 Threatened, Endangered, or Candidate Animal Species

This section addresses federally threatened and endangered species that would potentially be affected by the Action Alternatives, specifically, the GuSG and Canada lynx.

4.3.6.1 Canada lynx

The effects within lynx habitat are common to all Action Alternatives. The existing transmission line corridor is designated as unsuitable habitat due to management (e.g., ROW clearing) or fire activity; neither Alternative A nor C would directly affect Canada lynx habitat in the existing corridor. Additional ROW clearing would occur in the Spring Creek LAU and Traver Mesa LAU (Table 25). Approximately 5.6 acres of the clearing in the Spring Creek LAU would affect suitable habitat, while 15.3 acres of clearing would affect unsuitable habitat. An additional 9.7 acres has not been mapped. In the Traver Mesa LAU, there would be approximately 3.5 acres of additional clearing of which 2.7 acres are mapped as suitable habitat.

Table 25. Additional ROW Clearing by Lynx Habitat Type

Habitat Type	Spring Creek LAU (acres)	Traver Mesa LAU (acres)
Suitable	5.6	2.7
Unsuitable	15.3	0.0
Not Mapped	9.7	0.8
Total	30.6	3.5

Despite the increase in ROW, the lynx's ability to disperse would be maintained and habitat fragmentation from the additional clearing of 8.3 acres of mapped suitable habitat would be negligible. Given the poor quality habitat conditions, effects to lynx from all Action Alternatives would be negligible. A preliminary determination of may affect, not likely to adversely affect has been made for the lynx.

4.3.6.2 Gunnison Sage-Grouse

4.3.6.2.1 ***Effect Analysis Approach and Indicators***

As described in Section 3.5.6, existing threats to GuSG specific to the San Miguel Subpopulation include small population size and structure, drought, habitat loss and degradation, and habitat fragmentation from infrastructure, including roads and highways, energy development, and electrical transmission lines. Additional localized threats in the Dry Creek Basin may include grazing practices, fences, pinyon juniper encroachment, and predation. Indirect disturbances from minor roads, oil and gas development and other anthropogenic activities (described in more detail in Section 3.5.6) exist throughout the San Miguel Subpopulation extent and in the Dry Creek Basin in particular. Section 3.5.6 contains detailed descriptions of the approach to summarizing and evaluating existing threats in the Dry Creek Basin, including direct surface disturbance, effects of predation including avian predators, and indirect anthropogenic disturbance. As explained in those previous sections, zones of influence are commonly used to evaluate indirect anthropogenic disturbance (habitat avoidance), although there is a great deal of uncertainty associated with the available supporting data. Supporting literature for analyses focused on studies of both Gunnison and greater sage-grouse, with additional literature from prairie grouse species that have similar habitat requirements and exhibit lekking behavior. This body of knowledge as well as information from agency biologists represents the best available science for addressing the existing status and potential effects of the project. The same zones of influence described to evaluate the existing conditions (Section 3.5.6) were applied to the analysis of effects of each alternative.

Effect indicators were identified to evaluate the potential effects of the alternatives described above on GuSG (Table 26). Human disturbance to active leks was determined based on the area of disturbance (defined by the proposed ROW) within 0.6 mile of any active leks. The 0.6-mile is the BLM recommended No Surface Occupancy Buffer for lek sites (BLM 2015). Direct habitat loss of suitable GuSG occupied habitat and potential effects to critical habitat were determined based on the area affected by construction within the Dry Creek Basin. Indirect effects of avian predation were determined based on information and research described in Section 3.5.6.1 above and the incorporation of design features that reduce perch availability (Alternatives A and C). Indirect anthropogenic disturbance and habitat avoidance was evaluated based an estimated area of decreased habitat effectiveness within 600-meter influence zone from highways and transmission lines as described in Section 3.5.6.1.5. Given the uncertainties associated with the supporting data, avoidance effects were quantified for transmission line alternatives and SH 141 for comparative purposes only. Habitat fragmentation was evaluated based on linear corridors that potentially create physical or behavioral impediments to GuSG movement (see Section 3.5.6.1.5).

Table 26. Gunnison Sage-Grouse Effect Indicators, Effect Metrics, and Basis for Effect Metrics

Effect	Effect Indicator	Effect Metric	Basis for Effect Metric
Human disturbance to active leks	Proximity to active lek	Area affected within 0.6 mile of lek sites	BLM RMP 2015; GSRSC 2005; BLM IM 2014
Habitat loss of suitable GuSG occupied habitat	Disturbance to GuSG occupied habitat	Area affected within Dry Creek Basin occupied habitat	BLM RMP 2015; GSRSC 2005; BLM IM 2014
Permanent and temporary modification of critical habitat	Disturbance to critical habitat	Area affected in footprint of clearing and grading; for ROW	Critical habitat mapping from 74 FR 69312-69355, November 20, 2014
Avian predation facilitated by perching opportunities on powerline structures	Effect from avian predators	Number and design features of overhead structures that reduce perch availability	Manzer and Hannon 2005; Bui 2009; Coates and Delehanty 2010; Coates et al. 2014; Howe et al. 2014
Habitat avoidance	Decrease in habitat effectiveness (HE)	Area of decreased habitat effectiveness within 600-meter influence zone from highways, and transmission lines	Holloran et al. 2010; Braun 1998; Hanser et al. 2011; Aldridge et al. 2012; Gillan et al. 2013; Ouren 2016
Habitat fragmentation.	Physical and behavioral impediments	Linear corridors that potentially create physical or behavioral impediments to GuSG movement	Holloran et al. 2010; Braun 1998; Hanser et al. 2011; Aldridge et al. 2012; Gillan et al. 2013; Ouren 2016

The height of vertical structures may also have an effect on habitat use. The visibility of transmission line structures to GuSG depends on structure dimensions (height and width), the number of structures, the bird's ocular capabilities, topography, and land cover (UWIN 2010). Structures for any Action Alternative would be about 30 to 60 feet taller than existing structures. The width of the steel monopole would be 5 to 6 feet more narrow than the overall width of the existing H-frame (see typical structures and dimensions shown in Figure 18 and Figure 19), although, the width of the monopole would wider than each individual pole of the H-structure.

All Action Alternatives would result in taller, and fewer overall structures located in GuSG occupied habitat in the Dry Creek Basin compared with the existing transmission line. Transmission line structure dimensions and GuSG conservation have been discussed and debated in peer-reviewed literature only recently and with no conclusive results. An increase in structure height would theoretically increase the line-of-sight distance from that structure for wildlife on the ground. However, no studies have been completed regarding transmission line structure height differences in relation to GuSG or greater sage-grouse avoidance distances or behaviors. Information about sage-grouse vision, the bird's ocular stimuli, and how those stimuli affect the bird's behavior is also limited. Several studies have compared potential effects between various structure types (wind turbines, oil and gas, transmission lines) to sage-grouse, but there are no relevant peer-reviewed research papers analyzing the effects to ground-dwelling birds based on a specific change in transmission line pole structure height. The Utah Wildlife in Need (UWIN) Cooperative's Report, *Contemporary Knowledge and Research Needs Regarding the Potential Effects of Tall Structures on Sage-grouse* (UWIN 2010) found no definitive studies on the effects of tall structure height, density, etc., on sage-grouse habitat, including seasonal use and landscape variability. Because of this uncertainty and lack of knowledge and the fact that pole structure height would be similar for all Action Alternatives, structure height was not factored into the evaluation of habitat effectiveness. In addition, the proposed height increase of structures associated with the Action Alternatives in the Dry Creek Basin could be partially offset by the reduced number of pole structures compared to the No Action Alternative.

4.3.6.2.2 *Effects common to all Action Alternatives*

Direct and indirect effects to GuSG common to all Action Alternatives could include displacement of GuSG from suitable habitat during construction and maintenance activities due to human activities, inadvertent mortality or injury caused by construction and maintenance activities, and habitat degradation caused by the introduction or spread of noxious weeds. Most direct and indirect effects vary between alternatives because of the different alignment options in the Dry Creek Basin, and are summarized in Section 4.3.6.2.3. Electromagnetic field and Corona effects also could have a potential effect on GuSG.

Tri-State has committed to multiple engineering and design modifications as well as environmental protection measures (EPMs) to all Action Alternatives in order to minimize project related effects to GuSG and critical habitat, specifically those effects indicators listed in Table 26. Design and engineering commitments include using single-pole, self-supporting steel structure configurations with perch discouragers. Utilizing steel structures relative to the originally proposed H-frame wood structures reduces the frequency of routine maintenance needed on the line, thereby reducing temporary disturbance to GuSG. Replacing H-Frame structures within the existing alignment with steel monopoles with perch discouragers would reduce the number of structures across GuSG habitat and minimize opportunities for avian predator nesting and perching on structures in GuSG occupied habitat. Replacing H-frames with monopole structures along with the installation of perch discouragers on the pole top and davit arms would result in a beneficial effect to GuSG by reducing the amount of time ravens are perching on the transmission line.

The Action Alternatives involve construction of above-ground structures and wire in the Dry Creek Basin that present a collision risk to GuSG. Tri-State contracted EDM International, Inc. (EDM) to conduct an avian collision risk assessment for the entire Montrose-Nucla-Cahone

transmission line, including the Dry Creek Basin. EDM's analysis indicates that the risk of collision for GuSG in the Dry Creek Basin is low (EDM 2016). Tri-State has also committed to eliminating guy wires on three turning structures to make the poles "self-supporting" in the Dry Creek Basin. Removing guy wires would reduce the risk of GuSG and other bird collisions and the overall footprint of the structure itself, as well as flight diverters to reduce collision risk with the conductor. All Action Alternatives would implement guidance relative to the GuSG described in the TRFO RMP (BLM 2015) pertaining to powerlines.

For all Action Alternatives, potential GuSG exposure to EMFs related to the proposed project would be negligible because EMF diminishes rapidly with distance away from the transmission line (Fernie and Reynolds 2005). In addition the proposed increase in line voltage increases the possibility of corona. This increase, however, has been offset by the selection of a much larger conductor (1.345-inch diameter vs. the existing 0.72-inch), larger phase spacing (19.5 feet vs. the existing 15.5 feet), and other project design components.

Similar to EMF, for all Action Alternatives, GuSG exposure to corona during the proposed 230-kV transmission line operation would be negligible because of the project design described above, the location of the transmission line away from known concentrations of grouse, the generally dry conditions in Dry Creek Basin that are not conducive to produce corona, and the rapid decline in both audible and visual corona effects with distance from the transmission line.

Direct and indirect adverse effects that may vary among alternatives include human disturbance to active leks, habitat loss of GuSG suitable occupied habitat during construction and maintenance activities, permanent and temporary loss of critical habitat, avian predation facilitated by perching opportunities on powerline structures, habitat avoidance (decrease in habitat effectiveness), and habitat fragmentation. The voluntary conservation measures proposed by Tri-State as part of Alternative A also are unique to that alternative. For ease of comparison between the alternatives, Table 27, Table 28, and Table 29 include impact information for all alternatives (including the No Action Alternative) and routing options, including the upgrade-in-place as well as the realignment along SH 141 (both north- and south-side options).

4.3.6.2.3 *Effects Unique to Alternative A, Proposed Action (Preferred Alternative)*

Active Lek Proximity and Disturbance to Occupied and Critical Habitat

Alternative A includes a plan developed by Tri-State that details practices designed to address potential anthropogenic impacts from construction of the Project (Biological Resource Protection Plan; Appendix B of the POD). The Biological Resource Protection Plan provides detailed descriptions of the Avian Protection Plan (APP), design features to avoid and minimize anthropogenic effects of the Project, and site-specific EPMs (also see Section 2.2.2.2.3).

Under Alternative A, the transmission line would be improved in place in GuSG habitat and the types of direct (surface disturbance to occupied habitat) and indirect (noise and human activity from construction) effects would be similar to heavy maintenance activities under the No Action, although Alternative A would be involve more extensive disturbance over a shorter time frame compared to No Action. As noted in the No Action Alternative, heavy maintenance activities would be spread out over several years and require more frequent general maintenance. The

approach to analyzing the surface impacts of Alternative A roads is described in Section 3.5.6 , and was developed to evaluate new direct impacts of road disturbance on GuSG that satisfies both NEPA and ESA compliance. Alternative A would use most of the roads previously authorized for long-term maintenance, although portions of these roads would be upgraded to accommodate construction equipment. Based on a 2015 and 2016 Tri-State evaluation of maintenance needs in the Dry Creek Basin, access maintenance and upgrades under Alternative A would include new permanent disturbance of 2.2 acres for new road construction and temporary disturbance of 8.5 acres of habitat for access road upgrades and equipment clearing (Table 27). Although Tri-State does not anticipate disturbing the entire 30-foot ROW, an additional 14.7 acres of disturbance is permitted under the 2006 EA/DR for maintenance of existing structures (BLM 2006). The new, worse-case potential maximum ROW impact, assuming a maximum temporary disturbance to the entire ROW would be 25.4 acres under Alternative A (Table 27).

There would be no direct disturbance to GuSG during the lek season due to the implementation of timing restrictions described in EPM GUSG 6. Impacts to brood rearing sage-grouse would be minimized through the use of a timing restriction through June 30, annually. Implementation of EPM VG-2would preserve and protect vegetation from damage during construction operations to the maximum extent practicable and would be restricted to areas approved in the Final POD, Implementation of EPMs GUSG-12 and GUSG-13 would re-seed disturbed areas with a weed-free native seed mix beneficial to GuSG and treat noxious weed infestations associated with construction and maintenance activities. No weeds would be treated within the Dry Creek Basin or Miramonte Reservoir area until the BLM TRFO completes programmatic consultation with the USFWS regarding weed management. Future weed management in GuSG habitat would comply with this programmatic Section 7 consultation. In addition, where possible roads would not be cleared or graded and instead would be driven on in a natural state to reduce access impacts as much as feasible.

Table 27. New Permanent and Temporary Road Disturbance to Occupied Habitat by Alternative in Dry Creek Basin

Alternative	Total Access Road Length (mi)	Existing Road Area (acres)	New Road Construction Disturbance Impact (acres)	New Potential Equipment Clearance Impact (acres)	New Potential Maximum ROW Impact (acres)	Total Temporary impacts (acres)	Reclaimed (acres)[1]
Proposed Action	8.6	6.0	2.2	8.5	14.7	25.4	0
No Action*	8.6	6.2	2.2	8.4	14.6	25.2	0
Realignment - North	8.0	0.4	3.2	11.9	13.6	28.6	4.2
Realignment - South	8.5	0.6	3.8	12.1	14.5	30.5	4.2

* Schedule of pole replacement (i.e., # of poles replace at one time) is unknown.
[1.] Reclamation = repair of long-term damage from road footprints.

There would be no direct effects to active GuSG leks, or within the recommended 0.6 mile avoidance buffer. The distance from the center of the one known active lek to the Proposed Action (Alternative A) is approximately 3.8 linear miles. Alternative A would result in a total of

7.3 acres of new long-term surface effects to occupied GuSG habitat from new structure installation, including 5.1 acres of critical habitat. Total new long-term surface disturbance from new structures and new or upgraded roads would be 9.5 acres in occupied habitat, including 6.6 acres of critical habitat (Table 30). After construction, most of the surface disturbance would be restored, with only a small maintenance road remaining over the long-term.

Table 28. Surface Disturbance (Roads and Pole Structures) of Gunnison Sage-Grouse Habitat by Alternative in Dry Creek Basin

Surface Disturbance	Alternative A (upgrade-in-place in Dry Creek Basin)			Alternative B (No Action)			Alternative C (realignment in Dry Creek Basin)		
	New Construction Disturbance (acres)	New Potential Equipment Clearance[1] (acres)	Existing Road Reclaimed[2] (acres)	New Construction Disturbance (acres)	New Potential Equipment Clearance[1] (acres)	Existing Road Reclaimed[2] (acres)	New Construction Disturbance (acres:North/South)	New Potential Equipment Clearance[1] (acres:North/South)	Existing Road Reclaimed[2] (acres:North/South)
New/Upgraded Access Road – Occupied Habitat	2.2	8.5	0.2	2.2	8.4	0	3.2/3.8	11.9/12.1	4.2/4.2
New/Upgraded Access Road - Critical Habitat	*1.5*	*6.2*	*0.02*	*1.5*	*6.3*		*2.8/3.5*	*10.1/10.5*	*3.9/3.9*
New Pole Structures – Occupied Habitat	7.3	--		--	--	--	8.3/7.9	--	
New Pole Structures - Critical Habitat	*5.1*	--		--	--	--	*7.2/6.9*	--	
Total Overall New Disturbance	9.5	8.5		2.2	8.4	0	11.5/11.7	11.9/12.1	
Total Critical Habitat Disturbed	*6.6*	*-6.2*		*1.5*	*6.3*		*10.0/10.4*	*10.1/10.5*	
Total Overall Reclamation	--	--	0.2	--	--	--	--	--	4.2/4.2

[1]Area temporarily disturbed for equipment and restored back to 2-track road.
[2]Reclamation = repair of long-term damage from existing road footprints.

4.3.6.2.4 *Effect of Avian Predators*

The existing 115 kV transmission line provides nesting and perching opportunities for avian predators as described in the environmental baseline (Section 3.5.6.1). All Action Alternatives would reduce perching opportunities for avian predators associated with the transmission line because all structures in the Dry Creek Basin would be self-supporting steel monopoles equipped with perch discouragers (Figure 19). Alternative A would have 50 steel monopoles with perch discouragers compared to 72 wooden H-frame structures without perch discouragers in occupied GuSG habitat under existing conditions. Alternative A would reduce the number of structures by about 26 percent and additional design features including steel monopole structure and perch discouragers would reduce and minimize perch and nesting opportunities for avian predators in GuSG occupied habitat (see EPMs, Table 9 and POD Appendix B). Research has found that raptor and corvid nesting and perching was significantly reduced with the installation of perch discouragers on transmission lines (Lammers and Collopy 2007; Slater and Smith 2007). Fewer structures with fewer perching surfaces would reduce the frequency and duration of avian predator perching and nesting. This would likely reduce the presence of avian predators and the overall the predation risk on GuSG, providing a net benefit to GuSG and contributing to GuSG recovery in the Dry Creek Basin. The benefit of decreasing perching on the existing line is subject to the assumption that perching would not increase on the new larger lines that are a result of the upgrade.

4.3.6.2.5 *Habitat Avoidance/Decrease in Habitat Effectiveness*

The main infrastructure corridors that traverse GuSG habitat in the Dry Creek Basin and decrease habitat effectiveness (HE) are SH 141 and the existing transmission line (Figure 29). Because Alternative A would use the existing transmission line corridor there would be no change in HE from existing conditions (Table 29). As described above, a habitat avoidance distance of about 0.37 mile (600 meters) from the transmission line and SH 141 was used for alternatives comparison. Because of the uncertainty associated with the available data on habitat avoidance as described in Section 3.5.6, this analysis was completed for alternative comparison purposes only and was not intended to be used to determine mitigation. Based on this approach, habitat avoidance would occur on about 6,478 acres of occupied habitat (reduced habitat effectiveness), including 5,293 acres in critical habitat (Table 29). Of this total, about 3,306 acres are attributed exclusively to the transmission line. The width of the steel monopole would be wider than each individual pole of the H-structure, increasing the overall visibility of the structures. The Proposed Action would result in taller, thicker, but fewer overall structures located in GuSG occupied habitat in the Dry Creek Basin compared with the existing transmission line. Transmission line structure dimensions and GuSG conservation have been discussed and debated in peer-reviewed literature only recently and with no conclusive results. An increase in structure height and pole width would theoretically increase the line-of-sight distance from that structure for wildlife on the ground. However, no studies have been completed regarding transmission line structure height differences in relation to GuSG or greater sage-grouse avoidance distances or behaviors. Information about sage-grouse vision, the bird's ocular stimuli, and how those stimuli affect the bird's behavior is also limited. Under Alternative A, GuSG would continue to avoid habitat to the same extent as they currently do with the existing transmission line for the life of the line. This analysis only accounts for a geographic avoidance of physical structures and does not account for any eventual behavioral response to the expected decrease in avian predators resulting from fewer available perch structures under Alternative A.

Table 29. Gunnison Sage-Grouse Habitat Effectiveness[1] (for comparative purposes only)

Avoidance/Benefit	Alternative A (upgrade-in-place in Dry Creek Basin)	Alternative B (No Action and Baseline)	Alternative C (realignment in Dry Creek Basin) (North/South)
	Occupied Habitat (includes Critical Habitat)		
Area of Aggregate Reduced Habitat Effectiveness due to Avoidance of Transmission Line and SH 141 (Baseline)[2]	6,478 (no change from baseline)	6,478	4373/4383
Area of Reduced Habitat Effectiveness due to Transmission Line Avoidance[2] (acres)	3,306 (no change from baseline)	3,306	607/645
Area of Increased Habitat Effectiveness due to Removal of Existing Transmission Line (acres)	0	0	2,983/3,011
Existing Road Reclaimed (acres/miles)	0.02/0.20	0/0	6.2/8.6 *(both options)*
	Critical Habitat		
Area of Aggregate Reduced Habitat Effectiveness due to Avoidance of Transmission Line and Roads (Baseline)[2]	5,293 (no change from baseline)	5,293	3,802/3,820
Area of Reduced Habitat Effectiveness due to Transmission Line Avoidance[1] (acres)	2,224 (no change from baseline)	2,224	414/460
Area of Increased Habitat Effectiveness due to Removal of Existing Transmission Line (acres)	0	0	1,905/1,932

[1]Habitat effectiveness = the percent of area or percent of time that habitat is fully usable by a species (Lyon and Christensen 1992). Decreased habitat effectiveness is the indirect habitat loss that occurs when wildlife avoid areas immediately adjacent to a disturbance or physical infrastructure that extends beyond the physical footprint of individual projects.
[2]Based on 600-meter buffer of alignment and subtracting overlapping zone of influence with SH 141.
Note: Due to uncertainties associated with the data, habitat effectiveness evaluated for comparative purposes only to show relative magnitude of effects between alternatives.

