DRAFT PLAN OF DEVELOPMENT
MONTROSE-NUCLA-CAHONE
TRANSMISSION LINE
IMPROVEMENT PROJECT
MONTROSE, OURAY, SAN MIGUEL, AND DOLORES COUNTIES, COLORADO

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LIST OF ABBREVIATIONS AND ACRONYMS

ATV	All-Terrain Vehicle
BLM	Bureau of Land Management
BMP	Best Management Practices
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
CPW	Colorado Parks and Wildlife
DBH	Diameter at breast height
EPM	Environmental Protection Measures
FLPMA	Federal Land Policy and Management Act
FS	U.S. Department of Agriculture, Forest Service
kV	Kilovolt
MNC	Montrose-Nucla-Cahone Transmission Line
MPH	Miles per hour
NEPA	National Environmental Policy Act
NERC	North American Energy Reliability Council
NWP	Nationwide Permitting
OPGW	Optical Ground Wire
PFYC	Potential Fossil Yield Classification
ROW	Right-of-way
SUA	Special Use Authorization
SWMP	Storm Water Management Plan
Tri-State	Tri-State Generation and Transmission Association
U.S.C.	United Stated Code
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WECC	Western Energy Coordination Council

1.0 Purpose and Need for Project

1.1 Introduction and Background

This document is the Plan of Development (POD) for the construction, operation and maintenance of the proposed rebuild of the existing 80-mile Montrose-Nucla-Cahone (MNC)115 kilovolt (kV) overhead Transmission Line to 230-kV.

The new 230-kV overhead electric transmission line is a rebuild of the existing 115-kV line and will use the same right of-way (ROW) but expanded from 100 to 150 feet to accommodate the larger voltage. The project would primarily utilize the existing access roads as authorized under the 2006 POD for the 115-kV transmission line. Any new access roads required for the rebuild will be included in the Final POD and the new authorization. There are two proposed re-routes associated with the project at the Dolores River Crossing and in Dry Creek Basin that would require new access roads which will be discussed in further detail below. The 115-kV line currently extends from the Montrose Substation west of Montrose, Colorado to the Nucla Substation at the Nucla Power Plant at Nucla, Colorado and continues on to the Cahone Substation near Dove Creek, Colorado (Figure 1). The transmission line is owned and operated by Tri-State Generation and Transmission Association, Inc. (Tri-State), headquartered in Westminster, Colorado. Tri-State's Montrose and Durango Field Offices are responsible for maintenance of the transmission line

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 MNC transmission line. Tri-State has submitted applications to the Bureau of Land Management (BLM) and the United States Forest Service (FS), (collectively referred to as the agencies), for authorizations to rebuild, operate, and maintain the existing MNC transmission line.

The 115-kV transmission line is a major conduit for electric power from Tri-State's Nucla Generating Station and is a backbone of the transmission grid on the western slope of Colorado. The transmission line was originally constructed by the Colorado Ute Electric Association, Inc. in 1958 and it was part of the original electric power infrastructure in the region.

This transmission line supports western slope members including Delta-Montrose Electric Association Inc., San Miguel Power Association, Inc., Empire Electric Association, Inc. and La Plata Electric Association, Inc. The transmission line also supports a portion of the 'PathNet' or Northern Fiber Optic Telecommunication Project a fiber network that provides broadband service to emergency services on the western slope.

1.2 Applicants Need for the Project

The 115-kV transmission line has exceeded its 50-year project lifespan and requires more frequent maintenance as it ages. Tri-State studied the performance, reliability and load serving capabilities of the line and the overall performance of the electrical grid in southwestern Colorado. Modeling techniques were used to study future conditions, heavy winter loads and high flows on the TOT2A portion of the electrical grid.

Tri-State's modeling studies concluded that rebuilding the MNC transmission line to 230-kV would be a major step in upgrading the regional transmission system and supporting the reliability of the TOT2A path. Construction of a new 230-kV line will meet Tri-State's present needs to supply members with

reliable power and anticipated regional needs in the future (Tri-State Generation and Transmission 2012,Western Colorado Transmission Study Report 2013). Utilizing the majority of the existing transmission ROW and associated access roads would minimize impacts of new construction to the natural and human environment.

The MNC 230-kV Transmission Improvement Project (Project) is needed to address aging infrastructure and address system deficiencies as discussed further below.

Aging Infrastructure: The line, constructed with wooden poles in 1958, has exceeded its expected lifespan of 50 years. The aging infrastructure has resulted in more frequent and substantial maintenance and repair costs. Many of the structures have rot, woodpecker and insect damage, and large cracks. Many insulators and the conductor have been damaged from vandalism (gunshot). Local crews are unable to keep up with accelerating maintenance needs for the transmission line.

Thermal Design Constraints: The existing transmission line was constructed to 115-kV with a 50 degree Centigrade (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 50 degree C 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 Western Energy Coordination 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 thermal rating of the line.

If Tri-State were to lose a line or major transformer 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 planning process to ensure reliable electric service to the local area and the region. In addition, any failure of regional transmission infrastructure would also affect Tri-State's ability to serve loads in southwestern Colorado.

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 would be taken out of service at some point in the future. If Nucla Station remains in service, the project is needed for the reasons listed above and would not change in scope. Should the Nucla Station be retired, construction of the project will be critical to the reliable operation of Tri-State's transmission system.

The project has been designed to address both contingencies and address system constraints associated with both outcomes. The existing generation resources throughout the region are adequate to meet near-term moderate increases in demand, however, upgrades 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 project. The existing system is incapable of serving future loads, because of its 50 degree C 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

rebuilding the MNC line to 230-kV would address existing system constraints and future power needs in the region.

1.3 Project Benefits

Regional Transmission Benefits (TOT 2A): The load levels in southwestern Colorado have a significant impact on the transfer capability of a regional transmission path known as TOT2A. 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 project helps mitigate the negative effects of increasing load on the transfer capability of TOT 2A.

Rebuilding the MNC line aligns with larger regional goals within the overall system in southwestern Colorado. Strengthening the electrical grid will require future system upgrades and the MNC upgrade is a piece of this greater objective. It is not feasible for utilities operating in southwestern Colorado to upgrade and build multiple lines at one time in one region due to operational constraints, costs, and schedule.

Rebuilding the line with new structures will also provide a more secure and reliable broadband service on the Northern Fiber Optic Telecommunication Project (previously known as PathNet). The fiber optic cable for this service is attached to the transmission line. This fiber network provides broadband service on the western slope to emergency services, cable TV, internet services, government offices and businesses as well as communication for Tri-State and San Miguel Power Association facilities.

2.0 Right of Way Location

2.1 Transmission Line ROW

The transmission line crosses Montrose, Ouray, San Miguel and Dolores counties in Colorado. Tri-State holds easements with private landowners and a valid BLM ROW grant for the portion of the transmission line that crosses land administered by the Uncompahgre Field Office (UFO) and the Tres Rios Field Office (TRFO). The existing ROW grant, which was issued by the Durango Public Lands Office, incorporates rights for the Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG NF) and the San Juan National Forest (SJNF). Tri-State's ROW grant was reauthorized in 2007 (BLM 2007a). The National Forests are cooperating agencies and the BLM is the Lead Agency for purposes of compliance with the National Environmental Policy Act (NEPA) process. The new 230-kV transmission line will have two separate authorizations from BLM and the FS. Tri-State will work with individual landowners to secure easements on private land.

For most of its 80 mile length, the new 230-kV transmission line structures and wires will occupy the 100-foot ROW of the existing 115-kV ROW; however, Tri-State has requested an additional 25 feet on either side of the ROW (150 feet total) to ensure safe electrical clearance for the increased voltage from 115-kV to 230-kV. Tri-State is requesting a permanent 150 foot ROW for the length of the transmission line.

Figure 1 illustrates the current alignment of the transmission line. Legal descriptions and maps for the 115-kV alignment and access routes are shown in *Appendix V, ROW Legal Descriptions* for Transmission Line and Roads. A summary of land ownership for the existing 115-kV transmission line and the proposed 230-kV line are shown in Table 1, Land ownership mileage, legal descriptions and maps will be revised once final alternative route alignments on the 230-kV improvement project are selected.

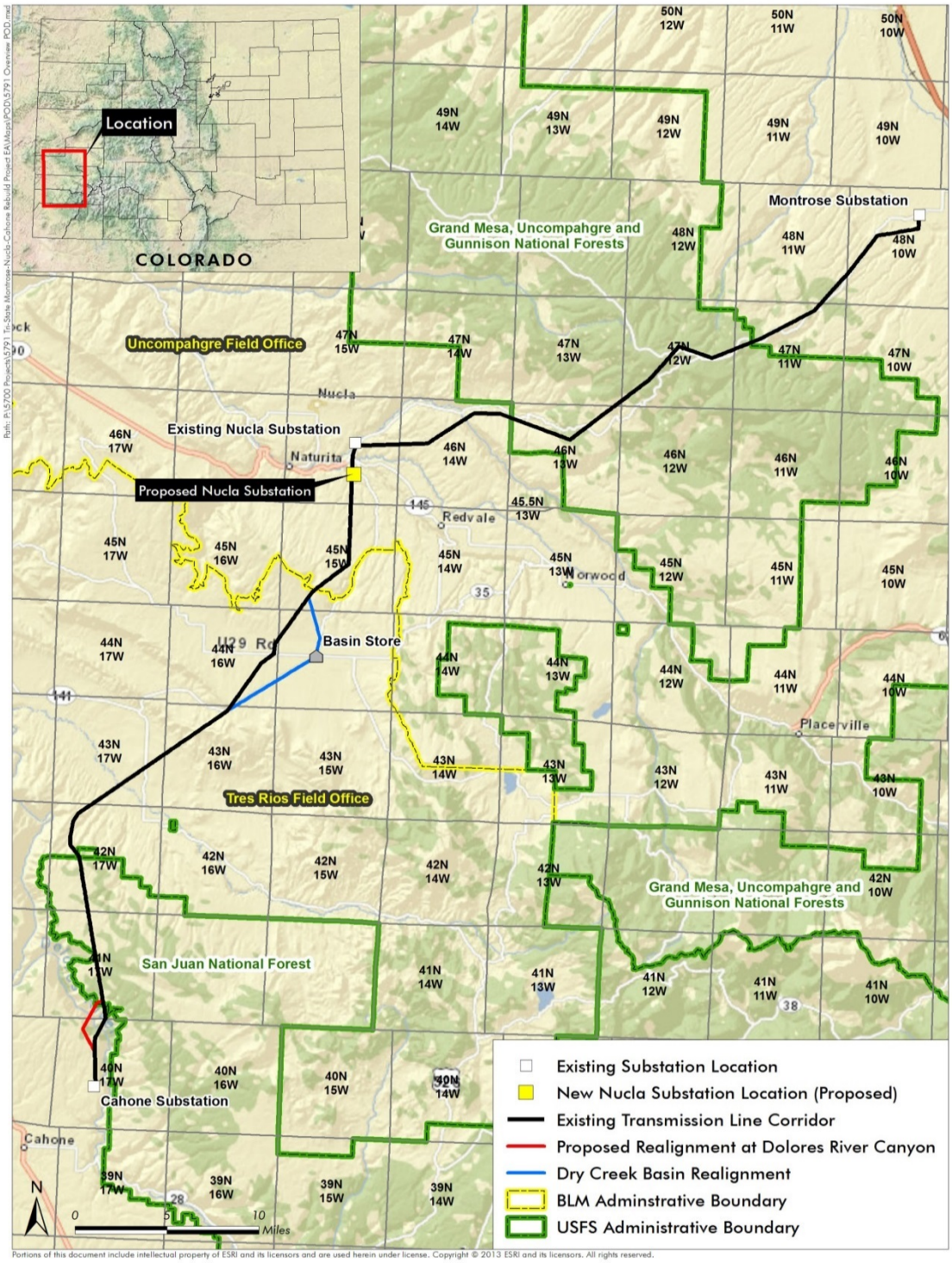

Figure 1: Project Location

Table 1: Summary of Montrose-Nucla-Cahone 230-kV Transmission Line Construction and Maintenance Access by Land Ownership/Management – PENDING FOREST SERVICE REVIEW

Montrose-Nucla Transmission Line Segment				
Land Ownership	**T-Line (miles)**	**Roads (miles) (Maintained by others)**	**Roads (miles) (Maintained by Tri-State)***	**Total**
BLM-Uncompahgre Field Office	14.6	(9.2) (Mail Box Park Rd)	19.8	29.0
Montrose County		(2.4)	-	2.4
Private	7.7	(9.9)		9.9
State of Colorado		(39.3)	-	39.3
FS GMUG- Norwood	9.8	(18.1)	15.3	33.4
FS GMUG-Ouray	4.8			
Total	**36.9**	(78.9)	**35.1**	114.0
Nucla-Cahone Transmission Line Segment				
Colorado Parks and Wildlife	2.1		2.1	2.1
State of Colorado		(65.3)	-	65.3
Dolores County Proposed Dolores River Crossing		(16.7) -0.26	-	16.7
Montrose County	0.5	(1.9)	-	1.9
San Miguel County		(23.8)	-	23.8
Town of Telluride	0.3		0.3	0.3
Private	12.2	(21.1)		21.1
San Juan National Forest-Dolores Ranger District Proposed Dolores River crossing	8.3 +0.2	(32.8) (24.1 miles Lone Dome Road)	5.0 -0.3 mile **	37.8
BLM Tres Rios Field Office Proposed Dolores River crossing	16.6 +0.2	-	20.5 -0.8 mile ***	20.5
BLM Uncompahgre Field Office	3.6	0.2	5.4	5.6
Total	**44.0**	(161.5)	**32.2**	195.4
Grand Total	**80.9**	(240.4)	**67.3**	307.5

Notes:

* Road mileage is for roads depicted on maps in Appendix W. Road mileage reflects the roads that would be maintained by Tri-State for the proposed action and include existing roads authorized for the 115-kV transmission line, the existing rebuild through Dry Creek Basin and the new proposed Dolores River crossing. Additional roads may be added or deleted based on the spacing and location of the new 230-kV structures.

** Roads and ROW on FS for the proposed Dolores River crossing would require 0.5 mile of new tree removal, but 0.8 mile would be reclaimed; this vacated corridor would likely reestablish as tree cover.

*** Will continue to use 0.3 miles of existing downline access; would reclaim 2.5 miles (0.9 on south rim, 1.6 miles on north rim); would add 1.7 miles of new downline access that would require tree removal.

3.0 Government Agency Involvement

3.1 Federal Authorizations/Decisions under Federal Land Policy and Management Act (FLPMA)

Tri-State submitted an application to the BLM and FS to upgrade the 115-kV transmission line to 230-kV in July 2013. Tri-State holds a valid BLM ROW grant for the entire existing transmission line on both BLM and FS land, issued in 2007 under the "Service First" initiative (BLM 2007a). The FS is a cooperating agency and the BLM is the Lead Agency for purposes of compliance with NEPA. The current ROW (COC-66840) governs on-going activity on the existing 115-kV transmission line. The BLM's need for the proposed action is to respond to a request from Tri-State, as required under Title 5 of the Federal Land Policy and Management Act of 1976, (43 United States Code [U.S.C.] 1761), as amended, to amend their ROW for this Project on public land. The FS is responding to a request for a new special use authorization (SUA). The FS has primary responsibility to issue special use authorizations on National Forest System Lands under the FLPMA.

The BLM and the FS have collaboratively developed a NEPA document to support the decision of whether to permit the project. BLM and the FS must consider the effects of the project and decide whether to amend the BLM ROW grant and whether to issue a FS SUA for the new 230-kV project. The NEPA analysis informs the agencies' decision whether to 1) approve the proposed Project, 2) not approve the Project, or 3) approve the Project with modifications and, if approved, under what terms and conditions. If approved, the agencies will approve the final Plan of Development (POD) and subsequently issue authorizations with terms and conditions for the construction, maintenance, and operation of a 230-kV transmission line.

The BLM is authorized to complete granting a ROW for the Project, under Title V section 501 [43 U.S.C. 1761] of the FLPMA as amended. The Secretary of the Interior, with respect to the public lands, is authorized to grant, amend, 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 U.S.C. 791a-825r).

In 2008, the Department of Energy and the BLM, and other cooperating federal agencies including the FS, the Department of Defense, and the U.S. Fish and Wildlife Service (USFWS), designated corridors on federal land in the 11 Western states for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors), as required by Section 368 of the Energy Policy Act of 2005. This process was developed to assist in the efficient and cost-effective transmission of energy resources being generated in the western United States while minimizing environmental impacts.

Portions of the MNC 115-kV transmission line were designated as a common corridor or '368 corridor' by land management agencies in 2008. Subsequently, the federal agencies were sued by environmental groups over the suitability of certain corridors for use as common corridors. As part of a settlement reached in July 2012, federal agencies agreed to reevaluate certain sensitive corridors. These 'corridors of concern' require the federal agencies to collaborate with the parties in the lawsuit to further evaluate their suitability as a common corridor. While parts of the project route are designated as a 368 corridor, no elements of the proposed upgrade or its alternatives are part of any of the corridors of concern identified in the lawsuit.

3.2 Local Permitting Requirements

The upgrade of the transmission line to 230-kV requires Tri-State to obtain a Certificate of Public Convenience and Necessity (CPCN) from the Colorado Public Utilities Commission (CPUC). Tri-State obtained its CPCN approval for the project in June 2013. This approval process reviews and certifies the need for the project. The CPUC serves the public interest by effectively regulating utilities and facilities so that the people of Colorado receive safe, reliable, and reasonably-priced services consistent with the economic, environmental and social values of the state.

Prior to filing of the CPCN application, Tri-State must notify the affected local government(s) of its transmission plans. Once the local governments have been informed, Tri-State must then obtain applicable permits from each affected local government. However, the CPCN may be issued, as it was for this project, without possession of all the local permits. Tri-State will seek approval from local jurisdictions in conjunction with seeking federal approvals for the project. County siting and land use permit processes will be initiated by Tri-State in 2015 and be completed in early 2017.

Tri-State will work independently to secure ROW easements with private landowners.

Tri-State has contacted the following local jurisdictions as part of the CPCN process.

- Montrose County
- Ouray County
- San Miguel County
- Dolores County

The following communities are located in proximity to the project but not directly affected by the proposed action.

- City of Montrose
- Town of Nucla

The City of Montrose long range planning area may extend beyond the corporate limits of the city depending on possible intergovernmental agreement(s) in place with Montrose County.

Table 2 lists the various permits and approvals for the project.

Table 2: 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, Section 106 Consultation	Determination of effects to listed or eligible historic properties and cultural resources
United States Department of Agriculture, FS	Temporary Special Use Authorization	For temporary uses of FS lands during construction. Includes a Surface Reclamation Bond.
	Special Use Authorization	Authorization of FS lands for operation and maintenance of the transmission line, including use of National Forest System Roads open to the public and administrative roads designated as special use roads for transmission line.
	Road Use Permit	Authorization of use of Forest Roads during construction the transmission line. Includes a Performance Bond and Surface Rock Replacement.
	Notice to Proceed (NTP)	Allows proposed project to proceed to construction
	POD	Consider approval of a detailed Final POD for proposed project construction, operation, and maintenance; meets the need for an SF-299.
U.S. 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
U.S. Department of the Interior, BLM	Short and Long-term ROW grant(s)	Consider issuance of short (construction related) and long-term ROW grants.
	POD	Consider approval of a detailed Final POD for proposed project construction, operation, and maintenance
	NTP	Allows proposed project to proceed to construction
U.S. Department of the Interior 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

Regulatory Agency	Required Permit, Approval, or Consultation	Agency Action
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 Department of Transportation	Encroachment Permit	Consider issuance of permit for transmission line crossing of State Highway (SH) 141 and 145
Local		
Dolores County	Land Use Change permit; permit for Construction in ROW; Driveway permit for substation; Traffic Control; Contact for smoke notification	Consider issuance of permits (proposed project is consistent with the land use plan)
San Miguel County	Land Use Change; 1041- Matters of state interest; Access permit (Special Construction Permit); Driveway permit; Traffic Control	Consider issuance of permits
Ouray County	Access permit (ROW Permit)	Consider issuance of permits
Montrose County	Special Use Permit for new 230-kV substation; ROW Use Permit(s) as applicable	Consider issuance of permits

4.0 Facility Design (Project Description)

4.1 Transmission Line

Tri-State is proposing to rebuild the existing 115-kV transmission line to 230-kV within the existing transmission corridor with the exception of the proposed re-route at the Dolores River Crossing where a re-route is proposed to address maintenance access and erosion concerns. The existing 115-kV ROW is 100 feet and Tri-State is proposing to expand the ROW an additional 50 feet (25 feet on either side of the ROW) to accommodate the safe operation and maintenance activities for the new larger 230-kV transmission line. Tri-State is proposing to utilize and improve the existing access road prisms for the 115k-V line. It is possible that new spur roads to new structure locations may be required or there could be potential re-routes of existing authorized access roads to minimize or avoid impacts to sensitive resources, land uses, or address areas with erosion concern. The Final POD will include any new access roads and spurs not currently authorized in the 2006 POD for the 115-kV transmission line. Tri-State would primarily use wooden H-frame structures, and three-pole guyed structures in specific locations as well as some self-supporting steel (mono-poles) and lattice structures at the Dolores River. The rebuild would consist of the following components:

- A 230-kV transmission line from the existing Montrose substation west of Montrose, Colorado to a new Nucla 230-kV substation.
- A 230-kV transmission line from a new 230-kV substation to the existing Cahone substation near Dove Creek, Colorado.
- A new 230-kV substation (Maverick substation) nears the existing Nucla substation and power plant, (on private property acquired by Tri-State) near Nucla, 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 new Nucla 230-kV substation (Maverick substation) and existing Nucla 115-kV substation at the Nucla generating station. The double circuit would consist of:
- A new 115-kV line which would provide a 115-kV electrical connection from the new 230-kV substation back to the existing 115-kV substation at the Nucla generating station; and,
- A new 230-kV Nucla (Maverick) to Cahone section of the MNC transmission line.
- A deviation from the existing route of the transmission line at the crossing of the Dolores River Canyon to minimize safety concerns associated with construction, repair, and maintenance in areas with steep slopes and unstable access roads.
- A short deviation from the existing route to avoid canyon walls near the Cahone substation and tie into the new 230-kV yard at Cahone Substation.
- As noted previously, existing access routes authorized in 2007 for maintenance of the existing transmission line would be used, with any necessary modifications to

accommodate construction vehicle widths/lengths, for construction of the new upgraded transmission line.

- Structure locations could change due to the increased spans between the 230-kV structures compared to the 115-kV structure spacing. Pending final engineering design, the total number of towers will decrease; however, additional spur routes could be needed for construction and long term operation/maintenance of the line.
- Replacement of the existing optical ground wire (OPGW) fiber cable used for communications (COC 063427).
- Removal and/or reclamation of the existing 115-kV transmission line facility and any roads not needed for operation of the new line.

The proposed route is depicted in Figure 1 and detailed locational information is presented in *Appendix V* (*ROW Legal Description*).