4.3.6.2.6 *Fragmentation*

Table 20 in Section 3.5.6.1 outlines sources of human disturbance in the Dry Creek basin that can create physical or behavioral impediments to GuSG and fragment GuSG habitat. The major existing anthropogenic linear features that impact habitat use by GuSG are the transmission line and SH 141. Because Alternative A is a re-build in place, no new physical or behavioral barrier would be permanently placed on the landscape, resulting in no new habitat fragmentation.

In addition to the analysis of fragmentation and habitat avoidance by GuSG, this EA evaluates the conservation benefits to GuSG provided by the various alternatives. Because Alternative A would be constructed within the existing alignment there would be no increased habitat fragmentation by transmission lines and/or roads. This assumes that the reduction in the number of structures as well as installation of perch discouragers would have a negligible beneficial effect on fragmentation.

4.3.6.2.7 *Voluntary Conservation Strategy*

Tri-State has developed a Biological Resources Protection Plan (Appendix B of the POD) as part of the Proposed Action to minimize potential impacts to GuSG in the project area. This strategy, in addition to the proposed engineering/design features and environmental protection measures, is expected to minimize impacts to the GuSG from the proposed activities. The key aspects as well as the beneficial effects of this conservation strategy are described below.

Tri-State's conservation strategy may result in long-term beneficial effects to the San Miguel GuSG population and habitat improvements within Dry Creek Basin. In order to address long-term recovery goals, a collaborative effort between federal, state, county, and local entities and local industry is required. This proposed voluntary conservation strategy would encourage a collaborative effort to address GuSG survival in Dry Creek Basin and target those measures in a way that provides the greatest benefit to the GuSG.

Tri-State, as part of their Gunnison Sage-Grouse Conservation Strategy, has committed to purchasing an approximately 500 acre parcel of property near Miramonte Reservoir (Dan Noble SWA). This 500 acre parcel would be incorporated into the SWA and would be transferred to the ownership and management of CPW. This parcel has been a conservation priority for CPW because it contains the last remaining documented GuSG lek that is unprotected in the Miramonte sub-population, as well as, documented radio telemetry data that shows it is used extensively for nesting and brood rearing (Del Piccolo pers. comm. 2016). Tri-State recently executed the Memorandum of Option Agreement for purchase of this parcel. Once management is transferred to CPW, a wildlife-friendly boundary fence would be installed around the outer three sides of the enlarged SWA. Fences would be modified to reduce collision risk to the maximum extent practicable. Along with the installation of the new perimeter fence would be the removal of the old boundary fence that is directly within a major GuSG movement corridor. Removal of the old boundary fence and other interior fencing would likely reduce the overall length of fencing and the number of fence posts in the Miramonte Reservoir area. Other fencing BMPs would also be incorporated for the benefit of wildlife (Del Piccolo, personnel communication 2016). These actions would reduce both the collision risk for GuSG and perch availability for avian predators (Del Piccolo pers. comm. 2016).

Tri-State has voluntarily committed $100,000.00 to fund habitat improvement projects to benefit the GuSG in the Dry Creek Basin both on and off BLM administered lands. The BLM would plan, implement, manage, and monitor the habitat improvement projects and provide annual status and expenditure updates to Tri-State on the implemented projects and efficacy of these funded habitat improvement projects.

Habitat improvement projects that may be implemented by the BLM may include, but are not limited to:

- Pinyon-Juniper Removal within critical habitat in areas with early stage (Phase I) pinyon-juniper communities.
- Water development/enhancement projects within Dry Creek Basin. These projects may include funding towards the installation of Zeedyk check dams, Zuni bowls, plug and spread methods, and channel shaping.
- Inter-seeding, mowing, or other habitat efforts within Dry Creek Basin designed to enhance understories where needed (recognizing these efforts have had limited success in the past and likely would need refinement to enhance success.
- Fence Removal or fence marking.

Table 30 below addresses the primary threats to GuSG and the voluntary conservation measures that are being proposed to address these threats.

Table 30. Voluntary Conservation Strategy Benefits Summary for Alternative A (Preferred Alternative) within GuSG Occupied Habitat

	Potential Effect	Conservation Action	Conservation Benefit	Description
1	Fragmentation, drought, poor habitat quality	Habitat enhancement and habitat protection via funding and purchase and transfer to CPW	Increased survival and habitat availability in Dry Creek Basin Reduced risk of habitat fragmentation at Miramonte Reservoir	Tri-State would contribute $100,000 toward habitat improvement projects in Dry Creek Basin. Tri-State would purchase an approximately 500-acre parcel near Miramonte Reservoir that contains a lek and brood-rearing habitat.
2	Small Population Size and Structure	Habitat Enhancement/Habitat Conservation	Increased Survival and Genetic Variability	Habitat improvement in Dry Creek Basin would improve population size and survivability in Dry Creek Basin. Habitat acquisition near Miramonte would preserve the last unprotected lek and associated brood-rearing habitat for the San Miguel GuSG population which would have a direct benefit to GuSG survivability.

	Potential Effect	Conservation Action	Conservation Benefit	Description
3	Fragmentation; Direct and indirect impacts to Critical Habitat (CH)	Habitat Enhancement: Weed Management	Weed monitoring and management to improve overall habitat for GuSG (above location options apply)	Tri-State would treat noxious weeds in the treatment area to prevent spread and propagation of noxious weeds which would affect the success of grass and forb restoration post construction. Tri-State would treat noxious weeds associated with the transmission ROW for the life of the facility.
4	Fragmentation; Direct and indirect impacts to CH	Expand State Wildlife Area (SWA)-Purchase of Approximately 500 acres of land near Miramonte Reservoir with a GuSG lek also that borders an existing SWA.	Increase critical habitat protected in perpetuity	Tri-State would fund the purchase of a parcel near Miramonte Reservoir for CPW.

4.3.6.2.8 *Mitigation Requirements*

In addition to the voluntary conservation strategy, an additional timing constraint would be required by BLM for Alternative A. The winter timing constraint for occupied GuSG habitat, extending from December 1 through March 15, would be applied as a stipulation/mitigation measure to the project (TRFO RMP (p II-28)).

4.3.6.2.9 *Effects Determination*

Although Alternative A would result in overall beneficial effects to GuSG, all Alternatives involve construction of above-ground structures and wire that present a collision risk to GuSG. An avian collision risk assessment for the entire Montrose-Nucla-Cahone transmission line, including the Dry Creek Basin, conducted by EDM International, Inc. (EDM) indicated that the risk of collision for GuSG in the Dry Creek Basin is low (EDM 2016). However, Tri-State has committed to installing flight diverters through occupied habitat in the Dry Creek Basin. Flight diverters and other design features in Alternative A, along with the winter timing constraint stipulation, would minimize, but not eliminate most collision hazards. Implementation of the Proposed Action may affect, is likely to adversely affect GuSG based on the risk of take due to collision with the proposed upgraded line and the uncertainty of direct and indirect impacts associated with the increase in pole height. The Proposed Action would decrease the number of poles by 30%. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line.

The USFWS is required to identify the physical and biological features (PBF) essential to the conservation of GuSG in areas occupied at the time of listing. The USFWS has identified extensive sagebrush landscapes capable of supporting a population of GuSG as a landscape specific PBF, that includes areas with vegetation composed primarily of sagebrush planting communities. Implementation of the Proposed Action may affect, is likely to adversely affect designated GuSG Critical Habitat based on the direct temporary and permanent impacts to occupied GuSG habitat as a result of construction activities, and the uncertainty of impacts associated with the increase in pole height. The Proposed Action would decrease the number of

poles by 30%. All new poles would have perch deterrents; this is a 100% increase in perch deterrents from current conditions. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line. Removal of existing structures in occupied critical habitat would be a management action that could reduce perch availability for avian preditors.

4.3.7 Visual Resources

4.3.7.1 Effects Common to all Action Alternatives

Long-term and short-term effects to visual resources common to all Action Alternatives would be low to moderate. Long-term effects to visual resources common to both Action Alternatives would include the existing transmission line upgrade mostly within the existing alignment, including a 50 percent wider ROW with vegetation clearing in forested areas, taller structures, larger diameter conductors, some different structure types, construction of the Maverick 230-kV substation near Nucla, additions to the existing Montrose and Cahone substations, and new maintenance roads. Short-term visual effects would include construction activities associated with the proposed transmission line such as the presence of equipment and vehicle traffic and staging areas for storage of construction materials. Visual effects from fugitive dust potentially produced during construction would be avoided or minimized by incorporation of design features A-1 through A-4 (see Table 9). The proposed construction period would be from April to October during 2017 and 2018.

Visual effects were assessed and analyzed from 12 KOPs (Section 3.5.7 and Figure 30; Appendix C – Visual Resources Report [HLA 2015]). Most existing views from KOPs include the existing transmission line, vegetation clearing corridor, and some maintenance roads. Therefore, the upgrade of existing structures, conductors, and vegetation clearing corridors would not noticeably change existing views. For example, in southeast views from KOP 4 on the Unaweep Tabaguache Scenic Byway (SH 145), the existing vegetation clearing corridor in the forest is highly visible to eastbound travelers. Because the clearing is approximately 15 miles away from the KOP, the proposed 50-foot increase in total clearing width would not be perceptible from the KOP.

Effects to visual resources from additions to the existing Montrose and Cahone substations would be negligible because of the presence of the existing substations at the same locations and no visibility from KOPs.

No KOPs would have visibility of the proposed Maverick 230-kV substation. Although views of the proposed substation from SH 141 would be unobstructed, the site and surrounding area is an existing industrial land use, composed of a highly-visible, open, gravel parking area for construction vehicle and materials storage. Viewers along approximately 1.5 miles of SH 141 would have short duration views of the substation from moving vehicles. Therefore, long-term effects to visual resources would be low due to the short duration views and the presence of existing ground disturbances and overhead power lines. Because the proposed Maverick substation is on private land, and no KOPs have visibility of the proposed site, existing BLM VRM, and USFS SIOs and VQOs would not be affected. Effects to visual resources of the proposed structures between the proposed Maverick 230-kV substation and the existing Nucla

substation, near the intersection of SH 141 and SH 145 would be negligible because the existing structures and conductors in the same location are highly visible.

4.3.7.2 Effects Unique to Proposed Action (Preferred Alternative)

4.3.7.2.1 *Dry Creek Basin*

The upgrade to the existing alignment in Dry Creek Basin would have similar visibility as the existing structures, conductors, and maintenance roads, as seen from KOP 6 and SH 141 (see Figure 30 and photos in Appendix C, Visual Resources Report). In the basin, the existing alignment crosses SH 141 at the southwest end, and is adjacent to SH 141 at the northeast end. Therefore the existing alignment is not visible from KOP 6 and most of SH141 in the basin due to the long distance between the alignment and potential viewers, and would be viewed with a background of sage prairie and mountains. Additionally, views of the alignment crossings at SH 141 are short duration views because the alignment is viewed from moving vehicles. There would be low new, long-term effects to visual resources in Dry Creek Basin.

4.3.7.2.2 *Dolores River Crossing*

Low to high long-term increased visibility at the Dolores River crossing is expected due to taller structures and a wider ROW, and increased visibility at KOP 2. Due to the site-specific context (including low volume, duration, and frequency of visitor use and the presence of the existing transmission line as an expected frame-of-reference in the landscape), the overall effects are expected to be low to moderate. The proposed alignment would cross the canyon approximately 1.2 miles closer to the scenic overlook (KOP 1) than the existing alignment. The distance between the scenic overlook and proposed transmission line would be approximately 3.5 miles. Impacts to visual resources would vary depending on the direction of the view. Effects to visual resources in views of the north rim (southerly and southeasterly views) would be low to moderate. As seen in Photo 1D of Appendix C, Visual Resources Report, the northern structure is not visible above the skyline, and it is relatively small in the view. Other visible man-made features include a radio tower on the north rim, the town of Dove Creek to the west, and the developed overlook (KOP 1). Although some of the proposed structures would be more visible, the conductors and structures would be visible in only one direction from the scenic overlook, would be relatively small in the view, and would be viewed primarily against a background of forest and canyon walls.

Effects to visibility in views from KOP 2 to the north would be moderate to high due to the close proximity of the structures and conductors. There would be effects to visual resources from KOP 2, the BLM cul-de-sac, in views to the north. Depending upon the viewer's specific location on the canyon rim near the vehicular cul-de-sac, some views of the structures would be completely or partially-obscured by vegetation, and others would be unobstructed. Additionally, public use of this location is very limited. The site is unsigned and accessed only by unmarked 4-wheel drive access roads. According to local residents, the area might be used infrequently and seasonally by hunters. Visitor use is low in frequency, duration and volume at KOP 2.

Effects to visual resources from KOP 10, at the Dolores River in the canyon bottom, in views to the north and upwards, would be negligible because the north canyon rim structure would be visible, but approximately 0.5 mile further away from the KOP than the visible existing

structure. Contrasts of the proposed and existing structures would be similar. Views to the east, west, and south would remain unchanged.

Effects to visual resources from KOP 11, at the Dolores River in the canyon bottom, would be beneficial in views to the north, because the crossing would not be visible due to the screening effects of trees and topography (the existing alignment is in view from KOP 11). Views to the east, west, and south would remain unchanged.

Effects to visual resources from KOP 12, at the Dolores River in the canyon bottom, would vary dependent upon the direction of the view. In views to the east, west, and south, effects would be eliminated because the crossing would be north of the KOP, and therefore not visible in any other direction. In views to the north, the effects would be moderate because the south rim structure and most of the conductors would be highly visible without obstruction.

Some existing transmission line structures and conductors are visible from the Dolores River in the canyon bottom, KOPs 10, 11, and 12. Recreational boaters floating the river have views of some structures and conductors in the vicinity of KOPs 10, 11, and 12, but for limited durations due to the movement of the boats downstream. The transmission line is visible along the river at river mile 2 and 5 for periods of time. The transmission line is an expected part of the landscape and is used as a frame of reference for boaters during the rare occasions when the river has boatable flows (about every 7 to 8 years). During low-flow conditions, boaters have visibility of some existing structures and conductors for approximately 45 minutes, in downstream and overhead views. Recreational boaters floating the river during low-flow conditions would have visibility of some proposed structures and conductors for approximately 20 minutes also near KOPs 10, 11, and 12. The duration of views of the proposed structures and conductors would be shorter than of the existing structures and conductors due to the screening effects of the canyon walls and existing trees in relationship to the river alignment.

Portions of the existing power structures (poles and lines) are visible from KOPs 1, 2, 10, 11, and 12 as part of the characteristic landscape. The degree of change as a result of this alternative would meet the BLM VRM Class II standards. There would be low to moderate change between the existing and proposed transmission line visual resources.

Within the SJNF, no KOPs were identified by the SJNF in the project area. The north crossing structure at the Dolores River Crossing would require changing the SIO within a 0.25-mile radius from moderate to low, where the landscape character can be moderately altered.

4.3.8 Lands with Wilderness Characteristics

The proposed Dolores River crossing under Alternative A would not affect lands with wilderness characteristics. There would be no ground disturbance within lands with wilderness characteristics. New facilities including structures and access roads would be located above and outside of the Dolores River Canyon rim, which generally defines the upper topographic boundary of the lands with wilderness characteristics in the Snaggletooth Unit. In addition, the existing structures and access roads that are located below the Dolores Canyon rim (but also outside of lands with wilderness characteristics) would be removed and reclaimed. Removal of the existing structures including transmission line and access roads and completion of revegetation could potentially increase the area within the canyon that meets the criteria for lands

with wilderness characteristics. In the future, the BLM may expand the Snaggletooth Unit lands with wilderness characteristics. About 2.1 acres of *inventoried* lands with wilderness characteristics (which were not identified as lands to be *managed* for wilderness characteristics) would be affected by Alternative A. The effects would include overlap with new ROW.

The proposed Dolores River Canyon transmission line crossing in Alternative A would not result in any direct surface disturbance within lands with wilderness characteristics and would not affect the size, naturalness, or outstanding opportunities for solitude or primitive, unconfined types of recreation on lands with wilderness characteristics because all new surface disturbance would be located outside of lands with wilderness characteristics. Noise and activity associated with construction of the transmission line upgrade could adversely affect opportunities for solitude within the canyon for a period of about 12 months. Visual effects associated with the Dolores River crossing are discussed previously.

This alternative is consistent with the language and guidance of the RMP, in that no new ground disturbance to lands with wilderness characteristics would occur, and the visual effect of the conductor crossing the canyon would meet VRM Class II standards. In addition, the proposed alignment would reduce effects to wilderness characteristics by reducing the visibility of structures from within the canyon after existing infrastructure below the rim is removed and the existing access roads and structure locations are reclaimed. As part of the Proposed Action a narrower ROW (less than 100 feet) would be granted for the span through the Dolores River Canyon. Therefore, low, long-term beneficial effects are expected to Lands with Wilderness Characteristics.

4.3.9 Areas of Critical Environmental Concern

The consideration of effects to nominated ACECs evaluates the potential impairment to the relevance and importance criteria for each nominated ACEC. As described in Section 3.5.9 and shown in Figure 31, there is one designated and four nominated ACECs within the project area that contain environmental resources that meet relevance and importance criteria established by the BLM's ACEC Manual (1613). These nominated ACECs—the Dry Creek Basin Nominated ACEC, the Gypsum Valley Designated/Nominated ACEC, the Spring Creek Nominated ACEC, and the Snaggletooth Nominated ACEC—could be affected by the alternatives. As described in Section 3.5.9, the Gypsum Valley Nominated ACEC has different boundaries than the Gypsum Valley Designated ACEC.

4.3.9.1 Effects common to all Action Alternatives

All of the Action Alternatives considered in this EA cross two of the four nominated ACECs in the same way. The potential effects to relevant and important values in the Gypsum Valley Nominated ACEC and the Spring Creek Nominated ACEC would be the same for all Action Alternatives.

4.3.9.1.1 *Gypsum Valley Designated/Nominated ACEC*

The currently designated Gypsum Valley ACEC has about 7.4 acres of overlap with the existing 115-kV ROW. The upgraded 230-kV transmission line would require a wider ROW which would overlap about 25 feet into some parts of the designated ACEC, for a total additional 4

acres of ROW overlap. No construction of facilities under the Proposed Action would occur within the designated Gypsum Valley ACEC.

Of the total Gypsum Valley Nominated ACEC acreage (19,867), 26 acres intersect with all Action Alternatives south of the Dry Creek Basin (Figure 31). The 100-foot ROW for the existing transmission line intersects with 17 acres within the ACEC; expanding the ROW as part of all Action Alternatives would increase the overlap with the nominated ACEC by an additional 9 acres.

The existing transmission line crosses the nominated ACEC at the southern edge as described in Section 3.5.9. The Gypsum Valley nominated ACEC meets the relevance and importance criteria because of rare gypsum outcrops that support rare plant species. Of the species present throughout the nominated ACEC, the Gypsum Valley cat-eye is present in the project area. None of the other species that contribute to the relevance and importance criteria have potential habitat or known occurrence in the project area. A total of about 1,141 individual plants of Gypsum Valley cat-eye were found during 2014 and 2015 surveys where the project area intersects with the Gypsum Valley nominated ACEC. Direct effects to individual plants could occur due to improvement of existing roads, construction of new roads, vegetation removal, excavation and removal of existing poles, drilling for new poles, vehicle travel, wire stringing, and other construction disturbances. Indirect effects to individual plants could occur due to dust deposition; however, EPM AQ-2, AQ-4 and AQ-6 are intended to avoid and minimize fugitive dust (see Table 8).

All Action Alternatives include a rare plant approach for monitoring and avoidance, focused on specific, mapped locations where Gypsum Valley cat-eye occurs within the boundaries of the Gypsum Valley ACEC. The “monitor, avoid, protect, report” protocol involves monitoring plant occurrences, using the existing disturbance footprint as much as possible, identifying a work area and cordoning off exclusion areas using flagging or other methods to protect population centers and individuals as much as possible, and completing daily reports to document estimated numbers of individuals that are impacted. A biological monitor would document conditions and impacts (see EPM BR-11, Table 8).

Loss of up to 5% of the individual plants of the Gypsum Valley cat-eye documented within the project area is possible during project construction, based on a review of existing and new structure and road locations. In total, as many as 57 individual Gypsum Valley cat-eye plants may be impacted. The Action Alternatives would affect the plant on an individual level, but not a population level. Because very few individuals would be affected, the population would continue to contribute to the relevance and importance criteria for the nominated ACEC. Effects to gypsum outcrops may occur but are not expected. The outcrops would be protected by the same protection measurements used to avoid and minimize impacts to the Gypsum Valley cat-eye. The relevant and important values of the Gypsum Valley nominated ACEC would not be impaired by any of the Action Alternatives, because gypsum outcrops and Gypsum Valley cat-eye would sustain localized, low, long-term impacts.

4.3.9.1.2 *Spring Creek Basin Nominated ACEC*

The 100-foot ROW for the existing transmission line intersects with 26 acres within the Spring Creek Nominated ACEC (25,286 acres). Expanding the ROW as part of any of the Action

Alternatives would increase the overlap with the nominated ACEC by an additional 13 acres. Under any of the Action Alternatives, 39 acres would intersect with the new transmission line ROW. As described in Section 3.5.9, in the Spring Creek Basin Nominated ACEC, the Gypsum Valley cat-eye contributes to the relevant and important values within the project area.