Table 3: Transmission Design for MNC Rebuild Project

Description	Comparison of Existing and Proposed Structure Designs	
	Existing Alignment (115-kV) Temporary/permanent	**230-kV Upgrade Temporary/permanent**
Right-of-Way (ROW) width	100 feet	150 feet
Span between structures (average)	500 feet	625 feet
Span between structures (maximum)	5,400 feet	6700 feet
Number of structures per mile (average)	11	7
Height of wood H-Frame structures (typical range)	48 to 57 feet	61-106 feet
Height of steel monopole structures in Gunnison Sage-Grouse (GuSG) habitat (typical range)	N/A	80 to 115 feet vertical wires
Height of double circuit steel monopole structures (typical range)	N/A	90-130 feet vertical wires
Height of steel lattice structures at Dolores River Crossing	North Rim – 90 feet South Rim – 80 feet Wood structures	North Rim – 150 feet South Rim – 75 feet Steel Lattice Structures
Land disturbed by construction at each wood H-frame structure base (maximum square feet) and permanent footprint	N/A/ 30 square feet	4,800 square feet/ 40 square feet
Land disturbed by construction at each steel mono-pole structure base including double circuit (maximum square feet) and permanent footprint	N/A	6,500 square feet/50 sq. feet
Land disturbed by construction at wood or steel three-pole turning structures (maximum square feet) and permanent footprint	N/A/6,000 square feet	30,000 square feet/ 13,000 square feet
Land disturbed by construction at each lattice structure at the Dolores River Crossing (maximum square feet) and permanent footprint	N/A	30,000 square feet/610 square feet
Typical Conductor type and size	336.4 kcmil ACSR (0.720”)	1272 kcmil ACSR (1.345”)
Conductor type and size, Dolores River Crossing	966-344 MCM 18/19 “Kaiser” Aluminum Conductor, Steel Reinforced (ACSR) (diameter unknown)	954 kcmil ACSS/HS285 (1.25”) 656mm^2 TACSR/TACIR (1.31”) 558 kcmil -T73 ACCR (1.2”)
Circuit Configuration	Horizontal	Horizontal and vertical
Minimum ground clearance beneath conductors	25 feet	28 feet
NESC electrical clearance	20 feet 8 inches	23 feet 4 inches

***Information provided in this table in based on preliminary engineering design and is subject to change as the design process evolves.**

4.2 Reroutes

4.2.1 Dry Creek Basin

Background

A reroute in the Dry Creek Basin was identified to address concerns from Colorado Parks and Wildlife (CPW) and the BLM regarding project related impacts to Gunnison Sage-Grouse (GuSG) from construction, operation, and maintenance of the proposed 230-kV transmission line. Both the existing and the proposed reroute cross critical habitat in Dry Creek Basin. The Dry Creek Basin realignment would move the route to parallel State Highway 141 (SH 141) in order to consolidate linear disturbances in Dry Creek Basin. The reroute would require construction of an additional 1.2 miles of transmission relative to the existing 115-kV route (7.9 miles), for a total length of 9.1 miles.

The Dry Creek Basin reroute diverges from the existing alignment at approximately Structure 93 at the north end of the Dry Creek Basin and heads south toward SH 141 (see Figure 2). The transmission line would follow the north side of SH 141 beyond U29 Road near the Basin Store. From that point, the line would turn west and follow either the north or the south side of the Highway. Tri-State has requested that a corridor, allowing for routing on either side of the road, be analyzed for purposes of the EA to provide flexibility to address land use and landowner concerns. The proposed re-route would cross lands owned by; CPW, City of Telluride (north side of highway), private ownership (north and south side of highway), and lands administered by the BLM. If this route is selected, final route specifications will be presented in the Final POD and legal descriptions will be included in *Appendix V* (*ROW Legal Descriptions*).

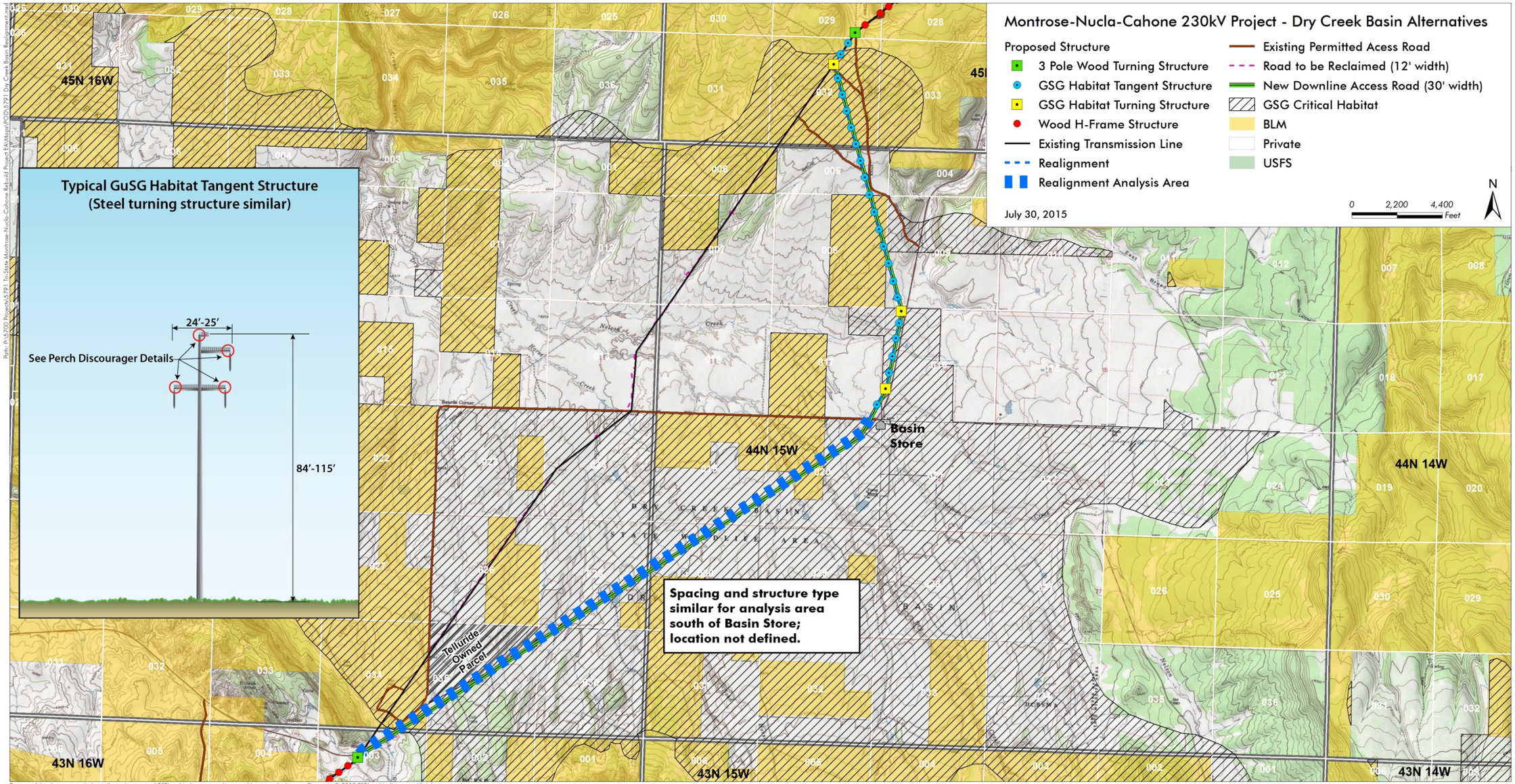

Figure 2: Dry Creek Basin Reroute, Including Existing Route and New Pole Structures

4.2.2 Dolores River Canyon Crossing

Tri-State proposes to re-route the transmission line crossing at the Dolores River Canyon (Figure 3) to resolve ongoing maintenance and safety concerns associated with the existing alignment. Tri-State proposes to move the crossing approximately 1 mile (at the furthest point from the existing alignment) to the west to a level plateau where soils are more stable and access would be primarily down-line without the need for significant cut and fill road construction. The new alignment takes advantage of an area with less topographic relief to the canyon rim on both the north and south sides (Figure 4 and 5). The road alignment on the north rim would be constructed adjacent to or under the line in the ROW (downline). An existing road and some downline access 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 to safely span the canyon.

Design Features

Two new steel lattice (tangent crossing) structures would be constructed on each side of the canyon rim (Structures A-5 and A-6) and would result in a 6,700 foot span across the canyon. Based upon preliminary engineering review, the tower on the north rim would be approximately 150 feet tall; the south rim tower would be approximately 75 feet tall (See Figure 3). The towers would be galvanized, non-reflective, acid etched steel to minimize reflection and decrease visibility. Structures A-1 on the north rim and Structure A-17 on the south rim would be three-pole wood structure (guyed dead-end) that would be approximately 80 feet in height. Structure A-7 on the south rim and Structure A-4 on the north rim would be three pole steel turning structures which would also be approximately 80 feet in height. The remaining crossing structures (Structures A-1 through A-3 and A-8 through A-16) would be standard 230-kV wooden H frames which would vary in height between 61-106 feet (Figure 3).

The new, modern conductor proposed for this alternative is high strength and low sag, which allows for longer spans while maintaining reasonable structure heights. 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 cannot cause the line to be too close to the ground or to vegetation, or ground safety clearances may not be met. Lines that are too close to obstacles such as rocks or vegetation may arc and cause outages, and represent 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 will to ensure minimum ground clearance is maintained at all times.

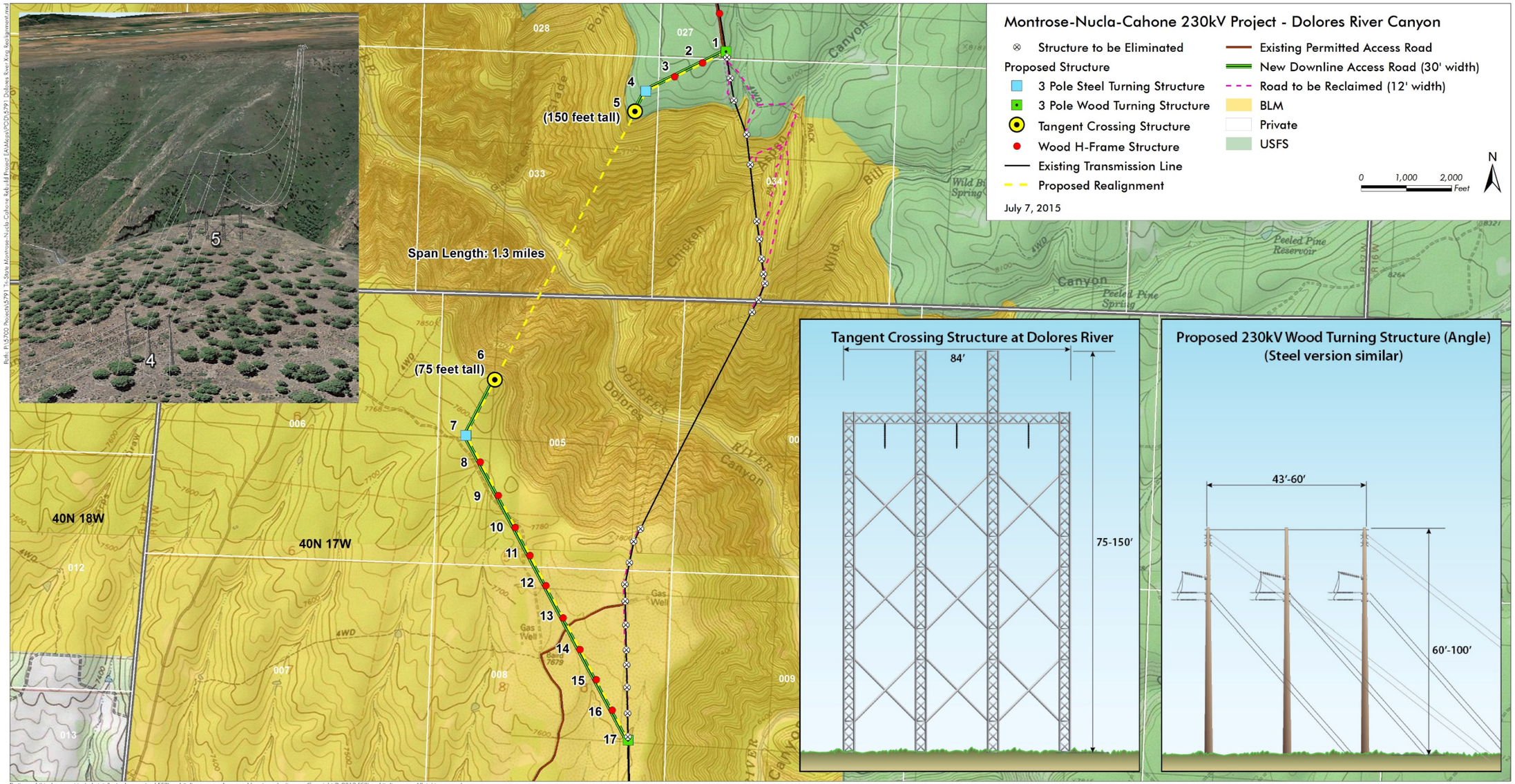

Figure 3: Proposed Reroute and Existing Dolores River Canyon Crossing

Figure 4: Photograph of Existing Dolores River Canyon Crossing Taken From the Air