A total of 418 Gypsum Valley cat-eye plants were observed where the Spring Creek Basin nominated ACEC intersects with the project area during surveys in 2014 and 2015. As described previously for the Gypsum Valley nominated ACEC, minimization and avoidance measures to protect known populations of the Gypsum Valley cat-eye would be followed as part of the Proposed Action. Loss of up to 5% of the individual plants of the Gypsum Valley cat-eye population documented in the project area is possible during project construction. In total, as many as 21 individual Gypsum Valley cat-eye individual plants may be impacted. The relevant and important values of the Spring Creek Basin nominated ACEC would not be impaired by any of the Action Alternatives, due to the minimal level of impacts. The Gypsum Valley cat-eye would continue to contribute to the relevant and important criteria for the ACEC.

Effects to the importance and relevance of the Spring Creek Basin nominated ACEC are expected to be low as a result of any of the Action Alternatives, because the Gypsum Valley cat-eye would sustain localized, low, long-term effects.

4.3.9.2 Effects unique to the Proposed Action (Preferred Alternative)

Effects to the Dry Creek Basin Nominated ACEC and Snaggletooth Nominated ACEC would vary between alternatives due to routing options at these two locations (Dry Creek Basin and Dolores River Crossing).

4.3.9.2.1 *Dry Creek Basin Nominated ACEC*

Of the total Dry Creek Basin Nominated ACEC (34,785 acres), 55 acres are transected by the project for the upgrade in place alternative (Alternative A). The 100-foot ROW for the existing transmission line intersects with 37 acres within the ACEC; expanding the ROW as part of the Proposed Action would increase the ROW overlap with the nominated ACEC by an additional 18 acres. As described in Section 3.5.9, two resources contribute to the relevance and importance criteria for the Dry Creek Basin Nominated ACEC- Gypsum Valley cat-eye and GuSG. Although several previously documented occurrences of the Gypsum Valley cat-eye are located ¼ mile west of the existing assignment; these populations were not observed during 2014 and 2015 surveys. No effects to these populations are expected under Alternative A due to the distance from project activities. Overall, beneficial effects to the habitat and population for the GuSG are possible and are summarized in Section 4.3.6. GuSG habitat conditions in the Dry Creek Basin are expected to improve as a result of project activities, including habitat improvement funding (vegetation and hydrology projects are anticipated); reduced perching opportunities for raptors and corvids; and lek protection within the San Miguel Basin subpopulation. The relevance and importance criteria of the Dry Creek Basin Nominated ACEC would not be impaired as a result of the Proposed Action (Alternative A).

4.3.9.2.2 *Snaggletooth Nominated ACEC*

Of the total 23,826 acres within the boundaries of the Snaggletooth nominated ACEC, 21 acres intersect with the existing transmission line ROW. Under Alternative A, the overlap of the project area with the nominated ACEC would expand by 11 acres (32 acres total of overlap). The

project area intersects the Snaggletooth Nominated ACEC at the existing crossings over the Glade Canyon, and Dolores River Canyon. As described in Section 3.5.9, relevant and important criteria are met by wildlife habitat (fish and peregrine falcon) and scenic qualities.

The existing conductor spans the Dolores River, and construction activity would occur above the canyon walls. No existing or proposed structures would be within the Snaggletooth nominated ACEC. Only the project ROW would overlap with the nominated ACEC boundaries. No effects to water in the Dolores River are anticipated as a result of this project; therefore, no effects to the three rare species of fish would result from the Proposed Action. Three Peregrine falcon nests were observed during biological surveys within 0.5 mile of the Dolores River Canyon. Measures to protect the Peregrine falcon, as well as other migratory birds are outlined in EPM BR-2 (Table 8). Measures to protect the Peregrine falcon include timing and spatial constraints described in Table 8. Biological resource impacts are expected to be minor because of the presence of the existing transmission line which has been in place since 1957, and protective measures incorporated into the Action Alternatives.

The Snaggletooth Nominated ACEC site's relevance and importance due to the scenic values of the Dolores River Canyon may be affected, but would not be impaired. Effects to visual resources within the Snaggletooth Nominated ACEC, near and around the Dolores River Canyon area are described in Section 4.3.7. Specific effects to the views from five KOPs are considered to be low to moderate as a result of the change. The existing transmission line would be more visible at several specific locations where it is visible and part of the canyon view, due to additional vegetation clearing and taller structures, as well as larger diameter conductors spanning the canyon. Short-term effects from construction activities and fugitive dust would temporarily affect the scenic value of the nominated ACEC. The area would still meet the BLM VRM Class II standards. Visual and scenic effects would be localized, and confined to the portions of the nominated ACEC near and around the canyon where the transmission line would be visible. No effects would take place in the canyon itself or to the qualities which make it rare and unique, particularly the colorful sedimentary geology and the size and depth of the canyon.

The Proposed Action would not impair the important and relevant values of the Snaggletooth nominated ACEC, including fish species, the Peregrine falcon, and scenic values of the Dolores River Canyon.

4.3.10 Socioeconomics

4.3.10.1 Effects common to all Action Alternatives

Permanent direct effects to the local economy at a project area scale would be minimal as a result of implementing any Action Alternatives. Existing Tri-State employees would continue to be responsible for operation and maintenance of the transmission line and associated facilities that would be owned by Tri-State. No new permanent employment would be generated, and there would be no change to existing population levels or additional demands on housing in the proposed project area. The anticipated workforce during construction of the 230-kV transmission line would range from about 40 to 60 workers over one approximately 12-month period in 2017 and one 12-month period in 2018. Given the specialized nature of transmission line construction and the expertise required, the majority of the workers employed for

transmission line construction would likely be recruited from outside the local area. There could be a short-term increase in housing demand during construction.

Construction-related spending would generate secondary effects from spending on local goods and services such as restaurants and gas stations. Although the Action Alternatives would increase short-term employment, no substantial change to economic factors from the proposed construction activities or long-term operation of the transmission line would occur. Effects from the Action Alternatives would be short-term and low.

For individual property owners with existing 115-kV transmission line easements, the potential effect to property values from the upgrade would be difficult to quantify but is anticipated to be low. For the Dry Creek Basin realignment option, several private landowners would be affected by new easements and locations for the transmission line. While there is a significant body of professional and academic literature on property value impacts from transmission lines, most summaries note that negative property value impacts (as measured in market transactions) tend to be smaller in size, extent, and duration than might be expected (Headwaters Economics 2012). The studies reviewed published empirical research from 1964 to 2009 that generally pointed to a small or no effect on sale price due to the presence of electric transmission lines. Studies of new transmission line effects to property values are limited, but suggest a potential reduction in sales value of about 2 to 9 percent (Jackson and Pitts 2010). A general observation is that when property value impacts occur, they tend to be negative; however, study results are inconclusive, especially for rural areas like the project area. All landowners would be compensated for easements at fair market value.

The Action Alternatives would not have disproportionately high, adverse effects on minorities or low-income populations or communities. The anticipated environmental and socioeconomic effects would be spread across all races, ages, and income levels.

4.3.10.2 Effects unique to Proposed Action

Implementation of Alternative A would result in an additional approximately $90,681,900 (2018 dollars) in construction-related spending (CPUC 2013). The current alignment, as well as Alternative A, crosses two private landowners and CPW, Town of Telluride, and BLM land.

For individual property owners with existing 115-kV transmission line easements, the potential effect to property values from the upgrade would be difficult to quantify but is anticipated to be low. For the Dry Creek Basin realignment option, several private landowners would be affected by new easements and locations for the transmission line. While there is a significant body of professional and academic literature on property value impacts from transmission lines, most summaries note that negative property value impacts (as measured in market transactions) tend to be smaller in size, extent, and duration than might be expected (Headwaters Economics 2012). The studies reviewed published empirical research from 1964 to 2009 that generally pointed to a small or no effect on sale price due to the presence of electric transmission lines. Studies of new transmission line effects to property values are limited, but suggest a potential reduction in sales value of about 2 to 9 percent (Jackson and Pitts 2010). A general observation is that when property value impacts occur, they tend to be negative; however, study results are inconclusive, especially for rural areas like the project area. All landowners would be compensated for easements at fair market value.

Table 31. Landowners in Dry Creek Basin

Landowners Affected by Alternative A (existing alignment)	Landowners Affected by Alternative C - North Side Realignment along SH 141 through Dry Creek Basin	Landowners Affected by Alternative C - South side Realignment along SH 141 through Dry Creek Basin
Landowner #1	Landowner #1	Landowner #1
State of Colorado Division of Wildlife	State of Colorado Division of Wildlife	State of Colorado Division of Wildlife
Town of Telluride	Town of Telluride	Town of Telluride
Landowner #2 (southern end, where line crosses SH 141)	Landowner #2 (southern end, where line crosses SH 141)	Landowner #2 (southern end, where line crosses SH 141)
BLM	BLM	BLM
	Western Slope Properties	Western Slope Properties
		Landowner #3
	Landowner #4	Landowner #4
	Colorado State Land Board	Colorado State Land Board

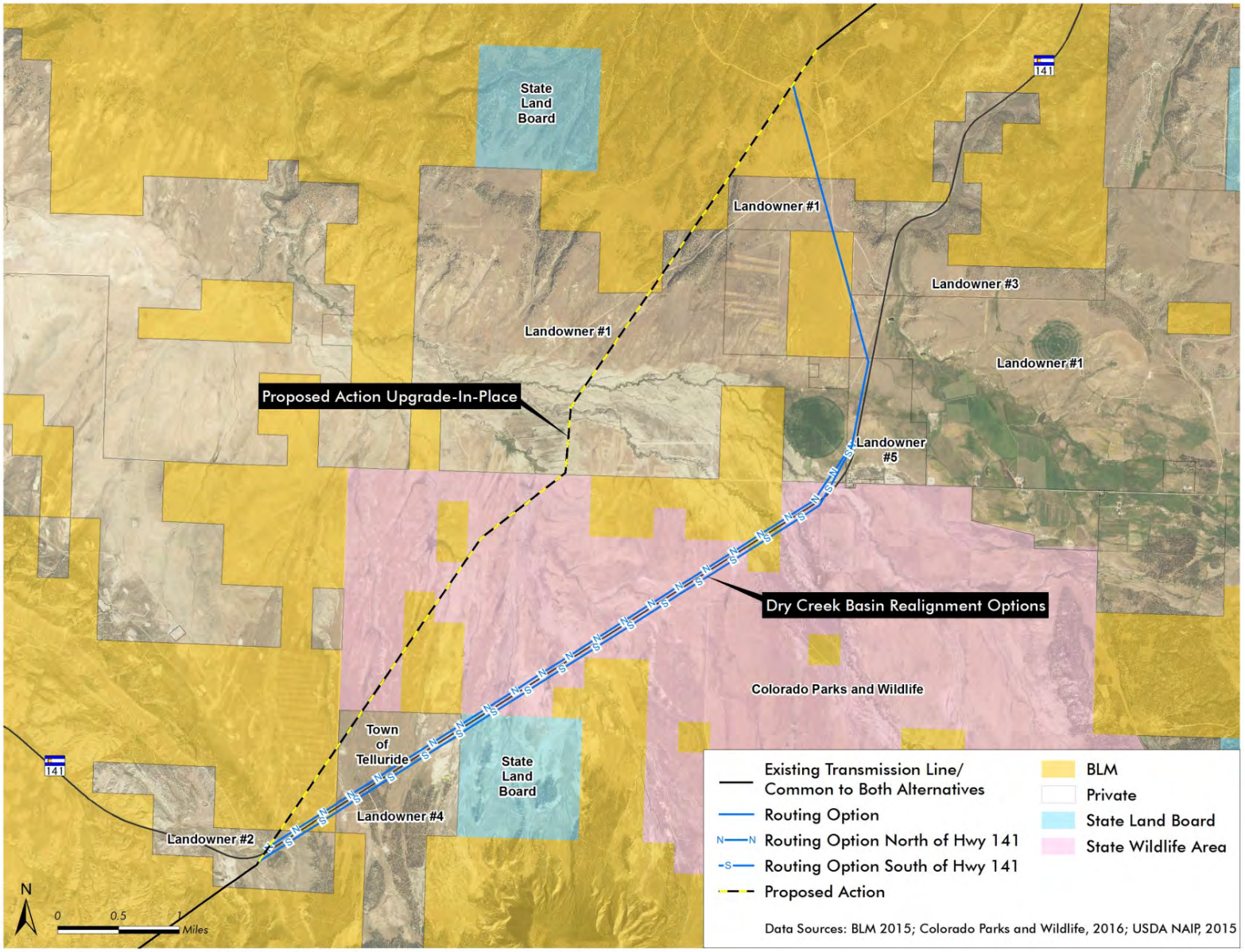

Figure 32. Land Ownership in the Dry Creek Basin (only parcels crossed by any alternative)

4.4 Alternative B: No Action Alternative

4.4.1 Access, Roads, and Transportation

There would be no change to the existing access and transportation system under the No Action Alternative. Tri-State would continue routine road maintenance on existing roads for which it has responsibility, in accordance with the 2006 Transmission Line Maintenance EA (BLM 2006) as it has in the past. Tri-State is authorized for disturbance of up to about 474.4 acres along 130.9 miles of existing access roads. Any new road development on BLM or USFS land would be subject to review and permitting requirements. There would be no new effects to access, roads and transportation.

4.4.2 Cultural Resources

Under the No Action Alternative, any identified historic properties within the existing 100 foot ROW and access road alignments would require consideration of potential adverse effects from ongoing maintenance activities and potentially be subject to mitigation under the MOA. There would be no new effects to cultural resources.

The 2006 EA that analyzed effects to historic properties from on-going road maintenance identified 31 historic properties that would require consideration of adverse effects. Nineteen fewer historic properties would be affected under Alternative B compared to the effects to historic properties common to all Action Alternatives.

4.4.3 Forest and Timber Resources

In the No Action Alternative, there would be no timber harvesting associated with the existing ROW other than ongoing maintenance and clearing of trees under the transmission line. The status of most forest vegetation types – in the mature stage due to lack of disturbance (e.g., fire or harvesting) with dense stand conditions – would not change. Areas that have been treated (i.e., thinned or harvested) more recently may not be available for harvesting activities in the near term. In addition, Tri-State is authorized to disturb up to 93.5 acres of suitable timber along existing access roads. There would be no new effects to forest and timber resources.

4.4.4 Geology and Minerals

No mineral resources would be affected by the No Action Alternative. Geologic hazards (specifically unstable slopes) at the existing crossing of the Dolores River Canyon would continue to create a threat to safety, and require ongoing maintenance to stabilize transmission line structures. Tri-State is authorized to disturb up to 298 acres of lands with a high susceptibility to landslides along existing access roads. There would be no new effects to geology.

4.4.5 Soils

Under the No Action Alternative there would be no construction activity or surface disturbance and therefore, there would be no new effects to soils. Ongoing maintenance of existing access roads and work on the transmission line would result in minor long-term soil disturbances; those effects are disclosed in the 2006 EA (BLM 2006). Tri-State is authorized to disturb up to 474 acres of soils along existing access roads. If the No Action Alternative is selected, all existing structures would need to be replaced. Over time, there would be disturbance along the corridor

as structures are replaced and roads are upgraded as authorized to maintain the existing transmission line at 115-kV.

4.4.6 Threatened, Endangered, or Candidate Animal Species

There would be no change in lynx habitat under the No Action Alternative. For more explanation, refer to the discussion of wildlife in Section 3.4.10.

4.4.6.1 Gunnison Sage-Grouse

Under the No Action Alternative, the existing transmission line in Dry Creek Basin GuSG habitat would remain in place. The indirect effects (noise and human activity from construction) from regular maintenance activities would be anticipated to increase in frequency as the existing line and structures age and decline.

4.4.6.1.1 *Active Lek Proximity and Disturbance to Occupied and Critical Habitat*

There would be no direct effects in known active GuSG lek buffers (0.6 mile from active leks; the distance from the center of the one known active lek to the existing line is approximately 3.8 linear miles. In order to continue to maintain the 115-kV line, more frequent and major maintenance activities would be required (refer to Section 2.3.2), which would involve the improvement of access roads in places to ensure safe access to any structures that need to be replaced. The frequency with which Tri-State would be conducting inspection and maintenance activities in the ROW would increase over time as individual structures are replaced. It generally takes one to two days to replace a structure. The extent and timing of the structure replacements would depend on the annual inspection results and available budgets from year to year. Given the age of the transmission line, all the poles and cross-arms would need to be replaced in the next 10 years. Maintenance could elect to do all the poles in Dry Creek Basin in the same year or spread it out over a 1-5 or 10 year period (assuming the condition of the poles does not rapidly deteriorate).

There are 8.6 miles of access road in the Dry Creek Basin. Because GuSG was not listed as a threatened species during the previous road analysis (BLM 2006), and no consultation with the USFWS has been completed, the road analysis approach described in Section 3.5.6 was used to determine direct and indirect effects of road on GuSG. Access maintenance and upgrades under Alternative B would include new permanent disturbance of 2.2 acres for new road construction and temporary disturbance of 8.4 acres of habitat for access road upgrades and equipment clearing (Table 28) over about a 10-year period. Although TriState does not anticipate disturbing the entire 30-foot ROW, an additional 14.6 acres of disturbance is permitted under the 2006 EA/DR (BLM 2006). The worse-case potential maximum ROW impact, assuming a maximum temporary disturbance to the entire ROW would be 25.2 acres over about a 10-year period under Alternative B (Table 28).

4.4.6.1.2 *Effects of Avian Predators*

Under the No Action Alternative, perching opportunities for avian predators provided by the existing 72 transmission line structures would remain. Any ancillary effects that result from avoidance of the existing line, increased opportunity for avian predators, and indirect impacts to GuSG survival from predation would remain.

4.4.6.1.3 *Habitat Avoidance/Decrease in Habitat Effectiveness*

No new habitat avoidance or new reduction of effective habitat would occur under the No Action Alternative. Alternative B effects on habitat avoidance/habitat effectiveness would continue to occur on 3,306 acres of occupied GuSG habitat, as described in Section 3.5.6 and shown in Table 29.

4.4.6.1.4 *Fragmentation*

Table 20 in Section 3.5.6.1 outlines the sources of human disturbance in the Dry Creek basin that can fragment GuSG habitat. Under Alternative B no new habitat fragmentation would occur.

4.4.6.1.5 *Effects Determination*

Under Alternative B, existing infrastructure (i.e., wire, poles, guy wire) would continue to present a collision risk to GuSG. Existing risks would continue. Due to the collision risk from existing infrastructure and the perching opportunity provided by the H-brace design for raptors and corvids, Alternative B may effect, is likely to adversely affect GuSG. Implementation of the No Action Alternative may affect, is not likely to adversely affect critical habitat. Under the No Action Alternative no new impacts to critical habitat would occur and the current existing baseline would be maintained.

4.4.7 Visual Resources

Existing views from all KOPs would not change in the No Action Alternative. Therefore, the existing BLM VRM class, and USFS SIOs and VQOs would not be affected. There would be no new effects to visual resources.

4.4.8 Lands with Wilderness Characteristics

Under the No Action Alternative, the existing Dolores River crossing and infrastructure would remain unchanged, and would not affect lands with wilderness characteristics. There would be no new beneficial effects to lands with wilderness characteristics (either inventoried or managed).

4.4.9 Areas of Critical Environmental Concern

Under the No Action Alternative, the existing transmission line ROW would continue to intersect small sections of four nominated ACECs. Measures to monitor and avoid sensitive plant species including the Gypsum Valley cat-eye would not occur. Regular maintenance and upkeep on the line would increase over time particularly for structures that are unstable in the Snaggletooth Nominated ACEC, on the north rim of the Dolores River Canyon. Potential effects to GuSG and GuSG critical habitat are described in Section 4.4.6.1. There would be no additional effects to resources that meet the criteria for relevance and importance for the nominated ACECs. The No Action Alternative would not impair relevant and important values for any nominated ACEC in the project area.

4.4.10 Socioeconomics

Under the No Action Alternative, ongoing voltage constraints would continue to exist which would affect the reliability of the system for local members as well as result in effects to the reliability of the electrical grid in southwestern Colorado. Tri-State would not be able to effectively provide transmission capacity to serve future residential, commercial, and industrial loads in the proposed project area, which would affect the regional capacity to serve the region

(see project purpose and need information in Section 1.2). The No Action Alternative would not have disproportionately high, adverse effects on minorities or low-income populations or communities.

4.5 Alternative C: Dolores River Crossing Routing Option (Alternative A Incorporating Upgrade-in-Place at Dolores River Crossing)

4.5.1 Access, Roads, and Transportation

Tri-State is authorized for disturbance of up to about 459 acres along 123 miles of existing access roads. In addition to use of existing access roads, a total of about 1.7 miles of new access roads would be constructed under Alternative C: Dolores River crossing routing option, and about 3.0 miles of existing roads would be decommissioned and reclaimed. Upgrading the transmission line in-place through the Dry Creek Basin would require improvements to existing access roads per the 2006 Transmission Line Maintenance EA (BLM 2006). Upgrading the Dolores River crossing in-place would require construction of about 0.5 mile of new special use road for new pole locations on NFS lands and reclamation of multiple spur roads to pole locations that would no longer be needed. Overall, effects to access, roads, and transportation for Alternative C: Dolores River Crossing Routing Option would be negligible to low and short-term similar to Alternative A (Proposed Action: Preferred Alternative).

4.5.2 Cultural Resources

Effects to historic properties under Alternative C would be the same as Alternative A. About 0.3 mile (1.8 acres) of additional cultural resource survey would be needed. Due to very low site density in the vicinity of the unsurveyed area and the small area of remaining survey, no new cultural resources are expected. Any additional cultural resources found would be subject to the MOA and treatment plan for the project.

Effects to historic properties under Alternative C would be low to high, localized, adverse, and long-term but would be mitigated under EPMs CR-1 to CR-8 (see Table 9), which include an MOA and treatment plan to be implemented prior to construction activities. Three non-eligible cultural resources could be destroyed or otherwise affected during construction activities.

4.5.3 Forest and Timber Resources

See Section 4.3.3.1 for effects common to all Action Alternatives. In Alternative C: Dolores River crossing routing option, the increase in the ROW width and new access road associated with the Dolores River crossing within the SJNF would result in new clearing of approximately 144.9 acres of lands *generally not suitable for timber production or harvest*, about 27.4 acres of *land suitable for timber harvest*, and about 2.5 acres of *tentatively suitable lands*. In total, Alternative C: Dolores River crossing routing option would have about 13.8 acres of new clearing in aspen and 34.2 acres in conifer on the GMUG NF, and about 27.4 acres of new clearing in *land suitable for timber production* (SJNF). Effects to forest and timber resources are expected to be moderate and long-term due to a total of 77.8 acres of new clearing in suitable timber. In addition, Tri-State is authorized to disturb up to 93 acres of suitable timber along existing access roads. However, these areas are on extremely steep slopes which likely are inaccessible or uneconomical for logging. Removal of portions of the existing access road would result in 2.4 acres of reclamation.

Table 32. Dolores River Crossing Upgrade-in-Place Effects to Timber Resources Based on Timber Suitability Classifications

Component	Timber Suitability Designation (SJNF)	Acres
Clearing		
Additional 25-foot ROW	Lands Generally Not Suitable for Timber Production or Harvest	3.7
	Lands Suitable for Timber Production	1.7
	Other Tentatively Suitable Lands Where Timber Harvest May Occur	2.4
New Road	Lands Generally Not Suitable for Timber Production or Harvest	4.9
Reclamation		
12-foot Access Road	Lands Generally Not Suitable for Timber Production or Harvest	2.4

4.5.4 Geology and Minerals

Mineral resources would not be affected by any Action Alternative or the No Action Alternative.

Geologic hazards under Alternative C are described in Alternative A, Section 4.3.4.

A preliminary engineering geologic hazard evaluation was conducted by Kleinfelder for the Dolores River crossing in the southern portion of the study area (Kleinfelder 2014). The evaluation included a desktop review of the site geology and a site reconnaissance to assess the potential for slope stability hazards in the areas proposed for new transmission line towers at the existing alignment for the Dolores River crossing. The evaluation concluded that landslides, rockfalls and other hazards could be minimized by careful structure placement and design. However, a new road alignment would be required to traverse unstable slopes at the crossing, and there would be ongoing maintenance and stabilization activities required. The Alternative C: Dolores River crossing routing option footprint would include about 56 acres of new disturbance with high susceptibility to landslides. Effects are expected to be low and long-term. In addition, Tri-State is authorized to disturb up to 289 acres of lands with a high susceptibility to landslides along existing access roads.

4.5.5 Soils

Most soil disturbance for Alternative C: Dolores River crossing routing option would be the same as Alternative A. Upgrading the Dolores River crossing in-place would result in soil disturbances similar to the remainder of the line; however, the steep terrain on the rim of the canyon increases the potential for soil loss during construction and over the long-term from maintenance access. The new design would remove two structures closest to the rim (one on each side), which are located on erodible steep slopes. However, the access road and new structures would still be located on steep terrain resulting in a large soil disturbance footprint due to cut and fill slope requirements. Soil effects along a new 0.5-mile road with a ROW of up to 75 feet would disturb about 5 acres of soils. Reclaiming the road from the 16-foot width required for construction access to 12 feet wide for long-term permanent maintenance access would reduce the area of soil disturbance and potential erosion. Revegetation of cut and fill slopes following construction would reduce erosion, but some soil loss is likely over the long-term in this steep terrain along access roads. Abandonment and reclamation of about 1.3 miles of existing access roads to the current pole locations would reduce erosion and soil loss over the long-term. Under Alternative C: Dolores River crossing routing option, about 134.64 acres of

direct soil disturbance would occur. In addition, Tri-State is authorized to disturb about 459 acres of soils along existing access roads.

4.5.6 Threatened, Endangered, or Candidate Animal Species

Under Alternative C: Dolores River crossing routing option, federally threatened and endangered species that would potentially be affected by the Action Alternatives are the GuSG and Canada lynx. For the Canada lynx analysis, lynx habitat occurs only in portions of the transmission line alignment common to both Action Alternatives. Effects to Lynx under Alternative C would be the same as for Alternative A.

For the GuSG, the alignment within the Dry Creek Basin would be the same as Alternative A (upgrade in place); therefore, most effects to GuSG, as well as all of EPMs would be the same as Alternative A. Alternative C: Dolores River crossing routing option, includes the voluntary conservation strategy described in POD Appendix B—specifically, the purchase of a 500-acre property containing an active GuSG lek near Miramonte Reservoir and $100,000 in habitat improvement funding. Overall, beneficial effects to the habitat and population for the GuSG are possible and are summarized in Section 4.3.6. An improvement for GuSG in the Dry Creek Basin is expected as a result of decreased opportunity for raptor and corvid perching. The amount of this improvement is unknown at this time since the effectiveness of the perch deterrents is not known and due to the uncertainty of the impacts of a larger wire for perching.

Alternative C impacts to the GuSG would be the same as Alternative A. Alternative C would result in overall beneficial effects to GuSG, although this alternative does involve construction of above ground structures and wire that present a collision risk to GuSG. Design features in Alternative C would minimize, but not eliminate most collision hazards. Due to the collision risk, perching opportunity for raptors and corvids, and no offsetting habitat improvement or resource protection measures Alternative C: Dolores River Crossing may effect, is likely to adversely affect GuSG, due to the marking of the line to reduce collisions. Additional information is provided in the Alternative A analysis.

Implementation of Alternative C: Dolores River crossing upgrade may affect, is likely to affect critical habitat. The voluntary conservation measures are contingent on the selection of the Dolores River crossing re-route. Additional information is provided in the Alternative A analysis.

4.5.7 Visual Resources

Effects to visual resources common with all Action Alternatives are described under Alternative A, Section 4.2.6. Differences between Alternative A and Alternative C: Dolores River crossing routing option are only at the Dolores River crossing. Additional information is in the Visual Resources Report, Appendix C (HLA 2015). Overall, effects to visual resources are expected to be low and long-term project-wide, with moderate localized effects at KOP 2, KOP 10, KOP 11 and KOP 12.

The Dolores River crossing upgrade-in-place option would have fewer, but taller structures than the existing line, within the same alignment. Structure type would be different from the wooden structures currently supporting the crossing. The new taller structures would be more visible, but would be set back from the rim about 314 feet from the location of the existing crossing structure

on the north rim, and about 69 feet on the south rim. The proposed construction and maintenance access road with cut and fill slopes, would be highly visible from KOP 2 in views to the east-northeast. Reclamation and revegetation of the cut and fill slopes of the maintenance access road would mitigate, but not eliminate the visible contrasts of the road. The view of the new structures and road would be to the northeast from KOP 2. Views in other directions would not include the proposed structures, road, and conductors. The taller towers and new access road with cut and fill slopes would be more visible than the existing structures and road due to size and location. Effects to visual resources would be low from KOP 1 and moderate from KOP 2. From KOPs 10, 11, and 12 the larger structures would be more visible due to size; but, from the canyon bottom, the proposed maintenance access road would not be visible. As noted in Section 4.3.7.2.2, the existing transmission line structure are visible at river mile 2, 5, and at the crossing, and are an expected part of the landscape. The crossing is a frame-of-reference for river users. In addition, use at KOP 2 and along the river is rare (see discussion in Section 4.3.7.2.2).

Because the proposed Dolores River Canyon crossing would be in the same location as the existing crossing, existing BLM VRM class II and USFS SIOs would not be affected.

4.5.8 Lands with Wilderness Characteristics

Under Alternative C: Dolores River crossing routing option, upgrade-in-place, the line would remain in a corridor that was specifically excluded from lands with wilderness characteristics designation, and would therefore not affect this designation. Existing tower structures would be removed, and new tangent structures would be placed further back from the existing positions (314 feet on the north rim and 69 feet on the south rim; see Figure 9). These new towers would still be below the canyon rim, but would be outside of the lands with wilderness characteristics boundary. Existing roads accessing eliminated poles would be reclaimed, and a new access road would be constructed; however, all new ground disturbance would be located outside of lands with wilderness characteristics.

Similar to Alternative A, this upgrade-in-place alternative would not result in any direct ground disturbance within lands with wilderness characteristics and would not affect the size, naturalness, or outstanding opportunities for solitude or primitive, unconfined types of recreation on lands with wilderness characteristics because all new ground disturbance would be located outside of lands with wilderness characteristics. Construction activity could adversely affect opportunities for solitude within the canyon during the 12-month construction period. Visual effects associated with the Upgrade-in-Place option at the Dolores River crossings are discussed above. About 0.3 acre of inventoried lands with wilderness characteristics (that are outside of the Snaggletooth Unit and are not managed for wilderness characteristics) would overlap with the ROW associated with the Alternative C: Dolores River crossing routing option, upgrade-in-place.

This alternative is consistent with the language and guidance of the RMP (USFS 2013 and BLM 2015), in that the transmission line would remain within the existing ROW, and no new disturbance to lands with wilderness characteristics would occur. As part of Alternative C, a narrower ROW (less than 100 feet) would be granted for the span through the Dolores River Canyon. Because the existing alignment impedes on the natural topography of the land, once the area below the Dolores River Canyon rim is reclaimed, structures are removed and the road is revegetated, additional acreage of lands with wilderness characteristics could be added to the

Snaggletooth Unit. Therefore, low, long-term beneficial effects are expected to lands with wilderness characteristics.

4.5.9 Areas of Critical Environmental Concern

Of the total 23,826 acres within the boundaries of the Snaggletooth nominated ACEC, 20 acres would intersect with the realigned transmission line ROW under Alternative C: Dolores River Crossing routing Option. The overlap of the project area with the nominated ACEC would be 12 acres less than Alternative A, and one acre less than the No Action Alternative. The ROW width across the canyon would be narrower; thus the specific acreage of ROW overlap with the Nominated ACEC would be less.

Otherwise, effects to the relevant and important values for the four nominated ACECs would be the same as described in Section 4.3.9. Alternative C: Dolores River Crossing Routing Option would not impair relevant and important values for any nominated ACEC in the project area. No construction of facilities under the Alternative C: Dolores River Crossing Routing Option would occur within the designated Gypsum Valley ACEC.

4.5.10 Socioeconomics

Implementation of Alternative C: Dolores River Crossing Routing Option would result in approximately $90,681,900 (2018 dollars) in construction-related spending (CPUC 2013). This additional amount of spending would have short-term effects on housing demand and secondary effects from spending on local goods such as gas and restaurants (see Section 4.3.10.1, 4.3.10.2, Table 31 and Figure 32).

4.6 Alternative C: Dry Creek Basin Routing Option (Alternative A Incorporating Dry Creek Basin Realignment Option)

4.6.1 Access, Roads, Transportation

In order to maintain the existing line, Tri-State is authorized for disturbance of about 422 acres along 113 miles of existing access roads. Please note that in this section, calculations for the north side of SH 141 through Dry Creek Basin are presented first, and south side is presented second. In addition to use of existing access roads, a total of about 10.2 (north side of SH 141) or 10.9 (south side of SH 141) miles of new access roads would be constructed under Alternative C: Dry Creek Basin routing option and about (12.7) 12.8 miles of existing roads would be decommissioned and reclaimed. Rerouting of the transmission line through the Dry Creek Basin would require construction of about (7.9) 8.5 miles of new downline and spur access roads. Along the existing transmission line corridor through the Dry Creek Basin (7.8) 7.8 miles would be decommissioned and reclaimed, including about 2.8 miles on BLM land, 2.8 miles on private land, and 2.1 miles on state land (CPW; Dry Creek Basin SWA).

As described for Alternative A, a new Dolores River Canyon transmission line crossing would require construction of about 1.4 miles of new access roads on the north and south rims. These would be special use routes closed to public access. About 1.3 miles of road used to access the existing transmission line crossing of Dolores Canyon would be decommissioned and reclaimed following removal of existing poles. Overall, effects to access, roads and transportation for Alternative C would be negligible to low and short-term similar to Alternative A.

4.6.2 Cultural Resources

Effects to known historic properties under Alternative C: Dry Creek Basin Routing Option are the same as disclosed under Alternative A. Regardless of whether the north or the south side of SH 141 is chosen for the transmission line under this alternative, remaining areas of survey would be about the same. Survey would be needed for about 9 miles of transmission line (about 83 acres) and about 7.6 to 8 miles of new access road (46 to 48.5 acres). Previous survey data along the existing transmission line (about 8 miles or 48 acres) and existing access roads (about 1 mile or 7 acres) in Dry Creek Basin resulted in the documentation of five cultural resources, one of which is eligible for the NRHP. Based on the comparable data, a similar number of historic properties are expected in areas of remaining survey under this alternative.

One historic roadway (SH 141) that is potentially eligible/supporting under Criterion A was identified within the area of potential effect. The addition of large, modern steel structures along SH 141 under the realignment option in Dry Creek Basin could alter the historic feeling and setting of the road. Please see photo simulations in Appendix C for visualization of these potential effects.

Effects to historic properties under Alternative A would be low to high, localized, adverse, and long-term but would be mitigated under EPMs CR-1 to CR-8 (see Table 9) which includes an MOA and treatment plan to be implemented prior to construction activities. Based on interpolation of unsurveyed areas, about 4 non-eligible cultural resources and 1 eligible historic property could be destroyed or otherwise affected during construction activities.

4.6.3 Forest and Timber Resources

Effects to Forest and Timber Resources under Alternative C: Dry Creek Basin routing option would be the same as under Alternative A for the effects common to all Action Alternatives (Section 4.3.1.2.1) and the Dolores River crossing (Section 4.3.1.2.2) and would be moderate and long-term. For the realignment along SH 141 in the Dry Creek Basin option, minor clearing would occur in *lands generally not suitable for timber production and harvest.* There are no timber resources in the Dry Creek Basin. In total, Alternative C: Dry Creek Basin routing option would have about 13.8 acres of new clearing in aspen and 34.2 acres in conifer on the GMUG NF, and about 34.4 acres of new clearing in *lands suitable for timber production* (SJNF). In addition, Tri-State is authorized to disturb up to 88.3 acres of suitable timber along existing access roads.

4.6.4 Geology and Minerals

Effects to Geology under Alternative C: Dry Creek Basin routing option would be very similar to Alternative A and would be low and long-term. Please note that in this section, calculations for the north side of SH 141 through Dry Creek Basin are presented first, and south side is presented second. The realignment along SH 141 in the Dry Creek Basin option would have surface disturbance to about (7.9) 8.2 acres of high susceptibility to landslides, for a total of about (65.6) 66 acres of disturbed lands having this classification for Alternative C: Dry Creek Basin routing option. In addition, Tri-State is authorized to disturb up to 236 acres of lands with a high susceptibility to landslides along existing access roads.

4.6.5 Soils

Realignment of the transmission line through the Dry Creek Basin would introduce new soil disturbances in an area not previously disturbed. Please note that in this section, calculations for the north side of SH 141 through Dry Creek Basin are presented first, and south side is presented second. Approximately (7.9) 8.5 miles of new downline road would be needed for access to this new transmission line route. Because the terrain is relatively flat, soil disturbance and water erosion potential for the downline road and construction work would be low. However, wind erosion would temporarily increase due to new surface disturbance. Revegetation of existing access road network would occur. The total new soil disturbance footprint for Alternative C: Dry Creek Basin routing option is (142.7) 143.1 acres. In addition, Tri-State is authorized to disturb up to 395 acres of soils along existing access roads. Effects to soils are expected to be similar to Alternative A and range from low, short-term to negligible and long-term.

4.6.6 Threatened, Endangered, or Candidate Animal Species

Under Alternative C: Dry Creek Basin routing option, federally threatened and endangered species that would potentially be affected by the Action are the GuSG and Canada lynx. For the Canada lynx analysis, lynx habitat occurs only in portions of the transmission line alignment common to all Action Alternatives. Effects to lynx under Alternative C: Dry Creek Basin routing option would be the same as for Alternative A.

4.6.6.1 Gunnison Sage-Grouse

Effects unique to Alternative C: Dry Creek Basin routing option on GuSG are described below.

4.6.6.1.1 ***Active Lek Proximity and Disturbance to Occupied and Critical Habitat***

This evaluation of Alternative C includes routing options both on the north and south side of SH 141. Please note that in this section, calculations for the north side of SH 141 through Dry Creek Basin are presented first, and south side is presented second.

Under Alternative C: Dry Creek Basin routing option, the transmission line would be realigned along SH 141 in the Dry Creek Basin. There would be no direct effects to active GuSG leks, or within the recommended 0.6-mile avoidance buffer. The distance from the center of the one known active lek to Alternative C: Dry Creek Basin routing option would be approximately 4.7 miles (North side of SH 141) or 4.9 linear miles (South side of SH 141; note that this labeling convention continues throughout the section). This would move the line 0.9 mile further away, compared to the existing line (Table 25). Howe (2014) found that the odds of raven nesting decreased with every 1 km increase in distance from a transmission line. Relocating the line next to the highway would increase the distance from the active lek by 1.4 km and could result in decreased raven nesting density, based on the Howe study. This could lead to a decrease in nest predation by ravens. Coates and Delehanty (2010) found that with an increase in raven density of 1 raven per 10 km^2 the odds of nest predation increased 26 percent. Low productivity of sage-grouse in combination with increased predation rates in fragmented habitats has the potential to decrease or extirpate local sage-grouse populations (Dinkins et al. 2014), increasing the value of any action the results in decreased habitat fragmentation. In Alternative C: Dry Creek Basin routing option, no construction or maintenance activities would occur within 4 miles of a currently active lek (other than the improvement or “wreck-out” of the existing alignment). All

maintenance and construction activity would be co-located with the existing highway and substantially reduce the amount of disruptive activity to GuSG in the basin.

Based on a 2015 Tri-State evaluation of maintenance needs in the Dry Creek Basin, access maintenance and upgrades under Alternative C: Dry Creek Basin routing option would include new permanent disturbance of (3.2) 3.8 acres for new road construction and temporary disturbance of (11.9) 12.1 acres of habitat for access road upgrades and equipment clearing (Table 28). Approximately 5.1 acres of the existing road improvements and 26.8 acres of the new access road disturbance would occur within critical habitat. Although Tri-State does not anticipate disturbing the entire 30-foot ROW, an additional (13.6) 14.7 acres of maximum disturbance could occur within the ROW. The total worse-case potential maximum ROW impact, assuming a maximum temporary disturbance to the entire ROW, would be (28.6) 30.5 acres under Alternative C: Dry Creek Basin routing option (Table 28).

Alternative C: Dry Creek Basin routing option pole construction would remove a total of (8.3) 7.8 acres of occupied habitat, including (7.2) 6.9 acres in critical habitat. Total new long-term surface disturbance from new structures and new or upgraded roads would be (11.5) 12.1 acres in occupied habitat, including (10.0) 10.4 acres of critical habitat (Table 28). After construction most of the surface disturbance would be reseeded.

4.6.6.1.2 *Effect of Avian Predators*

All Action Alternatives would reduce perching opportunities for avian predators associated with the transmission line because all structures in the Dry Creek Basin would be self-supporting steel monopoles equipped with perch discouragers (Figure 19). Alternative C: Dry Creek Basin routing option would have about (57) 54 steel monopoles with perch discouragers compared to 72 wooden H-frame structures without perch discouragers in GuSG occupied habitat under the existing conditions. Alternative C: Dry Creek Basin routing option would reduce the number of structures by about (21) 25 percent and additional design features including steel monopole structure and perch discouragers would reduce and minimize perch and nesting opportunities for avian predators in GuSG occupied habitat (see EPMs, Table 8 and POD Appendix B). Fewer structures with fewer perching surfaces would reduce the frequency and duration of avian predator perching and nesting. Reducing avian predator perching and nesting opportunities would likely reduce the presence of avian predators and the overall the predation risk on GuSG providing a net benefit to GuSG and contributing to GuSG recovery in the Dry Creek Basin.

4.6.6.1.3 *Habitat Avoidance/Decrease in Habitat Effectiveness*

The main infrastructure corridors that traverse GuSG habitat in the Dry Creek Basin and decrease HE are SH 141 and the existing transmission line (Figure 29). Because the transmission line would be located along SH 141, GuSG likely already avoid most of the habitat within the Alternative C corridor because of the presence of the highway (Table 28). As described in Section 3.5.6, a habitat avoidance distance of about 0.37 mile (600 meters) from the transmission line and SH 141 was used for alternatives comparison (Figure 33). Because of the uncertainty associated with the available data on habitat avoidance as described in Section 3.5.6, this analysis was completed for alternative comparison purposes only and was not intended to be used to determine mitigation requirements. Using this approach, new and existing habitat avoidance (reduced habitat effectiveness) would occur on about (4373) 4383 acres of occupied

habitat, of which only (607) 645 acres consists of new habitat avoidance (Table 29). All of the (607) 645 acres of new habitat avoidance would be in critical habitat.

Co-locating the transmission line disturbance corridor with the existing highway corridor would reduce the overall area of habitat expected to be avoided by GuSG. Because the existing transmission line would be removed, HE would improve in the area currently influenced by the existing transmission line. Subtracting the new reduced area of habitat avoidance under Alternative C Dry Creek Basin routing option from the amount of existing habitat avoidance (baseline) would decrease the amount of occupied habitat avoided (increase HE) by (2,983) 3,011 acres (Table 29), providing an overall net benefit to GuSG.