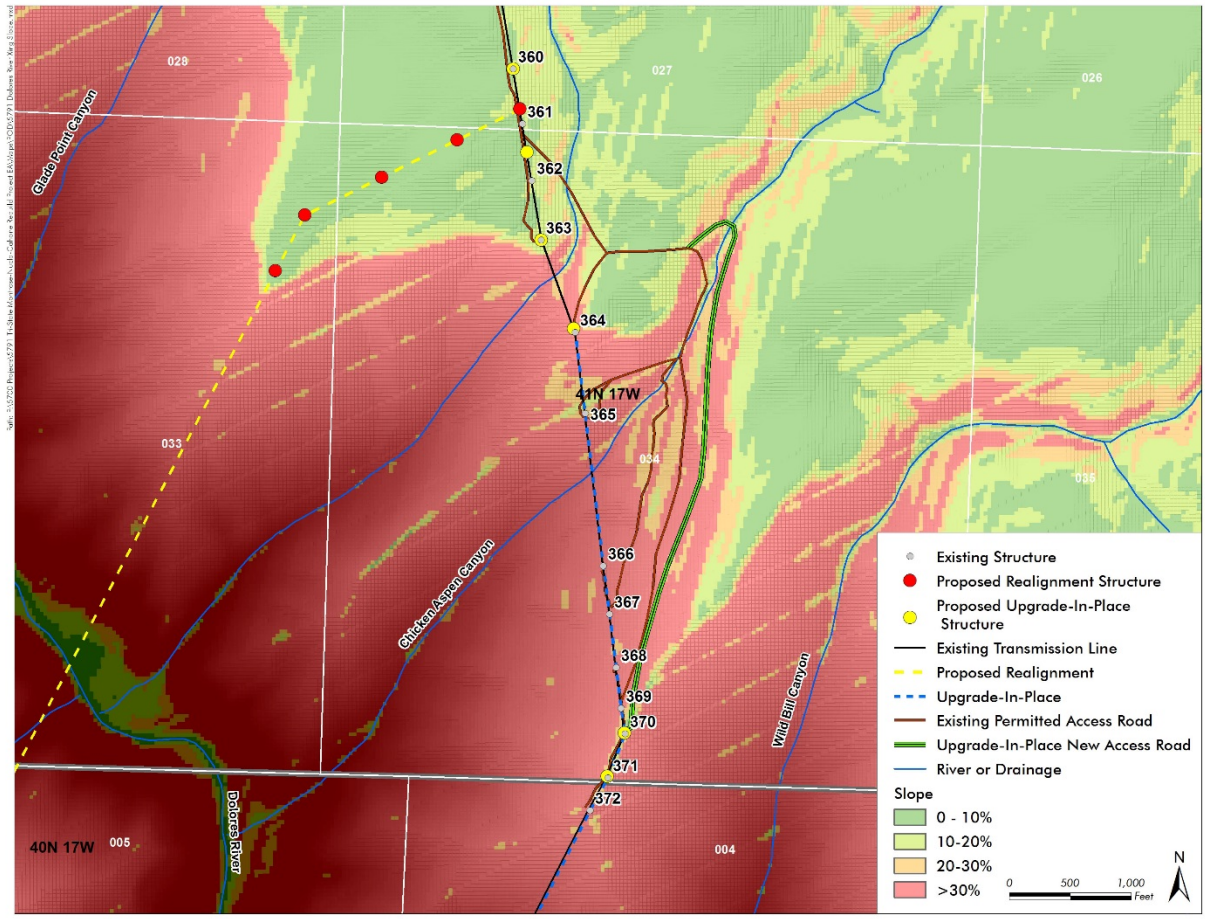

Figure 5: Percent Slope on Existing and Proposed Dolores River Crossing Routes.

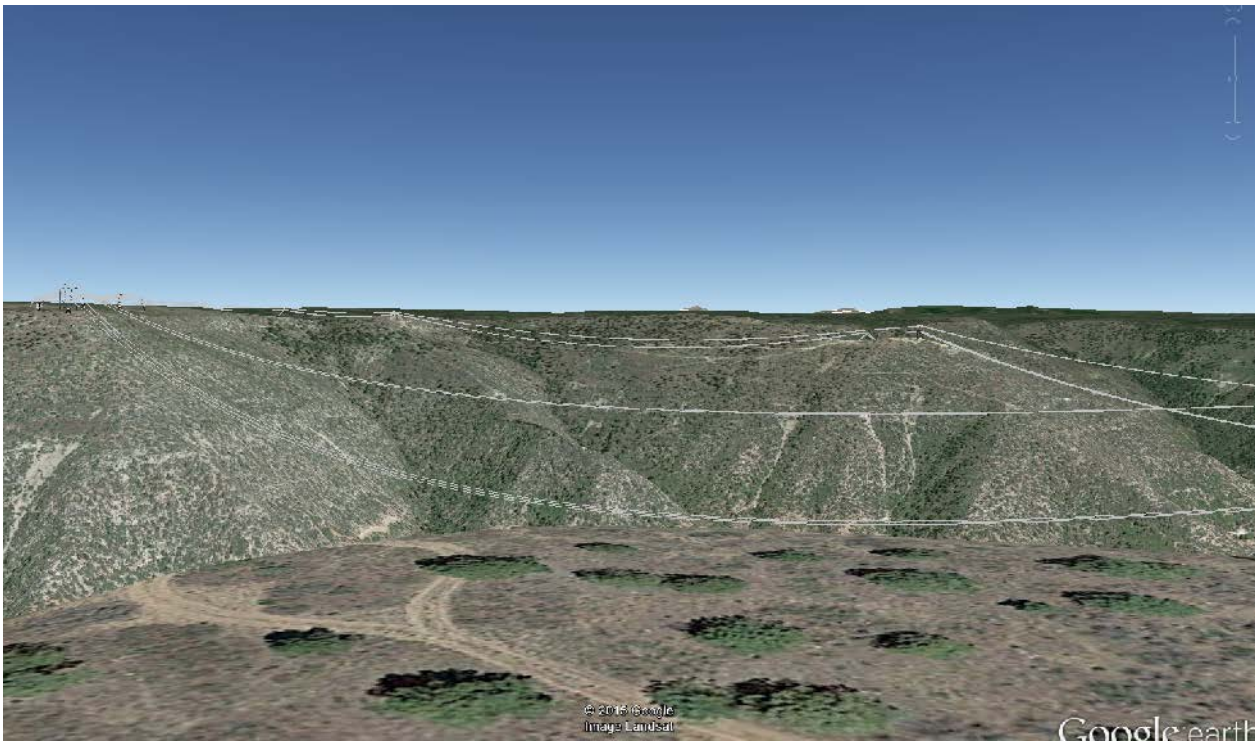

Figure 6: Google Earth Simulation of Existing and Proposed Alignment from South Rim, Proposed Route in Foreground.

A simulation of the existing and proposed alignment from the South Rim of the Dolores Canyon is shown in Figure 6.There would be a total of five wires spanning the canyon, three current-carrying conductors below and two OPGW above (see Figure 7). Like the existing crossing, the top wires must be marked with colored marker balls as required by Federal Aviation Administration (FAA) regulations (2007).

Concrete foundations are necessary for the steel towers and steel structures at each side of the canyon rim (A-4 through A-7; see Figure 3). Concrete would be brought to the site in concrete trucks and or by helicopter. Stringing of OPGW and conductor would be assisted by helicopter.

Vegetation removal would be required for the proposed re-route, on both ends of the canyon to meet federal reliability requirements and to facilitate construction and future maintenance operations. The ROW must be clear of tall/woody vegetation. The north rim is more heavily forested than the southern rim and on the southern rim BLM has recently conducted fuels treatment in the general vicinity of the alignment on the south rim. The north rim for the proposed re-route is managed by the FS, the canyon and south rim is managed by the BLM. Required clearing for the proposed re-route would cover approximately 28.8 acres, and would be conducted in compliance with Tri-State *Operations, Maintenance and Vegetation Management Plan* (*Appendix T*) and agency specifications.

Figure 7: Existing Dolores River Canyon Crossing, Including Marker Balls

About 2.2 miles of new access roads would be required for the re-route, including about 0.7 miles of two-track roads on the south rim that would be upgraded. It is expected that only minor grading would be required for construction and future maintenance of these access roads. Tri-State would reclaim and re-seed the access roads (3.3 miles) and structure sites associated with the existing 115-kV alignment. All applicable Environmental Protection Measures (EPMs) would be implemented regarding revegetation, public access, and other management measures.

Tri-State would place gates or other closure devices as appropriate on access roads as required by agencies to minimize unauthorized access and vandalism at the crossing until the area has been rehabilitated to the extent feasible. At the direction of the affected agency, Tri-State would also place gates or other closure devices within access for the proposed re-route to limit unauthorized public access to the area.

4.3 Permanent Transmission Line Features and Facilities

Tri-State has requested a permanent 150 foot ROW for the transmission ROW with the exception of maintaining a 99 foot ROW for the actual crossing of the Dolores River to comply with BLM land use requirements for area with wilderness characteristics. The majority of the access for the new 230-kV line has already been approved in the existing BLM ROW grant for the existing transmission line. If new or additional access is required for construction or future maintenance activities, Tri-State would request a permanent access ROW for these roads as well. In addition, permanent guy pockets will also be required for non-self-supporting angle structures and this would require a permanent easement, in some cases outside of the 150 foot transmission ROW. Preparation of these sites may require clearing and/or grading

depending on the slope steepness and type of vegetation present. Clearing and grading would be conducted in a manner that minimizes ground disturbance and retains root structure to the greatest extent feasible. Prior to completion of the Final POD, guy pockets would be identified and surveyed as appropriate for cultural and biological resources of concern.

No guy pockets would be required in GuSG critical habitat within the Dry Creek Basin portion of the project because the structures will be built as self-supporting structures to minimize the potential for GuSG collision with guy wires.

The Montrose and Cahone substation expansions and the new Nucla 230-kV (Maverick) substation would be on private lands owned by Tri-State.

4.3.1 Structures

The new 230-kV transmission line will typically be constructed on wood H-frame structures with three-pole wood turning structures. The 230-kV structures will average about 80 feet in height and will be about 30 feet taller than the 115-kV structures. See Figure 8. Steel structures would be used at the Dolores River Canyon and for the double circuit between the Nucla 230-kV Substation (new Maverick Substation) and the Nucla Power Station. Single or three-pole steel pole structures may be used for reinforcing turning angles on the 230-kV line and would be even taller, averaging between 60 to 110 feet in height. However, most turning structures would be wood three-pole structures. Spacing between poles within the H-frame structures would be 19 feet 6 inches and the average span length would be approximately 625 feet. See Figure 9.