The width of the steel monopole would be wider than each individual pole of the existing H-structures, increasing the overall visibility of the structures. Alternative C Dry Creek Basin routing option would result in taller, thicker, but fewer overall structures located in GuSG occupied habitat in the Dry Creek Basin compared with the existing transmission line. Transmission line structure dimensions and GuSG conservation have been discussed and debated in peer-reviewed literature only recently and with no conclusive results. An increase in structure height and pole width would theoretically increase the line-of-sight distance from that structure for wildlife on the ground. However, no studies have been completed regarding transmission line structure height differences in relation to GuSG or greater sage-grouse avoidance distances or behaviors. Information about sage-grouse vision, the bird's ocular stimuli, and how those stimuli affect the bird's behavior is also limited. Under Alternative C Dry Creek Basin routing option, GuSG would avoid habitat to a similar extent as they currently do with the existing transmission line for the life of the line, with benefits of overall improvements to HE basin-wide (see previous paragraphs).

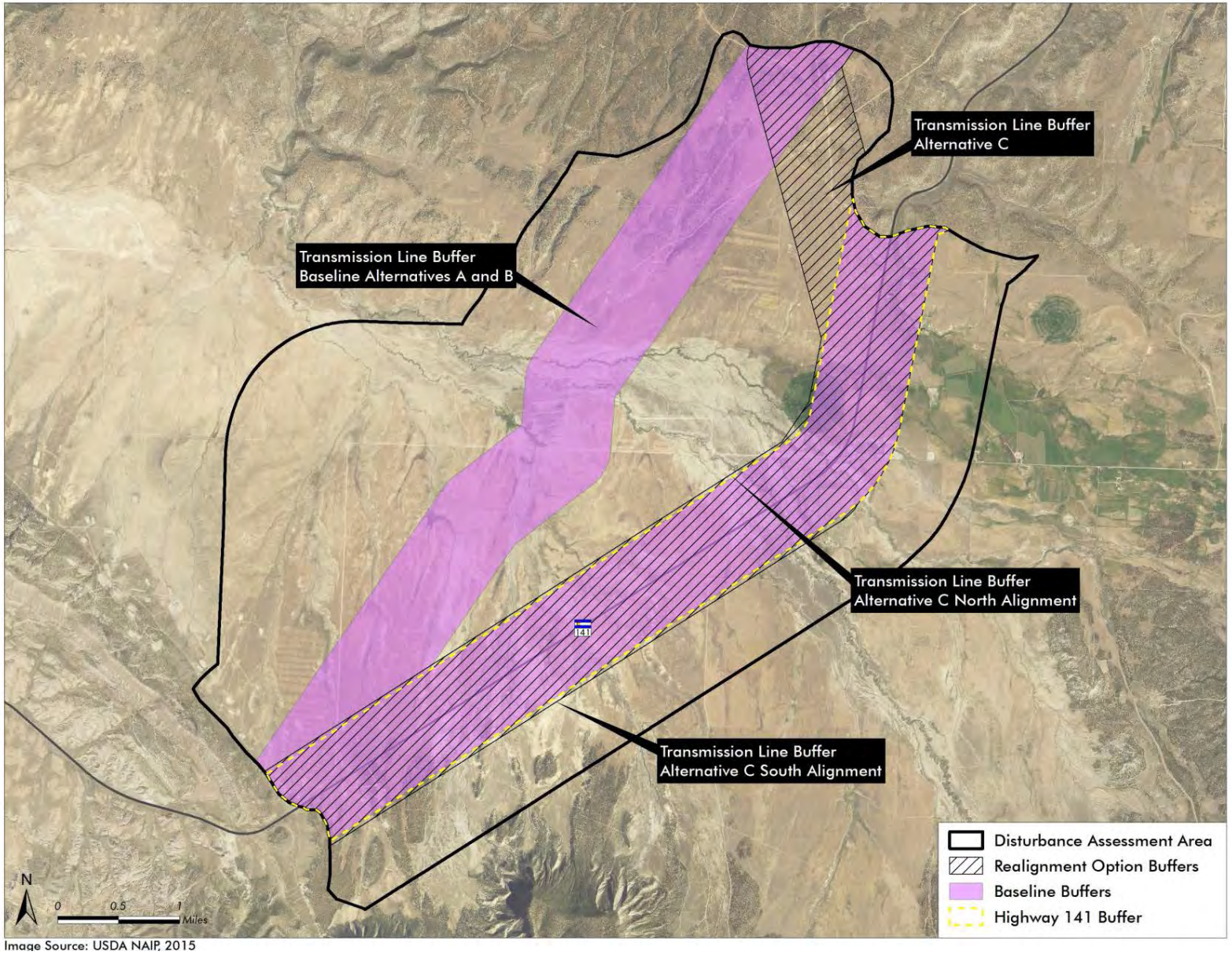

Figure 33. Habitat Avoidance and Reduction of Fragmentation with Co-Location of SH 141 and Transmission Line in the Dry Creek Basin

4.6.6.1.4 *Fragmentation*

Table 20 in Section 3.5.6.1.5 outlines the sources of human disturbance that may fragment GuSG habitat. The major sources of linear fragmentation are the transmission line and SH 141. Alternative C: Dry Creek Basin routing option would collocate the two major sources of fragmentation of GuSG habitat in the Dry Creek Basin. Collocating the transmission line disturbance corridor with the existing highway corridor would reduce overall habitat fragmentation for the life of the line (Table 28), and potentially provide greater connectivity between existing and formerly occupied lek sites within GuSG occupied habitat in the Dry Creek Basin. This concept is demonstrated graphically in Figure 33. Although the newly expanded corridor containing two sources of fragmentation may decrease movements through the corridor, no information is available to evaluate this potential effect. Incorporating design features that minimize perching and features on the landscape, could reduce fragmentation by addressing elements of the project that may lead to avoidance by GuSG.

4.6.6.1.5 *Effects Determination*

Although Alternative C: Dry Creek Basin routing option would result in overall beneficial effects to GuSG (see Table 33), all Action Alternatives involve construction of above ground structures and wire that present a collision risk to GuSG. Tri-State's has committed to installing flight diverters through occupied habitat in the Dry Creek Basin. Flight diverters and other design features in Alternative C would minimize, but not eliminate most collision hazards. Implementation of Alternative C: Dry Creek Basin routing option may affect, is likely to adversely affect GuSG based on the risk of take due to collision with the proposed upgraded line and the uncertainty of direct and indirect impacts associated with the increase in pole height. Alternative C: Dry Creek Basin routing option would decrease the number of poles by about 30%. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line.

Implementation of Alternative C: Dry Creek Basin routing option collocates the power line along SH 141. This results in the greatest increase in habitat improvement among all the alternatives. HE is improved on 2,938 acres of occupied habitat and on 1,905 acres of critical habitat. The improvement of 1,905 acres of critical habitat would continue for the life of the line. Alternative C: Dry Creek Basin routing option may affect, is likely to adversely affect designated GuSG Critical Habitat based on the direct temporary and permanent impacts to occupied GuSG habitat as a result of construction activities, and the uncertainty of impacts associated with the increase in pole height. The Alternative C: Dry Creek Basin routing option would decrease the number of poles by about 30%. All new poles would have perch deterrents; this is a 100% increase in perch deterrents from current conditions. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line. Removal of existing structures in occupied critical habitat would be a management action that could reduce perch availability for avian preditors.

Table 33. Benefits Summary for Alternative C: Dry Creek Basin Routing Option

	Potential Effect	Conservation Action	Conservation Benefit	Description
1	Fragmentation, drought, poor habitat quality	Habitat enhancement via increase habitat effectiveness	Increased survival and habitat availability in Dry Creek Basin Reduced fragmentation	Increase available habitat by 2,983 acres. This improvement is over life of line (60 years)
2	Small Population Size and Structure	Habitat Enhancement/Habitat Conservation	Increased Survival and Genetic Variability	Increase available habitat by co-locating two linear disturbances avoided by sage-grouse. Add 2,983 acres for sage-grouse in Dry Creek Basin
3	Fragmentation; Direct and indirect impacts to Critical Habitat (CH)	Habitat Enhancement: Weed Management	Weed monitoring and management to improve overall habitat for GuSG (above location options apply)	Tri-State would treat noxious weeds in the treatment area to prevent spread and propagation of noxious weeds which would affect the success of grass and forb restoration post construction. Tri-State would treat noxious weeds associated with the transmission ROW for the life of the facility.
4	Fragmentation; Direct and indirect impacts to CH	Expand available habitat and reduce habitat fragmentation	Collocate two linear disturbances impacting sage-grouse	Increase critical habitat available to sage-grouse on 1,905 acres, and on 2,983 acres of occupied habitat. Colocate two linear disturbances to reduce habitat fragmentation.

4.6.7 Visual Resources

Overall, effects to visual resources along the project area are expected to be low and long-term, project-wide, similar to Alternative A. Effects to visual resources would be high and localized for KOP 6 because the existing alignment is not visible from KOP 6 and most of SH 141 (see Appendix C for photo simulations). The new alignment along SH 141 would be highly visible to travelers along the highway for about 10 minutes (approximate drive-time through the basin) and would be highly visible from KOP 6 and to surrounding residents and landowners. The number of structures visible along SH 141 would not vary if the transmission line were constructed on the north or the south side of the highway.

Some views from CR U29 in the central and northern portions of the basin would be improved following removal of the existing structures and conductors and reclamation of the existing alignment.

4.6.8 Lands with Wilderness Characteristics

Under Alternative C: Dry Creek Basin routing option, effects to lands with wilderness characteristics would be the same as Alternative A and Alternative C: Dolores River Crossing routing option and would be beneficial, low and long-term.

4.6.9 Areas of Critical Environmental Concern

Under Alternative C: Dry Creek Basin Routing Option, effects to the relevant and important values for the four nominated ACECs would be the same as described in Section 4.3.9 except for acreage of overlap with the Dry Creek Basin Nominated ACEC and potential effects to Gypsum Valley cat-eye. Under Alternative C: Dry Creek Basin Routing Option, no construction of facilities would occur in the Gypsum Valley Designated ACEC.

4.6.9.1 Dry Creek Basin Nominated ACEC

The realigned transmission line corridor may occur north or south of SH 141 under Alternative C: Dry Creek Basin Routing Option. Gypsum Valley cat-eye was mapped on both sides of SH 141 during the 2014 and 2015 surveys in the Dry Creek Basin nominated ACEC where the proposed realigned transmission line corridor overlaps with the nominated ACEC. If the Alternative C: Dry Creek Basin Routing Option corridor is north of SH 141, 40 acres of the 34,785 total Dry Creek Basin Nominated ACEC acreage would overlap with the project area. About 19 individual plants out of the total documented population of about 382 plants on the north side of SH 141 may be impacted by construction. If the Alternative C: Dry Creek Basin Routing Option corridor is south of SH 141, 39 acres of the 34,785 total Dry Creek Basin Nominated ACEC acreage would overlap with the project area. 115 plants were observed south of SH 141 during 2014 and 2015 surveys, and about 10% or as many as 10 individual plants may be impacted during construction.

Effects to the Gypsum Valley cat-eye under Alternative C: Dry Creek Basin Routing Option (either side of SH 141) would be localized, low, and long-term. Effects would occur at the individual level, but not the population level. The relevant and important values of the Dry Creek Basin Nominated ACEC would not be impaired under this alternative.

4.6.10 Socioeconomics

Under Alternative C: Dry Creek Basin Routing Option, there would be an additional $3 million in construction-related spending (2018 dollars) as compared to the Proposed Action (CPUC 2013). This additional amount of spending would have short-term effects on housing demand and secondary effects from spending on local goods such as gas and restaurants (see Section 4.3.10.1 Effects Common to all Alternatives). Effects to landowners in the Dry Creek Basin are described under Alternative A (see Section 4.3.10.1 Effects Common to all Alternatives, Table 31 and Figure 32). However, the Dry Creek Basin Routing Option would cross private property that does not currently have a transmission line crossing. The alignment on the north side of SH 141 would affect 2 additional private landowners, as well as Colorado State Land Board Property. The alignment on the south side of SH 141 would affect 3 additional private landowners, Colorado State Land Board Property, and would require a new crossing of the Town of Telluride parcel (see Table 31 and Figure 32).

Travel for scenic viewing was identified as a potential impact due to visual changes for this alternative. Under Alternative C: Dry Creek Basin realignment, the proposed realignment is likely to result in negligible changes in traffic volumes following construction in the Dry Creek Basin area. Currently the average annual daily traffic count (AADTC) for the southern section of SH 141 in the project area is 260 vehicles (CDOT 2015). North of U29 Road, the AADTC on SH 141 increases to 560. Traffic increases to an AADTC of 1,300 vehicles closer to Naturita, most likely from commuter traffic with additional travelers using sections of SH 145 and SH 141

that are designated as scenic highways. Routing the transmission line along SH 141 in the Dry Creek Basin would have negligible impacts to travelers using other sections of SH 145 and SH 141. The realignment also is unlikely to impact current traffic volumes in the project area following construction. No impact to tourism-related spending is anticipated as a result of the proposed realignment in Dry Creek Basin. Other effects are described in Section 4.3.10.1.

Under this alternative, effects to socioeconomics would be low. Effects to quality of life for landowners affected by a new ROW crossing could be individually important to those landowners.

4.7 Alternative C: Dolores River Crossing and Dry Creek Basin Routing Options (Alternative A incorporating Dry Creek Basin Realignment and Upgrade-in-Place at Dolores River Crossing)

Analysis of Alternative C: Dolores River Crossing and Dry Creek Basin Routing Options includes an evaluation of routing options on both the north and south side of SH 141 through the Dry Creek Basin. Please note that in this section, calculations for the north side of SH 141 through Dry Creek Basin are presented first, in parentheses, and south side is presented second.

4.7.1 Access, Roads, and Transportation

Tri-State is authorized for disturbance of up to about 429 acres along 114 miles of existing access roads. In addition to use of existing access roads, a total of about (9.4) 10 miles of new access roads would be constructed under Alternative C: Dolores River crossing and Dry Creek Basin routing options and about (10.5) 10.5 miles of existing roads would be decommissioned and reclaimed as described for Alternative C: Dolores River Crossing routing option and Alternative C: Dry Creek Basin routing option. Overall, effects to access, roads and transportation for Alternative C would be negligible to low and short-term similar to Alternative A.

4.7.2 Cultural Resources

Effects to Cultural Resources under Alternative C: Dolores River crossing and Dry Creek Basin routing options would be the same as described for Alternative C: Dolores River crossing upgrade in place and Alternative C: Dry Creek Basin routing option.

Effects to historic properties under Alternative A would be low to high, localized, adverse, and long-term but would be mitigated under EPMs CR-1 to CR-8 (see Table 9) which includes an MOA and treatment plan to be implemented prior to construction activities.

4.7.3 Forest and Timber Resources

Effects to Forest and Timber Resources under Alternative C: Dolores River crossing and Dry Creek Basin routing options would be similar as described for Alternative C: Dolores River crossing routing option and Alternative C: Dry Creek Basin routing option and would be moderate and long-term. The Dolores River upgrade-in-place effects are in Section 4.3.3.2 (Table 23). In total, Alternative C (Alternative A incorporating the Dolores River crossing and Dry Creek Basin routing options) would have about 13.8 acres of new clearing in aspen and 34.2 acres in conifer on the GMUG NF, and about 27.4 acres of new clearing in *lands suitable for*

timber production (SJNF). In addition, Tri-State is authorized to disturb up to 92.6 acres of suitable timber along existing access roads.

4.7.4 Geology and Minerals

Alternative C: Dolores River crossing and Dry Creek Basin routing options would cause surface disturbance to about (61.6) 62.1 acres of land characterized as highly susceptible to landslides. In addition, Tri-State is authorized to disturb up to 271 acres of lands with a high susceptibility to landslides along existing access roads. Effects are expected to be low and long-term.

4.7.5 Soils

Effects to soils under Alternative C: Dolores River crossing and Dry Creek Basin routing options would be the same as described for Alternative C: Dolores River crossing routing option and Alternative C: Dry Creek Basin routing option. Under Alternative C: Dolores River crossing and Dry Creek Basin routing options, about (138.7) 139.1 acres of new soil disturbance would occur. In addition, Tri-State is authorized to disturb up to 430 acres of soils along existing access roads.

4.7.6 Threatened, Endangered, or Candidate Animal Species

Under Alternative C: Dolores River crossing and Dry Creek Basin routing options, federally threatened and endangered species that would potentially be affected by the Action Alternatives are the GuSG and Canada lynx. Effects to lynx under Alternative C: Dolores River crossing and Dry Creek Basin routing options would be the same as for Alternative A.

For the GuSG, the alignment within the Dry Creek Basin would be the same as described under Alternative C: Dry Creek Basin routing options (see Section 4.6.6). All effects described in Section 4.6.6 would be the same. Although Alternative C: Dolores River crossing and Dry Creek Basin routing options would result in overall beneficial effects to GuSG, all Action Alternatives involve construction of above ground structures and wire that present a collision risk to GuSG. Tri-State has committed to installing flight diverters through occupied habitat in the Dry Creek Basin. Flight diverters and other design features in Alternative C: Dolores River crossing and Dry Creek Basin routing options would minimize, but not eliminate most collision hazards. Alternative C: Dolores River crossing and Dry Creek Basin routing options may affect, is likely to adversely affect GuSG. based on the risk of take due to collision with the proposed upgraded line and the uncertainty of direct and indirect impacts associated with the increase in pole height. Alternative C: Dry Creek Basin routing option would decrease the number of poles by about 30%. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line.

Implementation of Alternative C: Dry Creek Basin routing option collocates the power line along SH 141. This results in the greatest increase in habitat improvement among all the alternatives. HE is improved on 2,938 acres of occupied habitat and on 1,905 acres of critical habitat. The improvement of 1,905 acres of critical habitat would be improved for the life of the line. Alternative C: Dry Creek Basin routing option may affect, is likely to adversely affect designated GuSG Critical Habitat based on the direct temporary and permanent impacts to occupied GuSG habitat as a result of construction activities, and the uncertainty of impacts associated with the increase in pole height. The Alternative C: Dry Creek Basin routing option would decrease the

number of poles by about 30%. All new poles would have perch deterrents; this is a 100% increase in perch deterrents from current conditions. A viewshed analysis identified very little impact in increased visibility outside the 600 meter buffer used for avoidance analysis. The greatest impact from increased height would occur closer to the line. Removal of existing structures in occupied critical habitat would be a management action that could reduce perch availability for avian preditors.

4.7.7 Visual Resources

Effects to visual resources in the Dry Creek Basin would be the same as for Alternative C: the Dry Creek Basin routing option (see Section 4.6.7). Effects at the Dolores River Canyon crossing would also be the same as described under Alternative C: the Dolores River Canyon crossing routing option (see Section 4.5.7). All other effects to visual resources are common to all Action Alternatives.

4.7.8 Lands with Wilderness Characteristics

Under Alternative C: Dolores River crossing and Dry Creek Basin routing options, effects to lands with wilderness characteristics would be the same as Alternative C: Dolores River crossing routing option.

4.7.9 Areas of Critical Environmental Concern

Under Alternative C: Dolores River Crossing and Dry Creek Basin routing options, all effects to the relevant and important values for the four nominated ACECs would be the same as described in Sections 4.5.9 and 4.6.9. Under this alternative, no relevant and important values would be impaired for any nominated ACEC.

4.7.10 Socioeconomics

Under Alternative C: Dolores River Crossing and Dry Creek Basin routing options, there would be an additional $3 million in construction-related spending (2018 dollars) because of the Dry Creek Basin proposed alignment shift, as compared to the Proposed Action (CPUC 2013). This additional amount of spending would have short-term effects on housing demand and secondary effects from spending on local goods such as gas and restaurants (see Section 4.3.10.1 Effects Common to all Alternatives).

4.8 Summary of Avoidance, Minimization, Mitigation and Monitoring

For all action alternatives, avoidance, minimization and monitoring measures have been integrated into the proposed design and construction methods (see Section 2, in particular Section 2.3.6.16, Table 9, and Table 10). The effectiveness of the avoidance and minimization measures has been reviewed for each resource, and no residual effects requiring mitigation have been identified. The avoidance and minimization measures would adequately offset the environmental effects to all resources. Monitoring integrated into the action alternatives would be effective at providing information needed to determine if avoidance and minimization measures are being appropriately implemented and are adequate to protect those resources (see Section 2.3.6.16, Table 9, and Table 10; details also provided in POD Appendix G).

5 CUMULATIVE EFFECTS

Cumulative effects result from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative effects may be additive (effects of actions add up to create a cumulative effect); countervailing (effects of some actions may balance or mitigate the effects of other actions); or synergistic (the effects of the actions is greater than the sum of their individual effects).

5.1 Analysis Areas

The geographic extent of cumulative effects varies by the type of resource and effect. The timeframes, or temporal boundaries, for those effects may also vary by resource. Where alternatives potentially contribute to cumulative effects, spatial and temporal Cumulative Effect Areas (CEAs) and their extent were developed by resource and are shown in Table 34.

For cultural resources, lands with wilderness characteristics, and ACECs, cumulative effects were not considered due to the lack of effects from the Proposed Action, Action Alternatives, or the No Action. For cultural resources, effects would be reduced, avoided, or mitigated through implementation of a treatment plan. Effects under Section 106 would be addressed through the MOA and treatment plan. For lands with wilderness characteristics, a net benefit is anticipated under both the alignment options at the Dolores River crossing, and the No Action Alternative represents no change from existing conditions; therefore, the Proposed Action, Action Alternatives, or the No Action would not result in any direct or indirect effects and would not result in an accumulation of effects.

Table 34. Cumulative Effects Analysis Area for Resources Evaluated in Detail in EA

Resource	Cumulative Effect Area	Total CEA Extent	Temporal Boundary
Access, Roads and Transportation	The network of access roads identified in the POD, CR 90, SH 141, and SH 145, and other local access roads	Access roads identified in the POD and major access routes used by the project and within 10 miles of the project area	During project construction (two 12-month periods)*
Cultural Resources	Project impact footprint for direct effects; 3-mile buffer of project area for visual and indirect impacts.	324,186 acres	Permanent effects: life of project (50 years)
Forest and Timber Resources	Timber units adjacent to and within 4 miles of clearing areas within transmission line ROW	30,655 acres	5 years (2-year life of project plus 3 years for vegetation reclamation)
Geology and Soils	Drainage areas (6th level hydrologic unit, 12-digit HUC) downgradient to new disturbed areas such as new lengths of access roads, realignment areas, and substation expansion areas	490,221 acres	5 years (2-year life of project plus 3 years for vegetation reclamation)
Lands with Wilderness Characteristics	Bradford Bridge to Dove Creek Pump Station N/A – No effects to lands with wilderness characteristics	N/A	N/A

Resource	Cumulative Effect Area	Total CEA Extent	Temporal Boundary
Socioeconomics	Same as effects analysis (Montrose, Ouray, San Miguel and Dolores counties)	3,290,880 acres	Temporary effects: during project construction (two 12-month periods).
Threatened and Endangered (GuSG)	Occupied habitat area for Dry Creek Basin subpopulation of GuSG	49,261 acres	Temporary effects: during project construction (two 12-month periods). Permanent effects: life of project (50 years)
Visual Resources	5-mile viewshed from project area; this area was chosen because it encompasses the entire project area viewshed as seen by travelers on nearby roads	563,814 acres	Temporary effects: during project construction (two 12-month periods). Permanent effects: life of project (50 years)
ACECs	Total area of designated and nominated ACECs that are crossed by project	103,764 acres	Temporary effects: during project construction (two 12-month periods). Permanent effects: life of project (50 years)

*Ongoing use for maintenance of line is not changed as a result of this project so not included in analysis.

5.2 Past, Present, and Reasonably Foreseeable Actions

The past, present and reasonably foreseeable actions that would contribute to cumulative effects on resources affected by the alternatives primarily include highways and rural roads, oil and gas development, trails, transmission lines, fences, rural residential and agricultural buildings, industrial storage, and other sites..

5.2.1 Past and Present Actions

These past and present actions are present throughout the project area in a broad sense, and specific locations are summarized in the bullets below. In addition, the affected environment described in Chapter 3 includes past and present actions, which result in the existing condition of the project area.

- Existing oil and gas development activities in the area near the Dry Creek Basin, including from the intersection of SH 141/145 south to the southern end of the project area. Existing facilities include gas wells, pipelines, access roads, compression stations, storage/staging yards, and evaporation and other processing facilities. Kinder-Morgan natural gas pipeline on GMUG NF across the Uncompahgre Plateau has ROW adjoining the MNC Tri-State improvement project;
- Ongoing farming, grazing, ranching, and other agricultural activity including fences, buildings, and other infrastructure;
- Transportation infrastructure, including SH 141, SH 145, CR 90, other local and regional roadways, and private inholding driveways;
- Energy infrastructure, including multiple 345-kV, 230-kV, 115-kv, and distribution lines throughout the project area, including the San Miguel Power Administration (SMPA) transmission line on the Uncompahgre Plateau which has ROW adjoining the MNC Tri-State improvement project;

- Communication infrastructure including the Raspberry Communications Site (Township 47 N, Range 12 W, Section 21) on the Uncompahgre Plateau;
- Nucla Generating Station north of the intersection with SH 141/145 and small coal-powered generating facility;
- Other extractive industries, including the existing Hankins Quarry for flagstone within the Dry Creek Basin;
- Timber clearing, sales, and fire/fuels management activities, specifically including the Upper Tri-State Fuels Treatment Project (on the Uncompahgre Plateau) for areas surrounding the existing 115-kV MNC Tri-State line (eg. "Spruce Up," which was completed in 2015);
- Recreation on the Uncompahgre Plateau includes camping (Iron Springs Campground, Silesca Cabin Rental), hiking, motorized and mechanized vehicle use, turkey and big game hunting, snowmobiling, driving for pleasure, and other miscellaneous activities; and
- Recreation use on the SJNF includes driving on the forest roads, dispersed camping, and hunting, and two permitted outfitter guides. Heaviest use in the Tri-State MNC transmission line area occurs during the fall hunting season. Winter recreation use is very rare as most roads become snow-closed.
- Department of Energy Legacy management Uranium leasing program in the Uravan Mineral Belt in southwestern Colorado. The primary transportation access corridors for the program cross the nominated Dry Creek Basin ACEC, west of the project area.
- 4WD linkage between Montrose and Moab (Rimrocker Trail).

5.2.2 Reasonably Foreseeable Actions

Reasonably Foreseeable Actions (RFAs), as defined in the BLM NEPA Handbook (Section 6.8.3.4; [BLM 2008]), are defined as those actions for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends. Trends in the workforce, demographics and the economy effect socioeconomics; these trends are not driven by federal actions in the area and are not included in Table 35. The following RFAs have been identified from actions posted on the BLM and USFS Schedule of Proposed Action (SOPA) lists, and from agency specialists' best professional judgment and local knowledge. The table below also identifies the primary resources potentially affected in a cumulative manner.

Table 35. Reasonably Foreseeable Actions, Locations, and Effects Analyzed

General Location	Name and Summary of Action	Resources Affected/Analyzed
GMUG (northern project area, Ouray District)	Various forest harvest, treatments and fuels reductions on the Uncompahgre Plateau (total about 1,300 acres in vicinity of project area); various small salvage sales. These are small (<$10,000 value) contracts of beetle killed Douglas-fir or windthrown spruce -- potential for additional small sales in the area given the ongoing Douglas-fir beetle mortality on the plateau and the history of the spruce in the area blowing down.	Forest and Timber Resources and Access, Roads, and Transportation

General Location	Name and Summary of Action	Resources Affected/Analyzed
Dry Creek Basin	Hamm Canyon Well Pad (GuSG cumulative effects) – Access to the site, which is in the Dry Creek Basin, could be via San Miguel County roads 29U and 16Z plus about 2.2 miles of two-track road on BLM land. The 16Z and two-track access roads would be improved to a 35-foot ROW. Use of the improved road would remove all oil and gas traffic from U29, substantially reducing traffic on U29.	Threatened, Endangered, or Candidate Animal Species (specifically GuSG) and Access, Roads, and Transportation
Dry Creek Basin	Healthy Lands Initiative West Highway Gunnison Sage-Grouse Habitat Improvement Project – Treatment of up to 905 acres of pinyon-juniper encroached shrublands to improve habitat suitability for GuSG in Dry Creek Basin.	Threatened, Endangered, or Candidate Animal Species (specifically GuSG)
Dry Creek Basin	Northwest Pipeline (Williams) Pipeline ROW project – Addition of cathodic protection to existing pipeline ROW	Threatened, Endangered, or Candidate Animal Species (specifically GuSG)
Dry Creek Basin	Hankins Quarry – Renewal of existing permit for flagstone quarry in Dry Creek Basin	Threatened, Endangered, or Candidate Animal Species (specifically GuSG)
Dry Creek Basin	Gunnison Sage-Grouse RMP amendment.	Threatened, Endangered, or Candidate Animal Species (specifically GuSG)
BLM, South end of Project Area (Dolores River)	West Dolores Rim Hazardous Fuels Reduction – Ongoing removal of fuels along the Dolores River West Rim.	Forest and Timber Resources
SJNF; South end of Project Area	Glade Landscape Rangeland Management Analysis Area - Analysis Area overlaps with the Tri-State MNC project area. Potential cumulative effects from domestic cattle grazing, during the summer months.	Geology and Soils
SJNF; South end of Project Area	Boggy-Glade Travel Management Decision (implementation in progress) – Tri-State MNC EA analysis included roads designated as open to public use as displayed on Motor Vehicle Use Map. Decision includes ATV trail south of Salter Canyon that is not yet implemented on the ground. Includes minor projects like signage or placing boulders at a few locations but no other large scale ground disturbing activities ongoing or in the near future.	Access, Roads, and Transportation
SJNF; South end of Project Area on East side of Dolores River	The Lake Canyon Forest Health Project – This project is in the implementation stage south of Glade Canyon along the rim and includes cutting beetle killed pine trees, mastication of oak brush, thinning live trees, and prescriptive burning. It is in its second year of implementation with some units cut last year, some cut this year and estimate additional units to be active for two more years.	Forest and Timber Resources and Access, Roads, and Transportation
Approximately 4 miles to the NW of Tri-State's Nucla power plant	SMPA ROW amendment to allow rebuild and upgrade of Nucla Substation	Visual Resources

General Location	Name and Summary of Action	Resources Affected/Analyzed
West of the Montrose substation and within a half mile of the MNC line where it first intersects CR 90	Proposed developed recreation facility and trails	Visual Resources and Access, Roads, and Transportation

5.3 Cumulative Effects of Alternatives

5.3.1 Access, Roads and Transportation

Existing federal, state, county, and private roads in the vicinity of the project area provide access for a variety of uses including regional travel; recreation, agricultural, and commercial activity; oil, gas, and mineral industries; transmission line maintenance; and land management operations. Primary highways in the vicinity of the project area are CR 90, SH 145, SH 141, and numerous county, NF and BLM, and private roads. Past and present activities have included construction of new roads and ongoing road maintenance and repair. The existing road network provides a beneficial cumulative effect to the region by providing safe travel and access to public and private lands. Roads to the existing transmission line allow Tri-State to access the 115-kV line for maintenance. Ongoing road maintenance by the responsible private landowner, BLM, and USFS would continue to provide access to public lands for multiple uses. On BLM-managed and other federal lands between Montrose and Nucla, Montrose County implemented a Four-Wheel Drive (4WD) system of existing access roads that provides a 4WD linkage between Montrose and Moab (Rimrocker Trail) and could increase traffic on CR 90 and other local access routes.

A number of RFAs near the project area would affect access and transportation. Proposed road improvements and new roads associated with the upgrade to the Tri-State transmission line would contribute to cumulative transportation effects Montrose County also is proposing a potential developed recreation facility and trails, and access near the north end of the project area, which also could increase traffic on CR 90. Various small salvage sales in the GMUG NF to restore forest health would involve use of existing access roads and possible new short-term roads used for timber removal operations. Similar activities associated with the Lake Canyon Forest Health Project could temporarily increase logging trucks on local roads at the south end of the project area on the SJNF. The development of the Hamm Canyon Well Pad would require improvements to several existing roads and would temporarily increase oil and gas traffic on local and regional roads in the Dry Creek Basin. Management of roads and trails under the Boggy-Glade Travel Management Decision would include a number of actions designed to provide for long-term watershed health, water quality, and wildlife habitat, while allowing access for outdoor recreation opportunities. When fully implemented, the public will be able to operate motor vehicles only on the roads and trails in the Boggy-Glade area that have been designated and depicted on a Motor Vehicle Use Map. The effect may be to concentrate vehicle use on fewer roads. Hunting on NFS lands contributes to the heaviest seasonal traffic—during the fall months—and would overlap with the proposed project construction season during September and October.

All of the Action Alternatives would contribute additively to the cumulative effects on roads and transportation from an increase in traffic during construction. Construction activities would be

completed on a schedule of two twelve-month sessions, one on the Montrose-Nucla section (2017) and one on the Nucla-Cahone section (2018). This may result in short-term cumulative adverse effects on travel and traffic in localized areas from the transport of equipment and materials. There would be no long-term adverse effects on transportation and traffic following construction, as future access for maintenance of the upgraded transmission line would be similar to existing conditions. Cumulative effects on traffic from the Action Alternatives in combination with other RFAs are expected to be negligible because actions are scattered over a large geographic area. New roads constructed for the upgraded transmission line would add to the road network, but the majority of these roads are expected to be short spur roads closed to motorized and mechanized use, so cumulative effects to regional access would be negligible. Local use by non-motorized public would likely occur on these new routes. The No Action Alternative's contribution to cumulative effects on access and transportation would be limited to ongoing maintenance of existing roads.

5.3.2 Cultural Resources

All of the Action Alternatives would contribute additively to the cumulative effects on cultural resources. Reasonably and foreseeable cumulative effects to historic properties include increased public visitation to unknown historic properties from the construction or improvement of new access roads. Any historic properties affected by construction of new access roads would be addressed through the MOA and treatment plan. Oil and gas exploration and federal agency land management activities would continue to affect unknown historic properties, but any potential effects would be avoided, minimized or mitigated under agency regulatory authority.

5.3.3 Forest and Timber Resources

Forest and Timber resources are affected by past actions including past timber sales, ROW clearing, forest fires, and fuel management projects. The actions identified as contributing to cumulative effects include various small salvage sales (about 50 to 100 acres each), Tri-State Ouray District Stewardship Contract Treatments (about 1,300 acres), the West Dolores Rim Hazardous Fuels Reduction (up to 10,000 acres of thinning and clearing), and the Lake Canyon Forest Health Project (pine thinning, mastication, sanitation /salvage, and prescriptive burning activities over approximately 7,500 acres). These projects have an overall effect of improving forest health and reducing the risk and intensity of insect infestations and catastrophic fire by clearing hazard trees and blowdown areas, and thinning trees to optimal healthy density. The Action Alternatives would result in additional clearing adjacent to an existing ROW corridor, with new clearing corridors needed for both routing options at the Dolores River crossing. Approximately 28 acres of lands suitable for timber production would be become unavailable for timber production for the life span of the powerline. Due to the size of the surrounding forest, this is a negligible effect. ROW limits would be cleared to NERC standards to protect the surrounding forest from potential hazard trees affecting the line and potentially causing fires or outages. The RFAs identified for Forest and Timber resources would primarily have a countervailing effect and balance or mitigate the low direct and indirect effects of the Action Alternatives.

5.3.4 Geology and Soils

Ongoing and reasonably foreseeable future land disturbances from forest health projects, oil and gas development, road work, livestock grazing, and other land use activities have the potential to

adversely affect geologic and soil resources where land disturbances occur. Proposed transmission line construction under all of the Action Alternatives would contribute to adverse cumulative effects from construction of new tower structures, roads, stringing operations, and other activities. Most of these activities would have short-term effects on geologic and soil resources with EPMs used to minimize long-term adverse effects. A net increase in new roads under the Action Alternatives (5.3 to 7.3 miles) would contribute long-term adverse cumulative effects on soil and geologic resources to those from other past, present, and RFAs. An upgraded transmission line under the Action Alternatives would have fewer towers than existing conditions, but towers would have a slightly larger permanent footprint. The net result would be a minor change in long-term soil productivity and contribution to cumulative effects. Overall, the Action Alternatives would contribute negligible to low adverse cumulative effects to land stability and soil productivity from temporary ground disturbing activities (a total of about 194 acres of temporary soil disturbance), with a long-term adverse loss in soil productivity from the additional access roads. The No Action Alternative would contribute ongoing adverse effects to geologic and soil stability from maintenance of roads and facilities at the Dolores River Crossing. Cumulative effects would be low to moderate in the localized area surrounding the Dolores River Crossing access roads and other ground disturbance.

5.3.5 Threatened, Endangered, or Candidate Animal Species (GuSG)

The Action Alternatives would contribute to cumulative effects on GuSG in the Dry Creek Basin. Cumulative effects of each routing option, in combination with past, present, and reasonably foreseeable actions in the Dry Creek Basin are described in the following subsections.

As described in Section 5.2.1, past and present activities affecting GuSG in the Dry Creek Basin include oil and gas development and other mining/extractive industries, development and use of transportation infrastructure, recreation, energy infrastructure including the existing 115-kV transmission line, and agricultural activity. Human activity and vehicle use associated with these activities may affect GuSG behavior, including lekking, and habitat use. Pipelines, well pads, fences, transmission lines, and local, county, and state roads and highways create physical and behavioral movement impediments, which contribute to habitat fragmentation.

RFAs potentially affecting GuSG include the Gunnison Sage-Grouse RMP amendment and the West Highway Gunnison Sage-Grouse Habitat Improvement Project; both projects would contribute to improvement of GuSG habitat in the Dry Creek Basin. The Hamm Canyon Well pad would contribute to improved habitat conditions for GuSG by removing oil and gas traffic from U29. The Hankins Quarry permit renewal would have no additional increase in human activity or vehicle use. The Northwest Pipeline would increase human activity for the fall and one month for one year. During that time, there would be increased human activity, vehicle use, and habitat degradation and removal that could affect GuSG behavior and fragment GuSG habitat.

5.3.5.1 Cumulative Effects of Upgrade-in-Place at Dry Creek Basin (Alternative A Proposed Action and Preferred Alternative)

Cumulative effects of the Proposed Action (upgrade-in-place) at Dry Creek Basin on GuSG would be low, with some detrimental effects and several beneficial effects. The direct effects of habitat loss for new poles and road improvements combined with RFAs would be negligible and

similar to the No Action Alternative. Cumulative effects of new human disturbance and vehicle use during construction and maintenance of the upgrade-in-place at Dry Creek Basin option would be negligible to low, because these effects would be temporary and minimized through implementation of EPMs.

The Proposed Action would reduce perching opportunities for avian predators associated with the transmission line, which would in turn likely reduce predation of GuSG (see Section 4.3.6.2). Reducing predation of GuSG in the Dry Creek Basin, in combination with implementation of the Gunnison Sage-Grouse RMP amendment habitat improvement measures and the West Highway Gunnison Sage-Grouse Habitat Improvement Project, would improve conditions for GuSG in the Dry Creek Basin. The upgrade-in-place at Dry Creek Basin would not create any new GuSG habitat fragmentation or habitat avoidance/reduction in habitat effectiveness; therefore, there would be no cumulative effects of the Proposed Action on habitat effectiveness or fragmentation.

When combined with the Gunnison Sage-Grouse RMP amendment and the West Highway Gunnison Sage-Grouse Habitat Improvement Project, the design features and voluntary conservation strategy included in the Proposed Action would further benefit GuSG and contribute to the recovery of the species. All of these actions would improve GuSG habitat conditions in the Dry Creek Basin as a result of habitat improvement projects and funding (vegetation and hydrology projects are anticipated); reduced perching opportunities for raptors and corvids; and lek protection within the San Miguel Basin subpopulation.

5.3.5.2 Cumulative Effects of No Action Alternative (Alternative B)

In order to continue to maintain the 115-kV line, more frequent and major maintenance activities would be required (refer to Section 2.2.2), which would involve the improvement of access roads in places to ensure safe access to any structures that need to be replaced. Cumulative effects of access road disturbance and vehicle use during construction and maintenance of the existing transmission line in the Dry Creek Basin would be negligible to low, because effects would be temporary and minimized through implementation of the stipulations and other commitments tied to the existing 115-kV ROW grant. The No Action Alternative would not contribute to any additional GuSG habitat fragmentation or reduction in habitat effectiveness. Therefore, there would be no cumulative effects of the Proposed Action on habitat effectiveness or fragmentation of GuSG habitat in the Dry Creek Basin.

5.3.5.3 Cumulative Effects of Realignment Option at Dry Creek Basin (Alternative C)

Similar to the upgrade-in-place at Dry Creek Basin option, the realignment at Dry Creek Basin would reduce perching opportunities for avian predators. The cumulative effects of habitat removal, human disturbance, and vehicle use during construction and maintenance of the realignment at Dry Creek Basin would also be similar to the upgrade-in-place. However, in the realignment at Dry Creek Basin option, the linear disturbance from the existing transmission line and SH 141 would be co-located into a single, expanded disturbance corridor. Co-locating the two major disturbance corridors in the Dry Creek Basin would result in a cumulative increase in habitat effectiveness on 2,983 acres (realignment on north side of SH 141) or 3,011 acres (realignment on south side of SH 141) of occupied GuSG habitat. As described in Section 4.6.6.1, reducing avian predator perching and nesting opportunities and co-locating the

transmission line and SH 141 would reduce predation of GuSG, reduce GuSG habitat fragmentation, which would in turn likely reduce predation of GuSG. Co-locating the transmission line and SH 141 would also reduce habitat fragmentation and potentially provide greater connectivity of GuSG habitat areas by concentrating behavioral avoidance/fragmentation effects of SH 141 and the transmission line along one corridor instead of two. The realignment at Dry Creek Basin option, in combination with habitat improvement projects, would cumulatively improve GuSG habitat quality and reduce fragmentation.

5.3.6 Visual Resources

The existing visual landscape includes ROW clearing, roadways, towns and other built environments, oil and gas facilities, and other extractive industries. New visual effects from additional clearing beyond the existing ROW, new access roads, taller structures, and realignment areas would have an additive effect. Widening the ROW from 100 to 150 feet would result in 534 acres of additional ROW acreage under the Proposed Action, of the 563,814 total acres of the Cumulative Effects Impact area for visual resources (5 miles wide by 176.2 miles long). Within this acreage, trees would be cleared, existing transmission line structures would be removed, and new structures would be installed and maintained. Other forest clearing activities in proximity to viewers could result in cumulative effects. No other RFAs were identified that would have a cumulative effect from the KOPs identified for the project; however, general visual effects would occur throughout the length of the proposed improvement project. A proposed rebuild and upgrade of SMPA's Nucla substation would potentially change the alignment of transmission lines entering the Nucla Power Plant. Any cumulative effects to visual resources from this project would be negligible, as no change in the visual context or contrast is anticipated. A potential shooting area for Montrose County, about 0.5 mile west of the Montrose substation, has been discussed with the BLM although no application has been made at this time. The larger facility and access road could result in a change to the visual landscape. More recreationists could potentially view the upgraded MNC 230-kV project as a result of improvements to the trail system, and from the potential developed recreation facility and trails; however, this does not represent a cumulative effect to visual resources.

5.3.7 Socioeconomics

Cumulative socioeconomic effects as a result of the Tri-State MNC project are negligible. The workforce during project construction would range from about 40 to 60 workers over two years. Tri-State's operations and maintenance workforce would return to existing levels following the construction phase. The proposed project under the Action alternatives is limited in scale and scope, and would produce negligible to low short-term socioeconomic effects due to project construction, and long term benefits due to the availability of a reliable power source in the region. No new permanent employment would occur as a result of the project. There would be no change to existing population levels in the proposed project area as a result of the project. No effects to underserved populations are anticipated and no environmental justice issues are anticipated.