Single steel pole (monopole) structures would be used for the double circuit portion of the alignment that will run between the new Nucla 230-kV (Maverick) Substation and the 115-kV Substation at the Nucla Generating Station. These structures would range from 90-130 feet in height (Figure 10). Some steel structures may also be used for reinforcing turning angles on the 230-kV line. Final structure design and numbers of each type of structure will be included in the final POD.

Single pole steel structures are also proposed for construction of the portion of the line that crosses critical habitat for Gunnison Sage-Grouse in the Dry Creek Basin. These structures would average between 80 to 110 feet in height in the Dry Creek Basin. The structure arms and pole top would be fitted with perch discouragers to reduce avian perching and nesting on these structures (See Figure 11). Tri-State has also committed to using self-supporting steel structures through critical habitat to eliminate the need for guy wires to reduce potential collision risk to Gunnison Sage-Grouse.

Tri-State would use special steel lattice towers on either side of the Dolores River crossing. Two new steel lattice (tangent crossing) structures would be constructed on each side of the canyon rim. Based upon preliminary engineering review, the tower on the north rim would be approximately 150 feet tall; the south rim tower would be approximately 75 feet tall. The towers would be galvanized, non-reflective, acid-etched steel to minimize reflection and decrease visibility (See Figure 12).

The new 230-kV transmission line facility will have taller structures than the existing 115-kV line. Taller structures are needed to hold the larger electrical wires (conductors) and provide adequate height for safe ground clearance. Since the 230-kV transmission line structures will be taller than the 115-kV line, there would be longer spans and fewer structures required on the landscape, approximately 1/3 less than what is currently in the ROW. Table 3 compares and contrasts features of the new 230-kV facility with the existing 115-kV facility. This table was created utilizing preliminary engineering design and may be subject to change as design evolves. Atypical conditions, such as the Dolores River crossing, require

different structure types, structure heights, special conductors and disturbance areas that are to be determined once a preferred crossing is selected by the federal agencies.

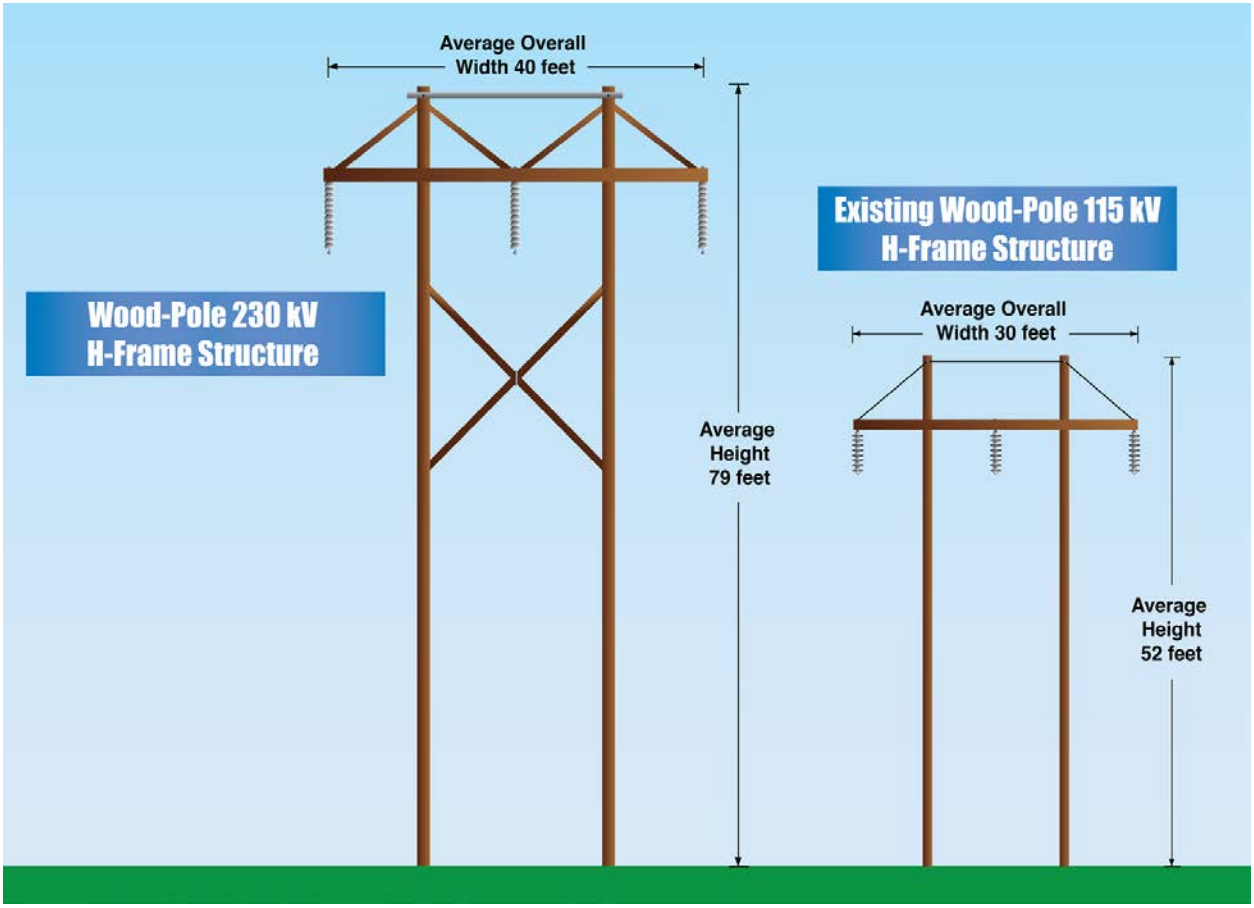

Figure 8: Comparison of Existing 230-kV Transmission Line (on left) and 115-kV Transmission Line Shown on the Landscape

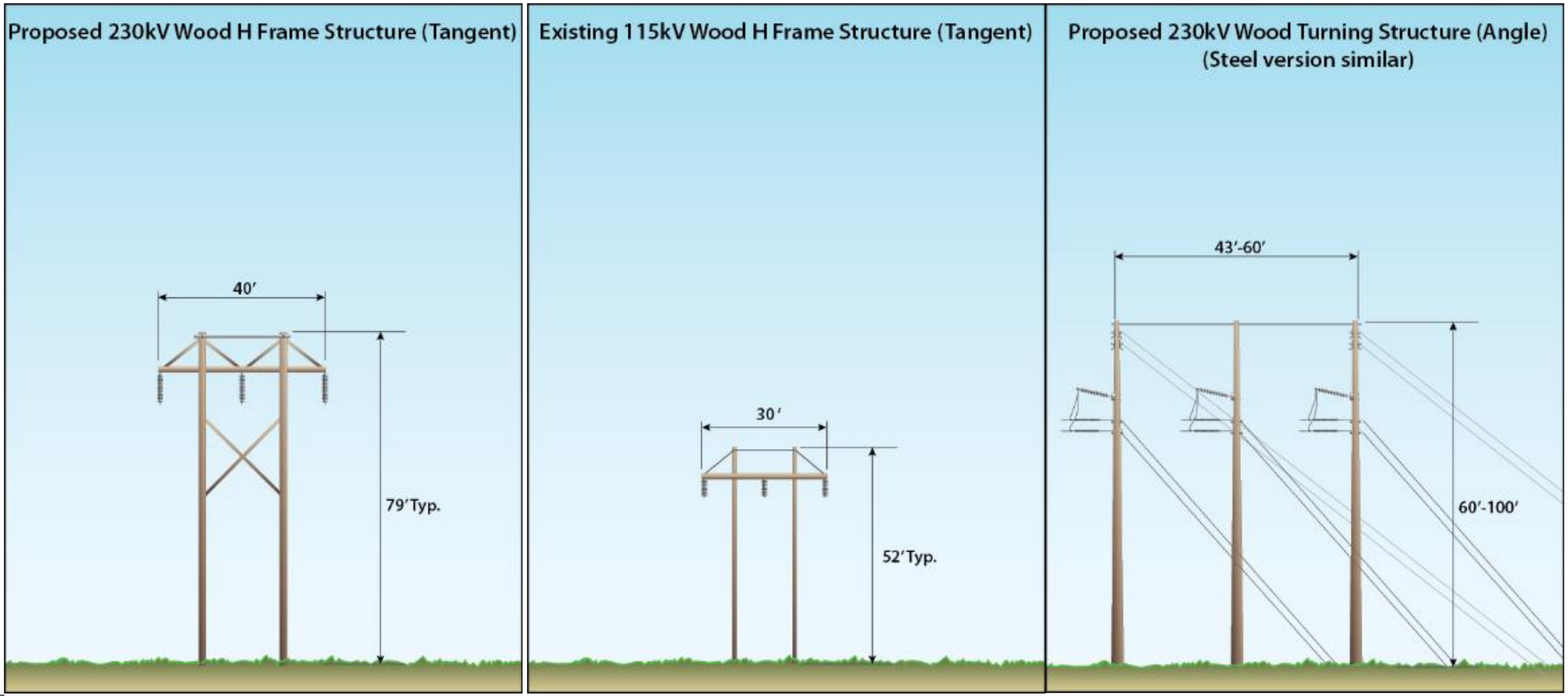

Figure 9: Comparison of Existing 115-kV and 230-kV Tangent Structures and 230-kV Turning Structure

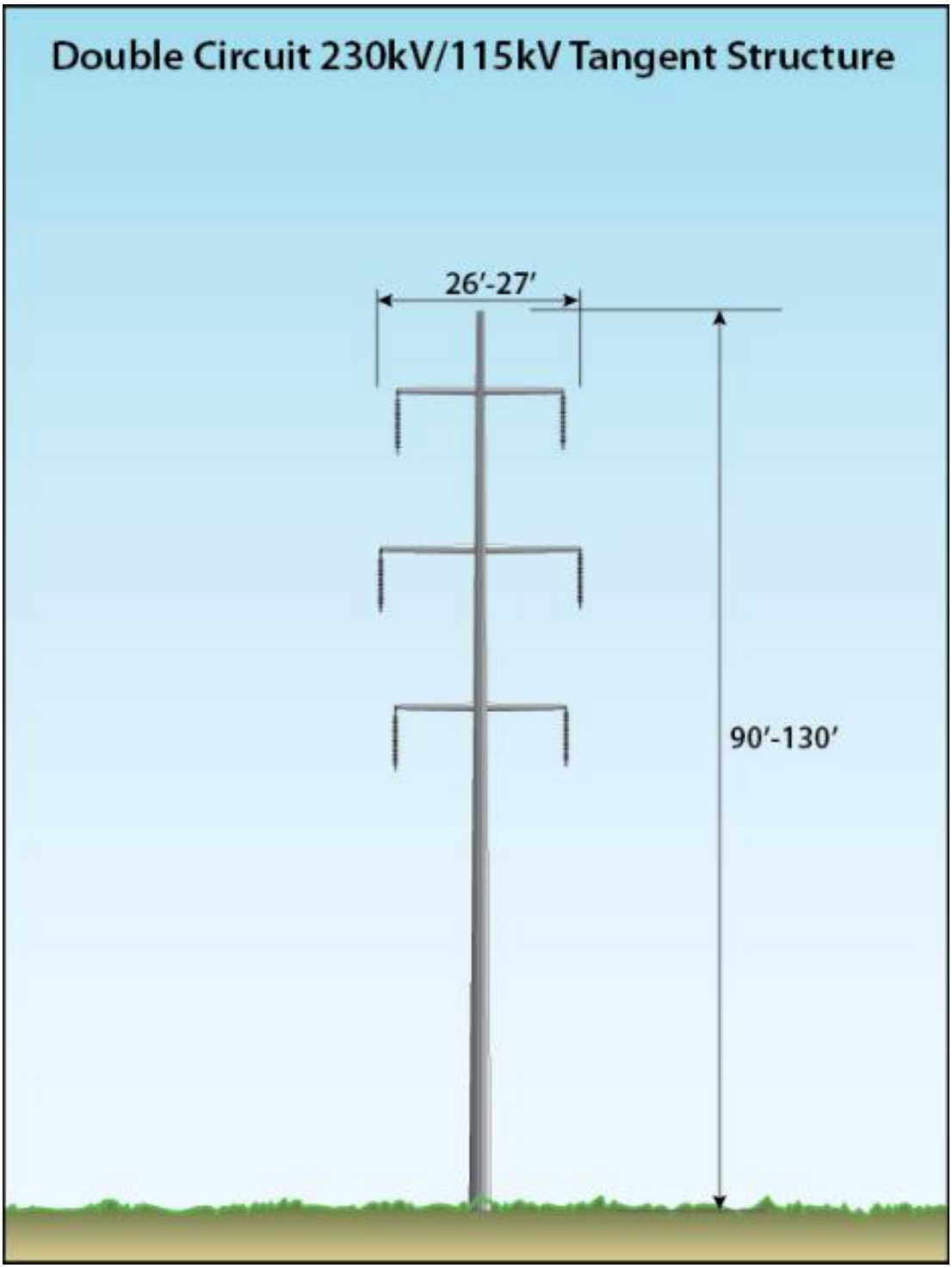

Figure 10: Proposed Double Circuit Tangent Structure

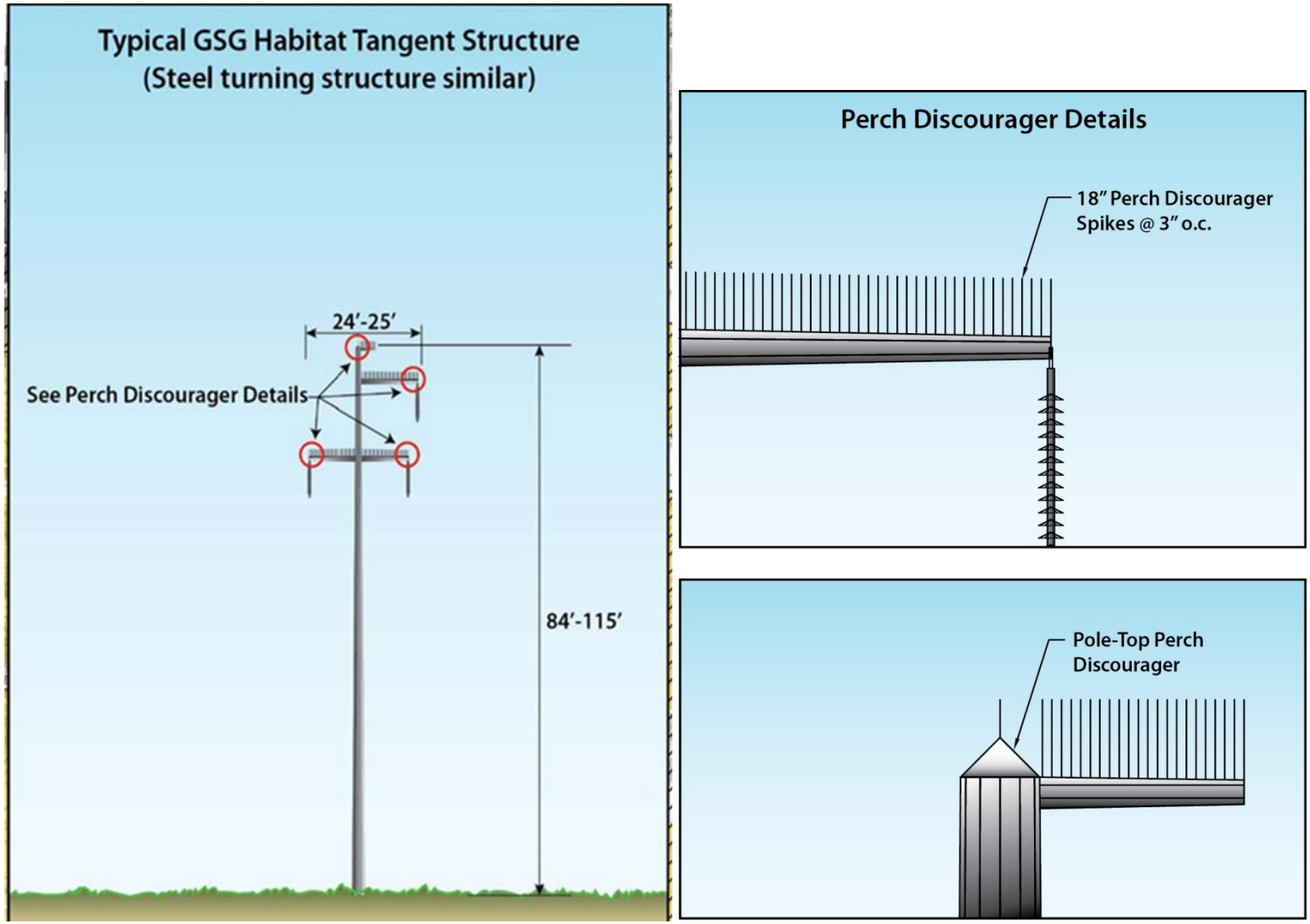

Figure 11: Existing and Proposed Steel Structures and Perch Discouragers in Dry Creek Basin

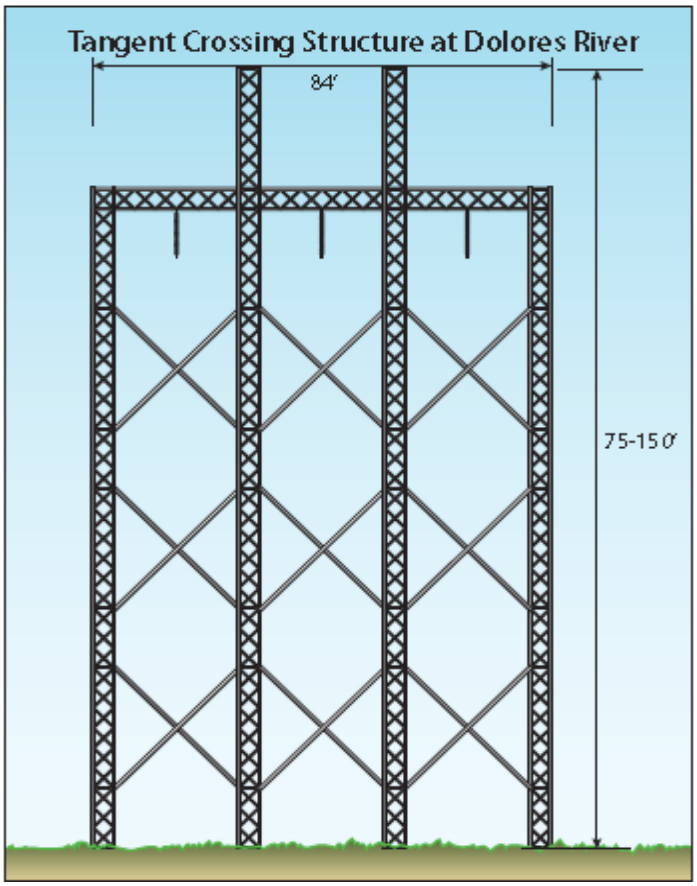

Figure 12: Proposed Lattice Steel Tangent Structure for Dolores River Canyon Crossing

4.3.2 Structure Pads

Where structures are to be constructed on slopes, a level area must be cleared and graded to allow for equipment to operate safely; these areas are known as pad sites. These pad sites would primarily be constructed inside the ROW and re-seeded post-construction. The surface disturbance necessary to establish pad sites for project construction and long-term maintenance will be determined based on structure type, existing conditions, slopes, and sensitive resources present. It is Tri-State's preference to leave the grade of pad sites in place for future maintenance but to re-seed the pad sites to minimize erosion, noxious weed infestation, and land use/ visual concerns. Pad sites may vary in dimensions, depending on the type of structure and site conditions. For purposes of this analysis, pad sites were calculated at 6,500 square feet (about 80 feet X 80 feet) for each structure location within the 150 foot ROW, however not all structures will require a constructed pad, level sites would not be cleared or graded.

4.3.3 Guy Wires and Guy Pockets

Guy wires are tensioned cables that anchor and provide stability for transmission structures. Guywires are attached to buried plate anchors or screw-in anchors drilled into bedrock. The guy wires will be marked with plastic sleeves to make them more visible where they are a hazard to foot traffic or wildlife.

Sometimes guy wires must extend outside of the ROW in order to achieve the angle necessary to secure large turning or dead-end structures. Guy pockets are the small areas or "pockets" adjacent to or within the ROW needed to accommodate guy wires. Most of the space in the guy pocket is needed for above ground wires as they angle down to the ground. This is a permanent or long term use of land and may, at agency or landowner discretion, be included in the ROW grants and easements. Guy pockets often occur at turning structures, dead-end structures, and structures at the ends of long spans. Guy pockets would be surveyed for sensitive resources prior to the NTP and will be updated in the Final POD. Guy pockets are generally small, limited to select structures and usually do not require extensive disturbance but must be placed several feet below ground. They may require tree branch cutting or minor clearing and/or grading depending on the slope steepness and type of vegetation present. Clearing and grading would be conducted in a manner that minimizes ground disturbance and retains root structure to the greatest extent feasible.

Guy pocket locations will be presented in *Appendix V- Right of Way Legal Descriptions* once final engineering design is complete.

No guy pockets would be required in GuSG critical habitat within the Dry Creek Basin portion of the project because the structures will be built as self-supporting structures to minimize Gunnison Sage-Grouse risk of collision See GuSG mitigation plan in *Appendix B- Biological Resources Protection Measures*.

4.3.4 Conductor Wires, Insulators, Hardware

New conductors would replace the existing 115-kV conductors. The current conductors are approximately 0.72 inch in diameter and the new conductors would be approximately 1.35 inches in diameter (conductor size pending final engineering design).

In order to reduce visual impacts from the transmission line, Tri-State has committed to utilizing non-specular conductor, apply acid-etched galvanized finish to all steel structures including steel fence and use non-reflective insulators for all conductor to structure connections.. These specifications would apply to the lattice steel structures and conductors at the Dolores River crossing.

Tri-State designs power lines to reduce corona effect. Devices called 'corona rings' have been specified at the energized end of each insulator in this line to further reduce the effects of corona. Corona occurs 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). 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.

On the MNC line rebuild, the line voltage would be increased from the existing 115-kV to 230-kV which does increase the possibility of corona. The polymer insulators selected for this line tend to exhibit less corona than glass or porcelain (existing) insulators at the same voltage. This increase, however, has been offset by the selection of a much larger conductor (1.345" diameter vs. the existing 0.72"), and larger phase spacing (19'-6" vs. the existing 15'-6").

Corona can also occur on insulators and hardware, particularly if the line is subjected to heavy contamination by pollen, dust, etc. Devices called 'corona rings' specified at the energized end of each insulator in this line to further reduce the effects of corona. These devices are designed to lower the electric field around an insulator below the threshold that will cause corona.

Finally, EHV or Extra High Voltage conductor fittings (dead-ends, terminals, and splices) will be specified and installed on this line. These EHV fittings have been specifically designed and fabricated with smooth surfaces, rounded edges and in some cases, recessed hardware specifically to reduce the potential for corona to occur.

4.3.5 Static Wires and Communications (OPGW Cable and Splice Cases)

Two new shield wires will be installed on the H-frame structures and one shield wire on the single-pole structures. Shield wires are installed above the conductors to provide lightening protection to the transmission line.