5.3.8 ACECs

Under the Action alternatives, cumulative effects have and could potentially continue to occur due to the Uranium Leasing program. This activity in particular could affect the nominated Dry Creek Basin ACEC, which is crossed by primary access routes to the lease tracts. Department of

Energy Legacy Management currently manages the Uranium Leasing Program and continues to administer 31 lease tracts, all located within the Uravan Mineral Belt in southwestern Colorado. Twenty-nine of these lease tracts are actively held under lease and two tracts have been placed in inactive status indefinitely. Administrative duties include ongoing monitoring and oversight of leaseholders' activities and annual inspections to identify and correct safety hazards or environmental compliance issues. The primary transportation corridors (County Roads EE21, DD19, and U29) that access ULP lease tracts JD-9 and WM-17 cross the middle of the proposed Dry Creek Basin ACEC. Uranium exploration and mining on these two lease tracts would increase ore truck and personal-vehicle traffic on these roads. However, the Uranium Leasing Program would implement Record of Decision (May 6, 2014) only after the U.S. District Court for the District of Colorado has dissolved the injunction issued on October 18, 2011, which froze lease activities at 31 tracts until this evaluation process was completed. Until such time no new cumulative impacts would occur.

6 CONSULTATION AND COORDINATION

6.1 Introduction

The issue identification section of Chapter 1 identifies issues analyzed in detail in Chapter 4. Table 13 and ID Team Checklists (available in the project record) provide the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in Sections 6.2 and 6.3 below. The scoping summary report documents the results of the public involvement process beginning with public scoping (available at 2014-1106 Tri-State Scoping Report).

6.2 Persons, Groups, and Agencies Consulted

Numerous persons, groups, and agencies were consulted during scoping, the public review of the Preliminary EA and during development of the Final EA. Consultation with cooperating agencies and other agencies is described in the following sections.

6.2.1 Agency Consultation and Coordination

Federal, tribal, state, and local agencies consulted during the development of this EA are shown below in Table 36.

Table 36. Federal, Tribal, State, and Local Agencies Consulted

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
USFWS	Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)	Coordination between Tri-State, third-party consultants (ERO Resources, Galileo Project), BLM, USFS, and the USFWS has been ongoing since January 2014. Meetings and conference calls occurred on the following dates: • March 12, 2014 conference call (USFWS, BLM, ERO Resources) • April 9, 2014 meeting (USFWS, BLM, Tri-State, ERO Resources, Galileo Project) • August 25, 2014 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project, CDOT) • February 6, 2015 meeting (USFWS, CPW, Tri-State, BLM, ERO Resources, Galileo Project) • August 21, 2015 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project) • October 2, 2015 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project) • June 8, 2015 (USFWS, BLM, ERO Resources) BLM has submited the BA to USFWS (Fall 2016).

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
CPW	Consult with CPW as the agency with expertise on effects on game species	Coordination between Tri-State, third-party consultants (ERO Resources, Galileo Project), BLM, and CPW has been ongoing since January 2014. Meetings and conference calls occurred on the following dates: • July 31, 2014 field review of Dry Creek Basin (CPW, BLM, Tri-State, San Miguel County, ERO Resources, Galileo Project) • August 25, 2014 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project, CDOT) • February 6, 2015 meeting (USFWS, CPW, Tri-State, BLM, ERO Resources) • August 21, 2015 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project) • October 2, 2015 (CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project)
CDOT	Consult with CDOT on highway ROW requirements	August 25, 2014 meeting between CPW, San Miguel County, USFWS, BLM, Tri-State, ERO Resources, Galileo Project, and CDOT to discuss ROW requirements along SH 141
Colorado SHPO	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	Section 106 consultation ongoing since March 2015 and expected to continue through project completion. MOA for SHPO review in progress
Jicarilla Apache Nations	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo de Cochiti	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Pueblo of Acoma	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 24, 2015: Pueblo declined to comment on MOA; requested continued information exchange • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo of Isleta	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo of Jemez	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Kewa	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.

Name	Purpose and Authorities for Consultation or Coordination	
Pueblo of Laguna	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Nambe	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Ohkay Owingeh	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Picuris	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Pueblo of Pojoaque	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of San Felipe	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 • December 9, 2105 Pueblo requested continued coordination and involvement
Pueblo of San Ildefonso	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo of Sandia	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo of Santa Ana	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 • November 19, 2105 Pueblo declined to participate in MOA

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Pueblo of Santa Clara	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • September 15, 2015 email from Pueblo of Santa Clara: questions about the cultural resources report sent to BLM • September 29, 2014 Pueblo of Santa Clara email, request for copy of 2013 Cultural Resources Inventory of study area • November 5, 2014 BLM email: transmittal of file transfer site information to retrieve the cultural resources technical report • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Pueblo of Taos	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Tesuque	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.
Pueblo of Zia	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the Proposed Action.

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Pueblo of Zuni	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Southern Ute Indian Tribe	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • October 15, 2014 meeting: Project update provided by BLM • June 18, 2015 BLM received a letter dated April 9, 2014 • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
The Hopi Tribe	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • April 4, 2014 letter from the Hopi indicating that they deferred decision about Cooperating Agency status to the SHPO • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • August 18, 2014 Hopi letter to BLM indicating interest in ongoing consultation and requesting a copy of the cultural resources inventory • September 9, 2014 meeting: Project update provided by BLM • October 15, 2014 meeting: Project update provided by BLM • November 5, 2014 BLM email: transmittal of file transfer site information to retrieve the cultural resources technical report • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106 • November 11, 2015: Request from tribe for continued information, including cultural resource report copies and the opportunity to comment on the MOA and treatment plan

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
The Navajo Nation	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • April 25, 2014 Navajo Nation letter: Tri-State Right-of-Way Grant • May 5, 2014 Navajo Nation letter to BLM declining Cooperating Agency status • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • September 24, 2014 Navajo Nation letter to BLM requesting to be notified if cultural sites are inadvertently discovered during proposed project implementation • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Ute Mountain Ute	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 3, 2014 consultation with BLM. Ute Mountain Ute indicated they want to be kept informed of potential effects of proposed project • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • September 9, 2014 meeting: Project update provided by BLM • October 15, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106
Ute Tribe of the Uintah & Ouray Reservation	Same as above	• March 20, 2014 BLM letter: Invitation to participate as a cooperating agency • August 12, 2014 BLM letter: Tribal Consultation Initiation Letter • October 15, 2014 meeting: Project update provided by BLM • November 11, 2015 BLM letter: notification to tribes of release of the EA and update on Section 106

6.2.2 Cooperating Agencies

A cooperating agency is any federal, state, or local government agency or Indian tribe that enters into a formal agreement with the lead federal agency to help develop an EA. More specifically, cooperating agencies "work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks" (BLM Land Use Planning Handbook H-1601-1 [BLM 2005]).

The BLM invited 21 agencies and 25 tribes (see Table 36 above for a summary of tribal consultation) to participate in the Tri-State MNC Transmission Improvement EA as cooperating agencies. Seven agencies are participating in the NEPA process as Cooperating Agencies with the BLM: SJNF, GMUG NF, San Miguel County, Montrose County, Dolores County, and the Colorado Energy Office.

Interactions with the cooperating agencies have and will continue to include periodic project briefings and reviews of preliminary internal draft sections of EA (see Table 37). The BLM will continue to engage the cooperating agencies throughout the preparation of the EA. Additional information is in the project scoping report.

Table 37. Cooperating Agency meetings

Attendees	Purpose and Objective	Date
USFS	Public Affairs and Introductions	April 7, 2014
USFS, Colorado DNR, CPW, Dolores County, Montrose County, RUS	Cooperating Agency Introduction Meeting	April 15, 2014
Colorado Energy Office, CPW, Dolores County, Montrose County, San Miguel County, RUS, USFS	Plan of Development Update, EA Development, Scoping Summary, Cultural, Tribal, and Biological resources Update	July 9, 2014
CPW, San Miguel County	Dry Creek Basin Alternatives Field Trip	July 31, 2014
Colorado Energy Office, Montrose County	Review project proposal, alternatives, and design features, Prepare for EA review, Discuss public, agency, and tribal coordination, Provide update on cultural and biological resource compliance, Identify timeline and next steps	January 20, 2015
USFS, San Miguel County, CPW	Preliminary EA overview, Discuss Preliminary EA comments, Affirm comment deadlines and review status, Review comment submission protocols, Discuss next steps	June 4, 2015
San Miguel County, USFWS, CPW	Discuss: role of Cooperating Agencies in the NEPA process; previous coordination, lessons learned, and best practices for ongoing consultation; decision-making framework and regulatory constraints of the agencies; agency Preferred Alternative process; upcoming NEPA milestones; alternative development, data, and mitigation options in Dry Creek Basin alternatives and discuss response to comments on analysis.	August 21, 2015
USFS, Dolores County	Dolores River Crossing Field Trip	September 24, 2015
San Miguel County, USFWS, CPW	Meeting is a follow up to the August 21, 2015 meeting	October 2, 2015
San Miguel County; Montrose County; Colorado Energy Office	Summarize public comments and draft responses; Preferred Alternative update; upcoming coordination opportunities	February 12, 2016
San Miguel County; Montrose County; Colorado Energy Office	Administrative Draft FEA Review Call; identification of Preferred Alternative; response to public comments	July 6, 2016

6.3 Summary of Public Participation

Public involvement is a vital and legal component of the EA process. Public involvement vests the public in the decision-making process and allows for full environmental disclosure.

Guidance for implementing public involvement under NEPA is codified in 40 CFR Section 1506.6, thereby ensuring that federal agencies make a diligent effort to involve the public in the NEPA process.

Scoping is an early and open process for identifying the key issues related to a Proposed Action. Information collected during scoping may also be used to develop the alternatives to be evaluated in detail in a NEPA document. Both internal and external scoping are conducted during the process. Section 6.3.1 of the 2008 BLM NEPA Handbook (BLM 2008) describes internal and external scoping as follows.

"…internal scoping is simply the use of BLM and cooperating agency staff to help determine what needs to be analyzed in a NEPA document. Internal scoping is an interdisciplinary process; at a minimum, use scoping to define issues, alternatives, and data needs. Additionally, this is an opportunity to identify other actions that may be analyzed in the same NEPA document"

"*External scoping involves notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public. . . External scoping can be used to identify coordination needs with other agencies; refine issues through public, tribal and agency feedback on preliminary issues; and identify new issues and possible alternative"*(BLM 2008).

Public involvement is being conducted in the following phases for the Tri-State MNC Transmission Improvement Project environmental review process:

- Public scoping prior to NEPA analysis to determine the scope of issues and alternatives to be addressed (complete: May 5 to June 4 2014)
- Public outreach, news releases, and newspaper advertisements (as needed)
- Collaboration with federal, state, local, and tribal governments, and cooperating agencies (ongoing)
- Public review of and comment on the Preliminary EA, which analyzes likely environmental effects of the Proposed Action and alternatives (Fall 2015)

This scoping summary report documents the results of the public involvement process beginning with public scoping.

6.3.1 Mailing List and Letters to Interested Parties

Public scoping comments were solicited via a scoping letter dated May 5, 2014, that was mailed to the appropriate agencies, specific interested parties, and to the general public. Letters to interested parties were mailed to approximately 900 addresses. The scoping letter announced the opportunity for public input and initiated the start of the scoping period. Various parties provided comments, and a total of 17 individual letters were received. Those included federal, state and local agencies (CPW, Department of Energy (DOE)-Western Area Power Administration, San Miguel County, and Dolores County); non-governmental organizations/groups (San Juan Citizens Alliance, Empire Electric Association, Inc., Colorado Plateau Mountain Bike Trail Association) and members of the public (both businesses and private citizens).

6.3.2 Press Releases and Website Posting

The scoping letter was also posted on the BLM Uncompahgre website (http://www.blm.gov/co/st/en/district_offices/southwest/TriState230kVRebuild.html). Maps and frequently asked questions (FAQs) also were published on the BLM website. Information also has been posted on both the GMUG NF and SJNF web sites since April 2014 (follow links to current and past Schedules of Proposed Actions at USDA Forest Service - SOPA - Grand Mesa, Uncompahgre and Gunnison National Forests and USDA Forest Service - SOPA - San Juan National Forest). The 30-day Public Scoping Period ended June 4, 2014. Legal Notices were posted in the two local newspapers of record (the *Grand Junction Daily Sentinel* and the *Durango Herald*) and the BLM and USFS websites were updated to include project information.

The EA was available for public comment in late Fall 2015. A copy of the EA was available for public review at the libraries shown in Table 38. Information also was posted on both the GMUG NF and SJNF websites for the EA and a public meeting held on November 23, 2015 (follow links to current and past Schedules of Proposed Actions at USDA Forest Service - SOPA - Grand Mesa, Uncompahgre and Gunnison National Forests and USDA Forest Service - SOPA - San Juan National Forest). The 30-day Public EA Review Period was November 3 through December 3, 2015. Legal Notices were posted in the two local newspapers of record (the *Grand Junction Daily Sentinel* and the *Durango Herald*) and the BLM and USFS websites were updated to include the EA, POD, and all appendices (Tri State Preliminary EA and Tri-State MNC Draft POD Front Matter Final).

Table 38. Libraries and Other Locations where a Copy of the EA Was Available

Library	Location
Ann Zugelder Library 307 N. Wisconsin, Gunnison, CO 81230	Montrose Regional Library 320 South 2nd Street Montrose, CO 81401
Old Rock Community Library 504 Maroon Avenue Crested Butte, CO 81224	Naturita Public Library 107 West 1st Avenue Naturita, CO 81422
Somerset Library 3764 Colorado 133 Somerset, CO 81434	Paradox Library 21501 Six Mile Road Paradox, CO 81429
Cedaredge Public Library 180 SW 6th Ave. Cedaredge, CO 81413	Nucla Public Library 544 Main Street Nucla, CO 81424
Crawford Public Library 545 Hwy 92 Crawford, CO 81415	Mancos Public Library 211 West First Street Mancos, CO 81328
Delta Public Library 211 W 6th St. Delta, CO 81416	Dolores Public Library 1002 Railroad Ave, P.O. Box 847 Dolores, CO 81323
Hotchkiss Public Library 149 E. Main Street Hotchkiss, CO 81419	Anasazi Heritage Center Library 27501 HWY 184 Dolores , CO 81323
Paonia Public Library 2 Third Street, [P.O. Box 969] Paonia, CO 81428	Durango Public Library 1900 East Third Ave. Durango, CO 81301
Norwood Public Library 1110 Lucerne St, Box 127 Norwood, CO 81423	Ridgway Public Library District 300 Charles Street Ridgway , CO 81432-0560

Library	Location
Wilkinson Public Library 100 W. Pacific Telluride , CO 81435-2189	Ouray Public Library 320 6th Avenue Ouray, Co 81427
Adult Dolores County Public Library 525 North Main Street Dove Creek, CO 81324	Fort Lewis Mesa Branch Library 11274 State Hwy 140 Hesperus, CO 81326
Rico Branch Library 2 N. Commercial St Rico, CO 81332-0069	Central Library 443 N. 6th Street Grand Junction, CO 81501
Cortez Public Library 202 North Park Cortez , CO 81321-3355	BLM Colorado State Office 2850 Youngfield Street Lakewood, CO 80215-7093
Norwood District Office 1150 Forest Norwood, CO 81423	Grand Mesa, Uncompahgre, & Gunnison National Forests 2250 Highway 50 Delta, CO 81416
BLM Southwest District Office and Forest Service Ouray Ranger District 2465 South Townsend Avenue Montrose, CO 81401	BLM Tres Rios Field Office and Forest Service Dolores Ranger District 29211 Highway 184 Dolores, CO 81323-9308
San Juan National Forest 15 Burnett Court Durango, CO 81301	

6.3.3 Comment Analysis

During the comment period, the BLM received 67 submissions from the public, agencies, tribes, organizations, and businesses. All submissions were entered into a database that recorded individual comments, the submission's identification information, and corresponding key word(s).

The BLM followed CEQ regulations found at 40 CFR § 1503.4 and developed responses and/or revised the Preliminary EA in response to substantive comments. During this process, the comments were sorted by topic to aid the BLM in identifying trends and seeing the full range of public opinion regarding particular topics. Reviewing comments in this manner facilitated the development of comprehensive responses.

6.3.4 List of Commenters

Correspondence was received from 67 commenters, as listed in below.

Table 39. Commenters on the Public EA

Last Name	First Name	Affiliation
Alexander	Cindy	N/A
Bergh	Nathan	N/A
Binkly	Gail	4 Corners Free Press
Bladow	Joel	Tri-State
Boyle	Patrick	N/A
Brandt	Laurie	Colorado Plateau Mountain Bike Trail Association, Inc.
Braun	Clait	Grouse Inc.
Bronec	Jasen	Delta Montrose Electric Association
Carlisle	Sarah	N/A

Last Name	First Name	Affiliation
Cohen	Patricia	N/A
Conrad	Lane	N/A
Crocker-Bedford	Cole	N/A
Culver	Melanie	N/A
Dellinger	Josh	Empire Electric Association
Dorsey	Patricia	Colorado Parks and Wildlife
Fellin	Mac A.	N/A
Fiddes	Elisabeth S	N/A
Frankmore	Robert	N/A
Garcia	Damian	Pueblo of Acoma
Head	Sandy	Montrose Economic Development Corporation
Heir	Geoffrey	N/A
Jackson, Jr	Martin	N/A
Johnson	Phillip	N/A
Kramer	James	N/A
Kuwanwisiwma	Leigh	Hopi Tribe
Little	Donald	N/A
Lock	Dave	N/A
Macha	Mark	N/A
Marolf	Karyn	N/A
McCarville	Sean	N/A
McInnes	Mike	N/A
Molvar	Erik	WildEarth Guardians
Morley	Jayne	N/A
Morris	Dawna	Town of Nucla
Mueller	Megan	Rocky Mountain Wild & the Wilderness Society
Neeley	Mona	N/A
Nordin	Bryan	N/A
Norris-Snell	Mandy	N/A
Reece	Christian	CLUB 20
Robertson	Amy	N/A
Robertson	Leigh	Sheep Mountain Alliance
Rojas	Roberto	N/A
Romero	David	City of Montrose
Rozycki	Mike	San Miguel County
Rugile	Elizabeth	N/A
Sangimino	Missa	N/A
Schiffbauer	Martin	N/A
Sedinger	James	N/A
Seglund	Julia	Montrose Association of Realtors
Shelley	Phillip	Pueblo of Santa Ana
Snyder	Sidney & Phyllis	N/A
Sposic	Jenny	Montrose Chamber of Commerce
Stout	Pinu'u	Pueblo of San Felipe
Timberman	Ann	U.S. Fish and Wildlife Service
Tueller	Douglas	Tueller and Associates
Tyll	John	N/A
Unknown	Unknown	N/A
Van Wagenen	Nina	N/A
Vorthmann	Chad	Colorado Farm Bureau
Warner	Faith	N/A
Waschbush	Jon	Montrose County - Board of County Commissioners

Last Name	First Name	Affiliation
Wilcoxson	Brian	N/A
Winton	Lyndsey	N/A
Woodward	Brigid	N/A
Wos	Thomas	N/A
Young	Brad	N/A
Young	Bill	N/A

6.3.5 Response to Public Comments

Appendix F contains a report of all public comments and responses.

6.4 List of Preparers

Representatives from the BLM (UFO and TRFO), and the USFS (GMUG NF and the SJNF), as well as ERO Resources Corporation and Galileo Project (private third-party contractors), assisted in the preparation of the EA. Table 40 through Table 45 list names, titles, and agencies of representatives, as well as the sections of the document for which they were responsible.