In addition, one of the shield wires on the H-frame structures and the only static wire on the single pole structures will also have a fiber optic cable that will used for Tri-State communications. Fiber optic cable is currently contained within the existing shield wire on the 115-kV H-frame structures. Using fiber optics for communication allows for fewer microwave radio stations on the transmission system.

Along with communication for the transmission system, the current OPGW wire 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 internet capabilities. Eighty miles of this system resides on the existing project transmission line system. The new 230-kV would continue to support this system.

The OPGW currently handles both commercial and emergency (911) capabilities. The OPGW on the transmission line consists of 144 fiber optics embedded in the static shield wire and pole mounted splice cases. Only 22 of the existing fibers are used on the OPGW, the cable provides communication for Tri-State as well as emergency 911 response links, cable TV, and internet service. The OPGW cable is a separate permitted use on federal lands and Tri-State pays fees, collected from commercial users, to the federal government. The new fiber would be the same size as the existing fiber and no additional commercial uses are planned. Any future subleases for new commercial uses would require payment of applicable fees by the authorization holder, i.e. Tri-State.

The OPGW fibers are contained in a central tube internal to the stranded shield conductor for protection. The actual fibers themselves are approximately the diameter of a human hair. The OPGW is approximately 0.625 inch in diameter and requires suspension hardware specially adapted for OPGW.

Splice cases allow a continuous connection of individual optic fibers from beginning to end of the transmission line and are typically rectangular in shape with a wrap-around shield of galvanized steel. Typical splice case separation distances can range from 3 to 4 miles. These cases are generally attached to transmission structures.

To reduce visual impacts, the galvanized steel splice cases will have a weathered finish. The overall size of this assembly is approximately 42 inches high by 18 inches wide by 12 inches. Around the perimeter of the rectangular splice case assembly is a fiber storage rack, designed to store enough fiber for maintenance crews to be able to pull the splice case down off of the transmission line poles to the ground for repair.

The OPGW located on the existing 115-kV pole would be removed after the new OPGW was installed, tested, and operational on the new 230-kV project. Service for this critical communication link cannot be interrupted and must remain in service while the new 230-kV line is constructed. This presents unique challenges to constructing the new 230-kV line and is described in Chapter 6. The OPGW cables will be new, but the service and customer base will remain the same. An additional OPGW cable will be installed at the Dolores River Crossing in order to create backup service. This second OPGW would only be lit if the first one is damaged.

4.3.6 Access Roads and Trails

The existing 115-kV line is supported by about 100 miles of existing access routes inside and outside of the ROW that provide access for routine maintenance and operation of the line. The access system is recognized as authorized access in Tri-States 2006 Plan of Development for the 115-kV line along with the existing 80 miles of transmission line ROW. In addition to these access routes, Tri-State uses several miles of public system roads that include state highways, county roads, FS and BLM system roads. Road mileage is shown in Table 1.

The construction and operation of the new 230-kV line will use the same access system with some additions and improvements. Tri-State engineers, road and environmental staff will review structure locations and the existing road system in 2015 and 2016, including roads permitted in the 2007 ROW grant (COC-66840). Tri-State will utilize existing roads to construct the new 230-kV line to the greatest extent feasible and will minimize the need for new access roads by placing new structures in proximity to existing structures locations with authorized access, to the extent feasible. (See *Appendix A- Access Road Siting, Appendix V- ROW Legal Descriptions and Appendix W- Map Atlas*

Since the 230-kV transmission line will require longer spans and taller structures, it is possible some spur roads may no longer be required but some new spur roads would be required along the ROW. It is also possible that better routes to structures may be identified that would reduce erosion. Roads that are not needed for the new 230-kV line would be reclaimed and dropped from the permit or authorizations and easements and would not be included in the renewed ROW grant and new SUA. Not including the roads needed for the proposed reroutes, less than 5%, or about 6 miles of the road network is expected to change due to span spacing. New roads that need to be constructed for new structure locations would be identified for the Nucla to Cahone segment in 2015 and the Montrose to Nucla segment in 2016. Staking for structures and roads would be continually replaced until construction is complete. Staking location and design criteria will be approved by the agencies. All road construction will be inspected by agency representatives. Final road locations will be included in the final POD (*Appendix A- Access Road Siting, Appendix V- ROW Legal Descriptions and Appendix W- Map Atlas*).

Tri-State's standard drive surface for maintenance and operations is 20 feet. Tri-State requests a long-term ROW authorization for the area required to construct the access road (30 or 50 feet depending on terrain) so that future maintenance of these access roads can occur within the permitted ROW.

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 will 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. Protocol for fencing, gates, access, and signage is detailed in *Appendix L (Flagging, Fencing and Signage Pla*n). Tri-State would work with the BLM and FS to close off access roads to the public that may result in travel management or resource concerns. Currently, Tri-

State and FS 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 -Forest. This is an area east of Dolores Canyon.

Any gates or bollards installed by Tri-State on behalf of the BLM and FS would be in compliance with existing BLM and FS travel management plans and would accommodate all agency requirements. All ROWs could be accessed by BLM or FS personnel at any time especially in the event of emergencies, such as fires. Tri-State would provide funding for the BLM and FS to install instructional signing 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 FS approval.

4.3.8 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 new Nucla 230-kV substation would be south of the SH 145 and SH 141 intersection on private land that will be acquired by Tri-State. The new substation cannot be located at the existing Nucla Substation, at the Nucla Generating Station, because space is limited at this facility and the new substation requires approximately 20 acres. Figures 13, 14, 15, and 16 show general arrangements for substation expansions; legal descriptions are provided in *Appendix V (ROW Legal Descriptions).*

Once the substations are energized and in operation, substation monitoring and control functions would be performed remotely by Tri-State from its operation center. Project substations would not be staffed; however, a remotely monitored security system would be installed. No permanent lighting fixtures would be required for substation operation, though lighting would be placed around the building for use during inspection and other maintenance activities. Maintenance activities would include equipment testing, equipment monitoring and repair, emergency and routine procedures for service continuity, preventive maintenance, maintaining drainage improvements and substation access roads, and stabilizing soils. Routine operations activities would typically occur monthly and a major maintenance inspection would take place once a year. Operations and maintenance is discussed in detail in *Appendix T (Operations Maintenance and Vegetation Management Plan).*

Figure 13: Current Montrose Substation and General Arrangement for New 230-kV Montrose Substation.