Table 40. Preparers from the BLM TRFO

Name	Title	Responsible for the Following Section(s) of this Document
Chad Meister (State)	Natural Resource Specialist	Air Quality/ Greenhouse Gas Emissions/Wildlife-aquatic
Forrest Cook (State)	Natural Resource Specialist	Air Quality/Wildlife-aquatic
Julie Bell	Archaeologist	Cultural Resources/Native American Religious and other Concerns/Wetlands/Riparian Zones
Gina Jones (SWDO)	NEPA Coordinator (Office Point of Contact/Project Lead)	NEPA Compliance
Jessica Montag (State)	Socioeconomic Specialist	Environmental Justice/ Socioeconomics
Mike Jensen	Rangeland Management Specialist	Farmlands (Prime or Unique)/Floodplains/Invasive Species/ Noxious Weeds/ Rangeland Health Standards/Soils/Special Status Plant Species/Threatened, Endangered or Candidate Plant Species/Vegetation Excluding USFWS Designated Species
Nate West	Supervisory Wildlife Biologist	Fish Habitat/ Migratory Birds/Special Status Animal Species/Threatened, Endangered or Candidate Animal Species
Brad Pietruszka	Survey Range Technician	Forest Resources (HFRA Project)/ Fuels/Fire Management
James Blair	Geologist	Geology and Solid Minerals/ Paleontology
Jeff Christenson	Outdoor Recreation Planner	Lands with Wilderness Characteristics/Recreation/Visual Resources/ Wild and Scenic Rivers/ Wilderness/WSA

Name	Title	Responsible for the Following Section(s) of this Document
Harrison Griffin	Realty Specialist (Office Point of Contact)	Lands/Access
Robert Garrigues	Natural Resource Specialist	Oil and Gas
Kay Zillich	AML Specialist	Wastes (hazardous or solid)
Kelly Palmer	Hydrologist	Water Resources/Quality (drinking/surface/ground)

Table 41. Preparers from the BLM UFO

Name	Title	Responsible for the Following Section(s) of this Document
Chad Meister (State)	Natural Resources Specialist	Air Quality
Julie Jackson	Recreation Planner	Areas of Critical Environmental Concern/Access/Land with Wilderness Characteristics/Recreation/Visual Resources/Wilderness/WSA
Edd Franz	Recreation Planner	Areas of Critical Environmental Concern/Access/Land with Wilderness Characteristics/Recreation/Wild and Scenic Rivers/ Wilderness/WSA
Teresa Pfifer	Assistant Field Manager, Lands and Minerals	Lands, Minerals, Cultural, Cadastral Survey
Glade Hadden	Archaeologist	Cultural Resources/Native American Religious and other Concerns/ Paleontology
Jessica Montag (State)	Socioeconomics Specialist	Environmental Justice/Socioeconomics
Bruce Krickbaum	Planning and Environmental Coordinator	Environmental Justice/Socio-economics/Law Enforcement
Jedd Sondergard	Hydrologist	Farmlands (Prime or Unique)/Floodplains/Soils/Water – Ground/Water – Surface (Clean Water Act and others)
Ken Holsinger	Natural Resource Specialist/Fire Management Specialist	Fish Habitat/Migratory Birds/ Threatened, Endangered or Candidate and Special Status Animal Species/ Threatened, Endangered or Candidate and Special Status Plant Species/Wildlife-aquatic/Wildlife-terrestrial
Kelly Homstad	Fire Use Specialist	Forest Resources (HFRA Project)/Fuels/Fire Management
Rob Ernst	Geologist	Geology and Minerals
Lynae Rogers	Rangeland Management Specialist	Invasive Species/ Noxious Weeds
Angela LoSasso	Rangeland Management Specialist	Rangeland Health Standards
Amanda Clements	Ecologist	Upland Vegetation Excluding USFWS Designated Species/Wetlands/Riparian Zones
Alan Kraus (UFO/GJFO)	Hazardous Materials Specialist	Wastes (hazardous or solid)
Nick Szuch	Realty Specialist	Lands and Realty

Table 42. Preparers from the GMUG NF

Name	Title	Responsible for the Following Section(s) of this Document
George Goehl (GMUG)	Civil Engineering Technician	Access/Roads
Brian Haas (Secondary)	Forest Archaeologist	Cultural Resources/Native American Religious and other Concerns
Niccole Mortenson	NEPA Coordinator	NEPA Compliance
Liz Mauch (Ouray Ranger District [RD])	Lands and Minerals Staff (Project Lead – Point of Contact)	Farmlands (Prime or Unique)/Floodplains/Geology and Solid Minerals/Oil and Gas/Paleontology/Lands
Corey Robinson	West Zone Fire Management Officer	Fire/Fuels
Curtis Keetch (Secondary; GMUG)	Zone Wildlife Biologist	Fish Habitat/Migratory Birds/Wildlife-Aquatic and Terrestrial/ Threatened, Endangered or Candidate Animal Species/ Threatened, Endangered or Candidate Plant Species/Special Status Animal Species/Special Status Plant Species
Luke Holguin	Zone Wildlife Biologist	Terrestrial Wildlife
Dee Closson (Norwood RD)	Lands and Mineral Staff	Land Use Authorizations
Elizabeth Stuffings (Norwood/Ouray RD)	Biological Science Technician	Invasive Species/ Noxious Weeds/ Invasive Plant Species
Clare Hydock (GMUG)	Rangeland Management Specialist	Rangeland Health Standards/Rangeland and General Vegetation
Kris Wist (Ouray RD)	Sup Forest Technician/Wilderness Specialist	Recreation
Ben Stratton (Gunnison RD)	Soils Scientist	Soils
Beth Anderson	Soils Scientist	Soils
Todd Gardiner (GMUG)	Forester/Silviculturist	Timber/Silviculture
Nicole Hackman	Forester/Silviculturist	Timber/Silviculture
Kevin Colby (Arap/Roosevelt NF)	Landscape Architect	Visual Resources
Timothy Stroope	NEPA Coordinator	Overall

Table 43. Preparers from the SJNF

Name	Title	Responsible for the Following Section(s) of this Document
Elaine Sherman (Primary; Dolores RD)	District Archaeologist	Cultural Resources/Native American Religious and other Concerns
Frank Gonzales (Mancos/Dolores RD)	Fire/Fuels	Fire/Fuels
Ivan Messinger (Primary; SJNF)	Wildlife Biologist	Fish Habitat/Migratory Birds/Fish Habitat/Wildlife-Aquatic and Terrestrial/ Threatened, Endangered or Candidate Animal Species/Threatened, Endangered or Candidate Plant Species/Special Status Animal Species/Special Status Plant Species
Shauna Jensen (SJNF)	Hydrologist	Floodplains/Soils/Water Resources/ Wetlands/Riparian Zones/Wild and Scenic Rivers
Heather Musclow (Dolores RD)	Supervisory Rangeland Management Specialist	Invasive Species/Noxious Weeds/Special Status Plant Species/Threatened, Endangered or Candidate Plant Species/Vegetation Excluding USFWS Designated Species/Rangeland Health Standards
Cody Jones (SJNF)	Civil Engineering Technician	Roads and Access
Tom Rice (Dolores RD)	Program Management Specialist	Recreation
Patrick McCoy (Dolores RD)	Lands and Mineral Staff (Point of Contact)	Lands/Special Designations/ Farmlands (Prime or Unique)/Geology and Solid Minerals/Oil and Gas/
Cara Gildar (SJNF)	Ecologist	Special Status Plant Species/Threatened, Endangered or Candidate Plant Species/ Vegetation Excluding USFWS Designated Species/ Wilderness/WSA
Mark Krabath (SJNF)	Supervisory Forester/Silviculturist	Timber/Silviculture
David Casey	Supervisory Forester/Silviculturist	Timber/Silviculture

Table 44. Preparers from ERO Resources Corporation

Name	Title	Responsible for the Following Section(s) of this Document
Aleta Powers	Senior Natural Resource Specialist	Project Manager
Karen Baud	Wildlife Biologist	Assistant Project Manager
Ron Beane	Senior Wildlife Biologist	Fish Habitat/Migratory Birds/Wildlife-Aquatic and Terrestrial/Threatened, Endangered or Candidate Animal Species/Threatened, Special Status Animal Species
Andy Cole	Natural Resource Planner	Timber Resources/Fire/Fuels, Socioeconomics
Mark DeHaven	Senior Natural Resource Specialist	Travel/Noise/Air Quality/Soils/EMF
Barbara Galloway	Hydrologist	Hydrology
Craig Sovka	Geologist	Geology/Hazards
David Hesker	Graphic Designer	Graphics
Wendy Hodges	GIS Specialist	GIS
Sean Larmore	Archaeologist	Cultural Resources/Native American Religious and other Concerns
Denise Larson	Ecologist	Invasive Species/Noxious Weeds/Special Status Plant Species/Threatened, Endangered or Candidate Plant Species/Vegetation Excluding USFWS Designated Species/Wetlands/Riparian
Bill Mangle	Natural Resource Planner	Recreation/Land use: Grazing and allotments/Land use: Prime Farmland/Land use: Conformance/Wilderness Designations/Wild and Scenic Rivers
Adam Petry	Natural Resource Specialist	Fish Habitat/Migratory Birds/Wildlife-Aquatic and Terrestrial/ Threatened, Endangered or Candidate Animal Species/ Threatened, Special Status Animal Species
Ed Russell	GIS Specialist	Terrain Mapping
Heidi Ochis	GIS Specialist	Photo simulations
Paul Murphey	Paleontologist	Paleontology
Mark Holdeman	Landscape Architect	Visual Resources
Jill Handwerk	Botanist	Threatened, Endangered or Candidate Plant Species
Steve Stevenson	Professional Engineer	Project Design

Table 45. Preparers from Galileo Project

Name	Responsibility
J. Grace Ellis	Facilitator
Peter Rocco	Facilitator

7 GLOSSARY AND REFERENCES

7.1 Glossary

Term	Description
Administer	To manage and be responsible for.
Aesthetic	Concerned with beauty or the appreciation of beauty.
Affect	To have an effect on or cause a difference to.
Alluvial	Sand, silt, clay, gravel, or other matter deposited by flowing water.
Anchor	Piece of equipment that is installed into the ground to transfer the unbalanced force on a pole or structure to the earth without intermediate supports.
Angle structure	A structure that supports the transmission line at points where it changes direction at an angle of 15 degrees or more (also see Turning Structure).
Anticline	A ridge-shaped fold of stratified rock in which the strata slope downward from the crest.
Archaeological site	A place (or group of physical sites) in which evidence of past human activity is preserved (either prehistoric or historic or contemporary).
Area of Potential Effect (APE)	The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effect is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.
Armored rock crossing	Typically a low water stream crossing that is reinforced with flat rocks.
Arroyo	A steep-sided gully cut by running water in an arid or semiarid region.
Artifact	A human-made object that is an item of cultural or historical interest.
Best management practices (BMPs)	Plans designed to prevent or reduce effects. They represent physical, institutional, or strategic approaches to environmental problems and are practices determined by the discipline to be the most effective at achieving a specific goal.
Bollard	One of a series of posts preventing vehicles from entering an area.
Boom truck	A utility vehicle with an extendable arm mounted to a bed or roof.
Brace	A piece of equipment used solely for additional support to another piece of equipment, such as a cross-arm or transformer.
Bus work	Work related to a heavy conductor, often made of copper in the shape of a bar, used to collect, carry, and distribute powerful electric currents, as those produced by generators.
Cadastral survey	A survey and demarcation of land to define parcels of land for registration in a land registry.
Candidate	Species that are undergoing a status review for consideration of addition to the Federal Threatened and Endangered species list.
Circuit	The pathway for an electrical current.
Clearance	Clear space between the surface of the conductor and any other surface. Different conductors (depending on voltage) need different clearances as determined by NESC codes.
Conductor	The wire cable strung along a transmission line through which electricity flows.
Conduit	A tube or trough used for protecting electric wiring.
Connectivity	The capability of being connected, especially the ability to connect or communicate with another computer or computer system.
Constraint	A limitation on one or more transmission elements that may be reached during contingency, emergency, or normal operating conditions.
Corona	An electrical field around the surface of a conductor, insulator, or hardware caused by ionization of the surrounding air.
Corona rings	Devices specified at the energized end of each insulator in this line to reduce the effects of corona.

Term	Description
Corvid	Any birds of the family Corvidae, which includes crows, ravens, jays, and magpies.
Migration corridor	A defined route across land through which a species must travel to reach habitat suitable for reproduction and other life-sustaining needs.
Crimp	To embed straw with a spiked roller or disks used to incorporate mulch on bare soil.
Critical habitat	As defined by the ESA, a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.
Cross arm	A high quality piece of wood mounted on a utility pole used to hold up power lines or other equipment.
Cultural resources	The remains of sites, structures, or objects used by humans in the past either historic (at least 50 years old) or prehistoric. Resources that are protected under federal statutes, regulations, and executive orders. More recently referred to as heritage resources by the Forest Service.
Culvert	A device used to carry or divert water from a drainage area in order to prevent erosion or facilitate a waterway crossing.
Cumulative effects	Effects on the environment that result from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. See 40 CFR 1508.7.
Current	The flow of an electrical charge through a conductive material such as the transmission line conductor wires.
Dead-end structure	A structure capable of supporting the highest tension of all the attached wires. These are required at the ends of a line, where large angles are turned, where uplift is to be managed or when a tension change is advantageous.
Design feature	A best management practice designed to reduce effects through a special action or modification.
Direct effects	Effects that occur as a direct result of the action and occur at the same time and place.
Disking	Working the upper layer of soil with a disk implements, such as disk harrows or plows used to lessen soil compaction, prepare for seeding, or control weeds.
Drill seeding	A mechanical method for planting seed that positions the seeds in the soil and covers them with soil.
Effect	A change that is a consequence or result of an action.
Electromagnetic field (EMF)/spectrum	The physical fields, both electric and magnetic, created in the vicinity of the transmission line produced when electric transmission is occurring.
Emission	The discharge or release of something, often referring to releases to the environment, such as air emissions.
Endangered species	Plants or animals that are in danger of extinction through all or a significant portion of their ranges. Plant or animal species identified by the Secretary of Interior as endangered in accordance with the 1973 Endangered Species Act.
Environmental justice populations	Low-income and minority populations protected under Executive Order 12898 from disproportionate adverse effects of federal projects.
Environmental Protection Measures (EPM)	Measures to avoid or minimize project effects, to which Tri-State has committed. Also may be called proponent-committed measures or BMPs.
Eolian	Deposited or eroded by the wind.
Ephemeral stream/drainage	A stream that flows only as a direct response to rainfall or snowmelt events; having no base flow from groundwater.
Erosion	The wearing away of the land surface caused by running water, wind, or ice.
Erosion potential	The likelihood that an area is susceptible to erosion. Erosion potential is assessed using slope and soil properties such as cohesion, drainage, and organic content.
Excelsior log	A roll of natural material such as straw or wood shavings contained in a mesh tube used for erosion control.

Term	Description
External scoping	External scoping can be used to identify coordination needs with other agencies; refine issues through public, tribal and agency feedback on preliminary issues; and identify new issues and possible alternatives. External scoping serves to build agency credibility and promote constructive dialogue and relations with tribes, agencies, local governments and the public (BLM 2008a).
Fiber optic cable	A cable made of many individual glass optical fibers that can transmit large amounts of information at the speed of light.
Flocculating process	A chemical process where colloids come out of suspension, widely used in water treatment operations.
Floodplain	The land adjacent to a stream or river that is periodically flooded.
FONSI	Finding of no significant impact (FONSI). A document issued by a federal agency briefly presenting the reasons why an action for which the agency has prepared an EA has no potential to have a significant impact on the human environment and, thus, would not require preparation of an EIS.
Footprint	Referring to the area occupied by a facility or man-made disturbance.
Forage	To search for food.
Forb	A broadleaf, non-woody plant that is not a grass, sedge, or rush.
Fugitive dust	Solid particles of soil that are suspended in the air by wind action and human activity generated or released from earth disturbance.
Grading	Earthwork necessary to create a level base, or one with a specified slope.
Graminoids	Grasses or grass-like plants.
Grid	A high-voltage transmission network. A system of interconnected transmission lines and power generating facilities that allows large quantities of electrical power to be shared on a regional basis.
Ground wire	Wires placed above the conductors to route lightning-strike electricity to the ground.
Guard structure	Structures designed to prevent ground wire, conductors, or other equipment from falling on an obstacle (roads, railroads, power lines, or structures).
Guy wire	A guy wire is a tensioned cable that attaches to a guy anchor, in order to hold a structure to the ground to provide extra stability.
Habitat	Habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.
Habitat fragmentation	The division of continuous habitat into smaller pieces which are partly or fully disconnected from one another, caused by man-made activity.
Harrowing	To break up compacted soil using a special implement that breaks up and smooths the surface of the soil.
Herbaceous	A flowering plant whose stem does not produce woody tissue and generally dies back at the end of each growing season.
Igneous	Relating to rocks produced from intense heat, formed by solidification from a molten state.
Indirect effects	Effects that are caused by the action but are later in time or farther in distance, but are still reasonably foreseeable.
Insulator	A component made of non-conductive materials that connects the conductor to the suspension structure and prevents the transmission of electrical current from the conductor to the ground.
Interdisciplinary team	A collaborative group of agency resource specialists with different expertise who combine skills and resources to present guidance and information for the Environmental Assessment.
Intermittent stream/drainage	A stream that flows for several weeks or months in response to precipitation; the source is direct runoff and groundwater discharge.

Term	Description
Internal scoping	The use of BLM and cooperating agency staff to help determine what needs to be analyzed in a NEPA document. Internal scoping is an interdisciplinary process; at a minimum, use scoping to define issues, alternatives, and data needs. Additionally, this is an opportunity to identify other actions that may be analyzed in the same NEPA document (BLM 2008a).
Issue	A point of disagreement, debate, or dispute with a Proposed Action based on some anticipated environmental effect.
Jurisdiction	Under the guidance or protection of a specific agency or regulation.
Kilovolt	One thousand volts of electrical power.
Lek	An assembly area where animals (as the sage grouse) carry on display and courtship behavior.
Loading – Electrical system	The electrical energy that is consumed by a system connected to an energy source in order to perform its function.
Loading – Physical line loading	The different forces acting upon a transmission structure including the pole and the conductors themselves.
Minority population	A group of minority persons who live in geographic proximity that could be disproportionately affected by a federal action.
Mitigation	An action that can avoid, minimize, reduce, eliminate, replace, or rectify the effect of an action.
Mosaic	Made up of different landscape types.
Non-native	A species that has been introduced into and has acclimated to an area outside of its normal range.
Noxious weeds	Nonnative plants that have been identified by state law as damaging to natural or human resources.
OPGW	Fiber optical cable.
Paleontological resource	Any fossilized remains, traces, or imprints of organisms, preserved in or on the Earth's crust that are of paleontological interest and provide information about the history of life on Earth.
Perch deterrent/Perch discourager	Devices used to keep birds from roosting or landing on structures (power lines, buildings, statues, etc.).
Perennial stream/drainage	A stream that flows from source to mouth throughout the year; the source is groundwater and surface runoff.
Predation	One species preying on another.
Production area	Calving or fawning areas.
Pulled back bank	Term referring to the process of pulling soil from a stream bank without disturbing the stream bottom or gradient.
Pulling	The process of installing and tightening new wires, such as conductors or optic power ground wires (fiber optic cable).
Pulling station/site	The location where equipment is staged for pulling wires.
Raptor	A bird of prey.
Regime	Changes with time in the rates of flow of rivers and in the levels and volumes of wate r in rivers, lakes, reservoirs, and marshes.
Residuum	Something left behind.
Right-of-way (ROW)	The corridor of land in which transmission structures and conductors are established, operated, and maintained.
Rill	A shallow channel cut into soil by erosive action of water.
Riparian	Vegetation or habitat situated on the banks of rivers and streams.
Riser	The conduit and conductor involved in the transition from overhead distribution to underground distribution. Usually runs down the pole and into an underground pedestal.
Roost	A place where winged animals (birds and bats) settle for rest.
Sag	The vertical distance between the point where the line is joined to the tower and the lowest point on the line.

Term	Description
Scenic Integrity Objective	A desired level of scenic quality based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.
Scoping	The early and open process of determining concerns and the significant issues related to an action, including feasible alternatives and mitigation measures.
Sediment barrier	A permanent or temporary barrier designed to control erosion and prevent sediment from entering waterways.
Sedimentary rock	A type of rock formed by the deposition of material at the earth's surface or within bodies of water.
Shield wire	A shield wire or ground wire route lightning strikes to ground on a transmission line. The shield wire is the highest wire(s) attached to the top of the structure.
Silt fence	A permanent or temporary barrier designed to control erosion and prevent sediment from entering waterways.
Silviculture	The cultivating and growing of trees.
Slope breaker	A slope breaker or waterbar is a structure that intercepts water on a continuous slope reducing the slope length and speed that water can travel.
Stub pole	A pole stub or log which is set or buried in the ground to serve as a temporary anchor. Stub poles are often used at pull and tension sites.
Socioeconomics	The social science that studies how economic activity affects and is shaped by social processes.
Sock line	The line or rope connected to a steel wire that is used to pull the conductors through the structures during installation.
Spark arrester	A device designed to prevent sparks or flammable debris from being emitted from a combustion source such as an engine.
Special Use Authorization	A legal document such as a permit, term permit, lease, or easement, which allows occupancy, use, rights or privileges on National Forest System Lands for a specific use of land for a specific period of time.
Specular	Non-reflective.
Splice	A location on a wire where a joint or bond must be created.
Spoil	Material brought up during excavation – typically considered waste material.
Spur road	A short length of new road extending from an existing road network.
Staging area/yard	A temporary area used to store and assemble men, materials and equipment during construction.
Straw wattle	Straw wrapped in netting used to control erosion. They detain surface runoff, thus reducing flow velocity, by breaking up slop length.
Stringing blocks	A wheeled device that temporarily supports the conductors during installation.
Structure	A type of support used to hold up transmission or substation equipment.
Substation	The fenced site that contains the terminal switching and transformation equipment that transforms voltage.
Survey	To examine and record an area and features of the area.
Tackifier	An agent that binds seed, fertilizer, and mulch, usually applied as a liquid to the ground surface often used when seeding slopes.
Tamp	To pack down.
Tensioner	Mechanical pulling machine.
Tensioning sites	Tensioning sites are used for pulling and tightening the conductor and fiber optic cable to the correct tension once they are mounted on the transmission structures. Tensioning sites are located within the right-of-way where possible or just outside of the right-of-way where the line makes a turn or angle.
Terrace	A flat area bounded on at least one side by a steep slope.
Terrestrial	Living or growing on the land.
Threatened species	Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and which have been listed as threatened by the USFWS.

Term	Description
Tiering	Tiering is using the coverage of general matters in broader NEPA documents in subsequent, narrower NEPA documents (40 CFR 1508.28, 40 CFR 1502.20). This allows the tiered NEPA documents to narrow the range of alternatives and concentrate solely on issues not already addressed. Tiering is appropriate when the analysis for the Proposed Action will be a more site specific or project-specific refinement or extension of the existing NEPA document. (From BLM NEPA handbook, BLM 2008).
Transmission line	The structures, insulators, conductors, and other equipment used to transmit electrical power from one point to another. In this document, the term transmission line also includes the associated access roads.
Turbidity	The amount of particulate matter, such as suspended sediment, per unit volume of water.
Turning structure	Structures that support the transmission line at points where it changes direction (also see Angle structure).
Understory	Vegetation beneath a canopy.
Viewshed	An area visible from a defined location.
Visual quality objective	A desired level of scenic quality based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.
Water bar	A shallow ditch or berm dug or graded across a slope to minimize flow and volume down a slope surface designed to minimize erosion.
Wetland	Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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