General Arrangement to be provided in Final POD

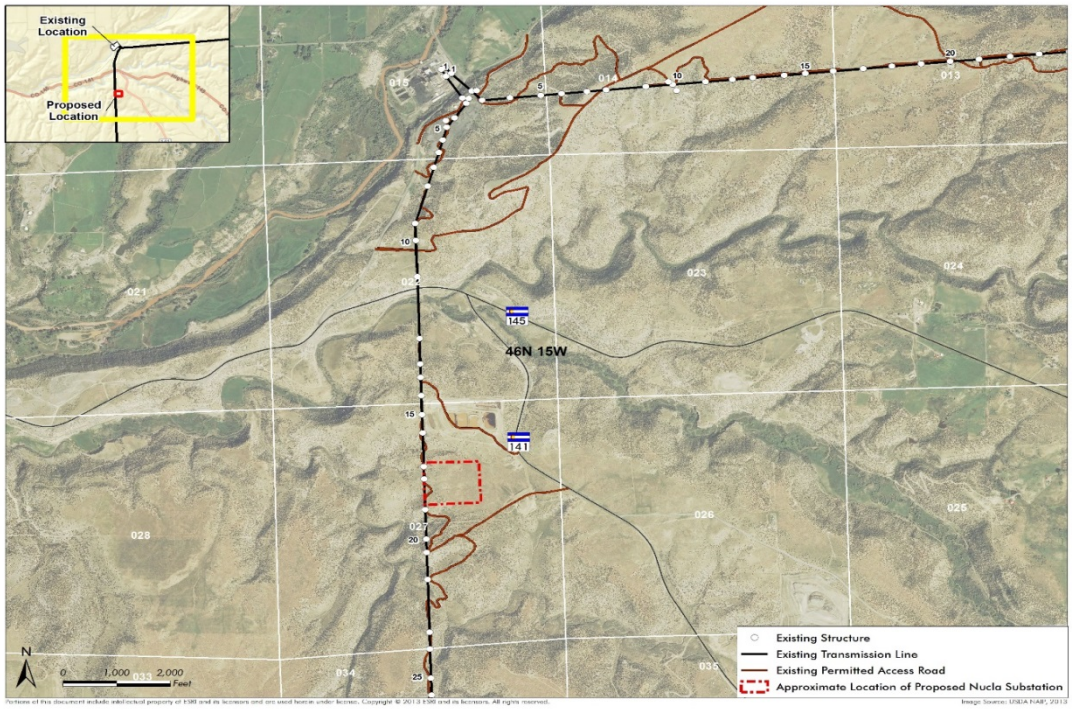

Figure 14: New Nucla 230-kV Substation Location

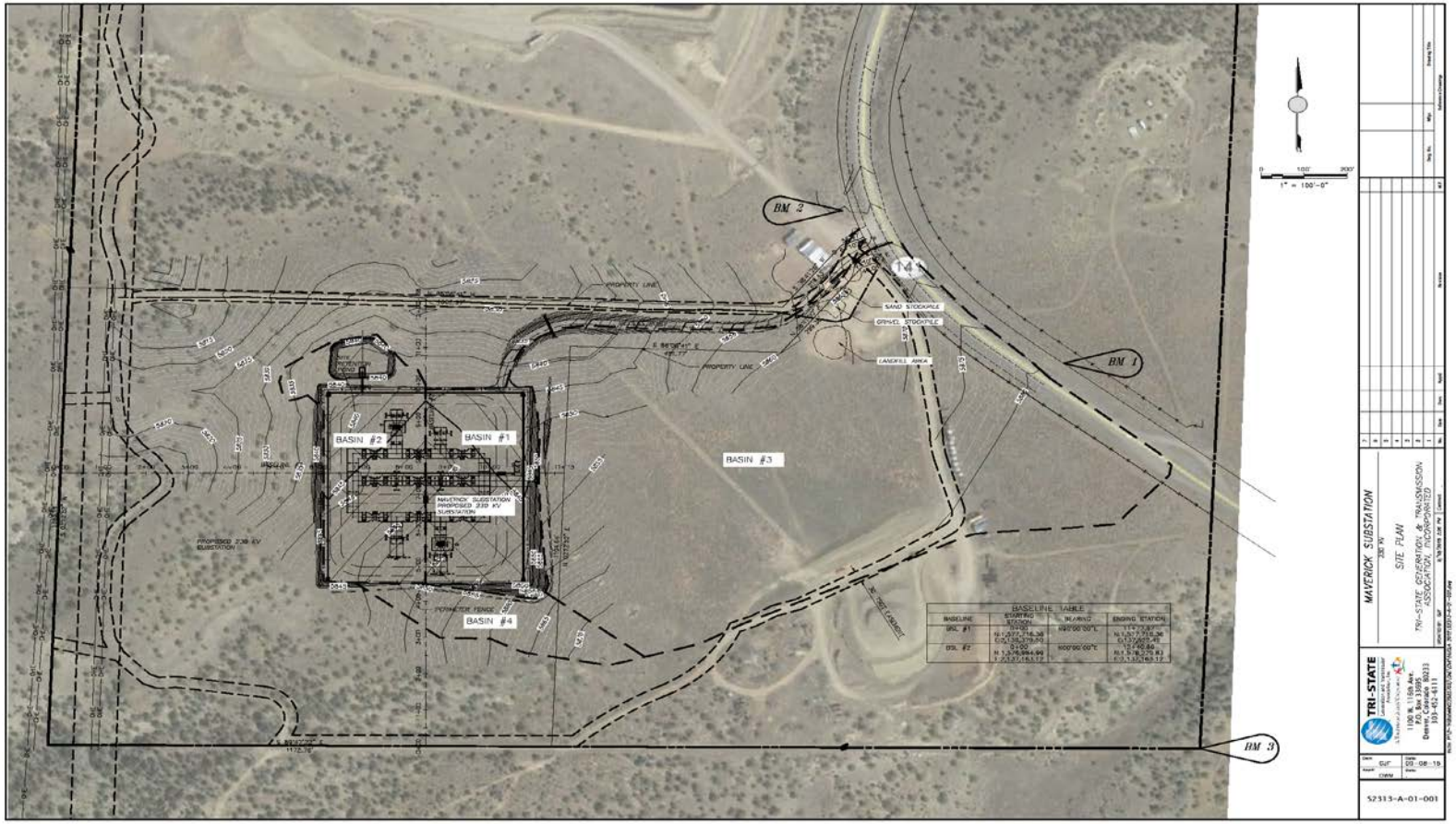

Figure 15: Photograph and General Arrangement for New Nucla 230-kV Substation

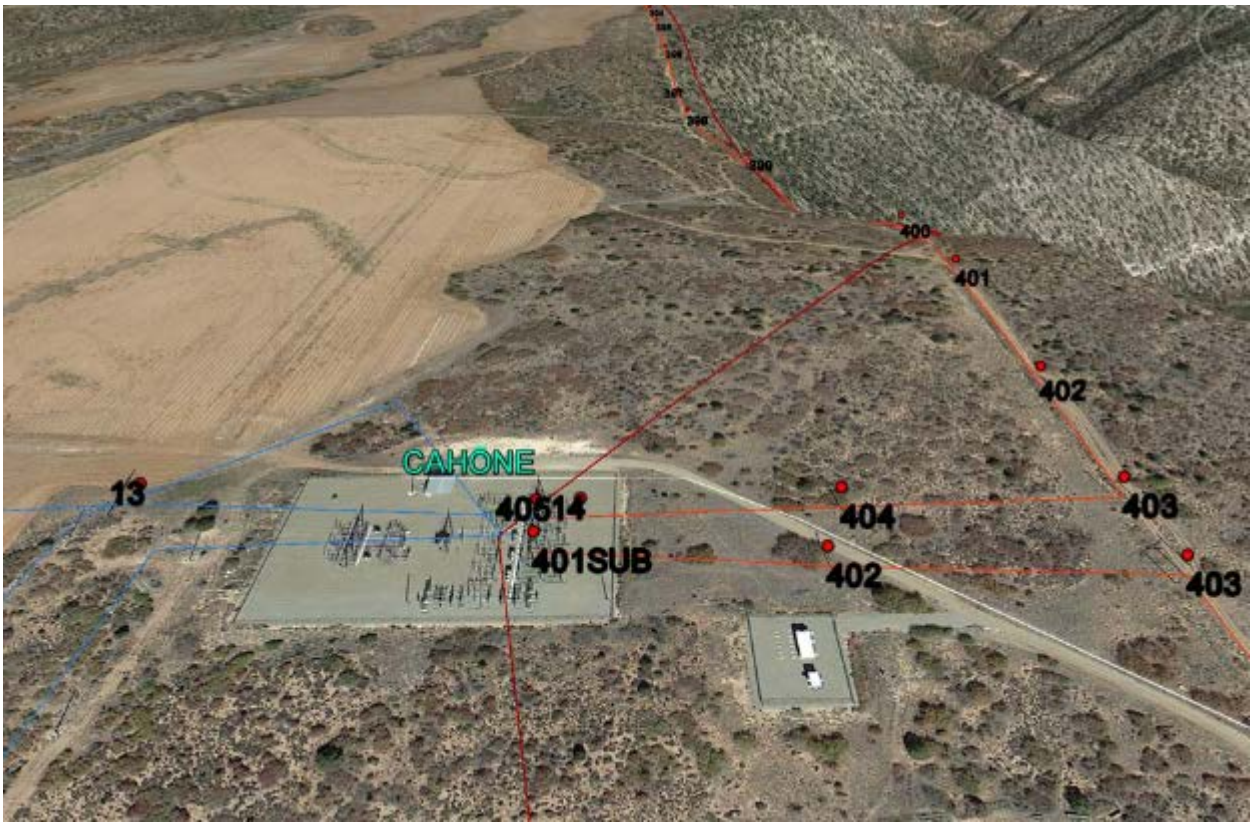

Figure 16: Photograph of Cahone Substation
Substation addition general arrangement to be provided in Final POD

4.4 Transmission Line Temporary Features/Facilities

4.4.1 Pulling Sites

There would be a number of sites along the ROW or immediately adjacent to the ROW that would be used for wire setups pulling, and splicing. The sites would be used during wire stringing and pulling activities for both conductor wires and OPGW. The workspace is needed for a tensioner, puller, spools of wire, snub poles, and a crew.

In general, the pull sites would be in the ROW or in-line and behind large angle dead-end structures. 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 X 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. Tri-State will utilize flatter areas to avoid the need to do any ground disturbing activities for pulling sites. 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 Montrose to Nucla segment of line. It is possible that 25 of these pull sites may be required off the 150

foot transmission ROW. Most of these sites (80%) would be on federal lands. Pulling sites would be surveyed for sensitive resources and reclaimed and re-seeded post construction. Pulling sites will be identified as part of final engineering and locations will be presented in *Appendix V. (ROW Legal Descriptions)*

4.4.2 Storage and Staging Areas

A minimum of three temporary staging areas would be needed to store poles, equipment, and vehicles. Staging areas would occur on private lands. The largest staging area is expected to be approximately 60 acres and would be centrally located on private lands off of Highway 141. Two other larger staging areas of 20 acres would be needed along the line. Staging areas of this size are required to store poles, conductor and construction equipment for the project as well as provide space to assembler structures when necessary. Staging areas are expected to occur on the north and south ends of the project and a third centrally located. Other staging areas may range from 5 to 20 acres in size depending on the number of suitable sites found. Staging areas will be identified during final project design and presented in *Appendix V (ROW Legal Descriptions).*

4.4.3 Helicopter Staging Areas

Helicopters may also need staging areas for landing and fuel storage. Helicopters may be used to install conductor and OPGW for the transmission line. It is also possible that helicopters could be used to install or partially install specific structure types that are in areas that present topographic challenges such as the Dolores River Crossing. Use of helicopters will require a specific number of helicopter landing sites along the ROW during construction. These areas would be located in grass or areas cleared of brush to reduce fire hazard. Pad locations would be selected to avoid sensitive resources. Helicopter staging areas and landing sites will be identified as part of final engineering and locations will be presented in *Appendix V (ROW Legal Descriptions).* No staging areas with bulk storage of fuel will occur on public land. Fuel storage would be in accordance with protocol detailed in *Appendix N, Hazardous Materials Management and Oil Spill Plan.*

5.0 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 4. These EPMs include, but are not limited to, EPMs outlined in the 2006 POD as appropriate. The measures in Table 4 would supersede the previous EMPs for the 115-kV line. The measures below briefly outline the conditions that Tri-State would follow to improve the existing 115-kV access system; more detail is provided in the attached appendices to this POD. This table will be updated in the Final Plan of Development to include more specific EPMs once engineering and design is complete.

Table 4: Tri-State EPMs for Construction Projects

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
General	
G-1	Tri-State and its contractors will comply with all federal, state and local environmental laws, orders and regulations. Prior to construction, all construction personnel will be instructed on the protection of cultural and ecological resources.
G-2	Prior to and throughout construction, Tri-State shall discuss with the Contractor areas of environmental sensitivity within the project area, and, in particular, those areas where a monitor must be present during construction.
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 would occur in proximity to sensitive biological or cultural resources. The environmental monitor would be responsible for keeping Tri-State and its contractors in compliance with the Final POD and associated permits/easements. The environmental monitor would 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 would result in non-compliance with any terms of grants, permits, easements and associated committed environmental protection and mitigation measures approved for the project.
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 would require submittal and approval of a variance request to the BLM/FS. The Final POD would 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.
G-5	The project will be planned, constructed, and operated in accordance with the Finding of No Significant Impact (FONSI), ROW grant (BLM), special use authorization (FS), and requirements of other federal, state and local permitting agencies.
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.
Access Routes (also see Traffic section, T-1 and T-2)	
AR-1	No construction 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 shall be deemed too wet to adequately support construction equipment. If equipment or vehicles create ruts in excess of 1 inch deep on graveled roads, the roads shall be deemed too wet to support construction equipment.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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.
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.
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).
AR-5	Tri-State will design access roads to BLM/FS 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 Forest Service 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.
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).
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/FS 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 would be mitigated after the emergency has been resolved in coordination with the affect land management agency or landowner.
Aesthetics/Visual Resources	
A-1	Tri-State and its contractors shall exercise care to preserve the natural landscape and shall 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 shall be preserved and shall be protected from damage by the contractor's construction operations and equipment.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
A-2	Tri-State and its contractor(s) shall minimize scarring, defacing, damage, or destruction of the natural landscape resulting from construction operations: any unnecessary or unauthorized disturbance shall be repaired by the contractor to the satisfaction of the agency authorized officer.
A-3	All construction and future maintenance materials, waste, and debris shall 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 shall be removed from the ROW.
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 (KOP) 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.
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.
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 to all steel structures including steel fence, and using non-reflective insulators for all conductor to structure connections.
A-7	EPM VG-2 through VG-10 would 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.
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).
Air Quality	
AQ-1	Tri-State and its contractor(s) shall utilize practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.
AQ-2	Possible construction related dust disturbance shall 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.
AQ-3	Vehicles and equipment showing excessive emission of exhaust gases due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective adjustments or repairs are made.
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.
AQ-5	The contractor shall turn off equipment when it is not in use.
AQ-6	When wind speeds exceed 20 miles per hour (mph), Tri-State and contractors would minimize new disturbance to the extent possible and/or mobilize additional water trucks to minimize fugitive dust from exposed surfaces. Also see AQ-4.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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 from May 15 through June 30 unless previously authorized by agency authorized officer. There are also big game closures on BLM administered lands in lands in accordance with the respective Resource Management Plans. These timing restrictions will be adhered to whenever feasible and a waiver would be required from the agency in coordination with Colorado Parks and Wildlife (CPW) if construction needs to occur in sensitive big game habitats during sensitive time periods.
BR-2	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 (Migratory Bird Executive Order 13186, January 10, 2001). 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 utilized guidance as outlined in CPW's Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors (CPW 2008) on private, State, and USFS administered lands. Separate guidance will be followed on lands in the BLM Tres Rios Field Office. 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.
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 found prior to construction, no work will be permitted within 0.5 mile of the active nest from December 15 through July 15. 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 would 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 would obtain an eagle take permit from the USFWS prior to construction. The same process would apply to future major maintenance activities.
BR-4	Once pre-construction surveys have been completed, the Final POD would 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 would also apply to heavy maintenance activities as defined in the POD.
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 the CPWs approved protocol. If prairie dog colonies occur on BLM lands, burrowing owl surveys will be conducted using protocol from the Tres Rios BLM. If an active nesting burrow is found, it will be buffered 0.25 miles feet from March 15 through August 15 or until the young have fledged and left the net.
BR-6	In order to preclude avian electrocutions and minimize collision risk, Tri-State will incorporate guidelines developed by the Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC 2012) to protect birds on power lines.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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.
BR-8	Structure holes will be covered when work is completed each day to prevent entrapment of wildlife.
BR-9	Impacts to wildlife and special status species habitats will be minimized through incorporation of EPMs included under Vegetation and Water Resources.
BR-10	In order to minimize impacts to nesting migratory birds, vegetation removal required for construction and maintenance of the power line will occur to the greatest extent feasible in the fall and winter months. If this is not feasible, Tri-State will conduct nest surveys and flag and avoid any active nests identified.
BR-11	Surveys for sensitive plants will be conducted in suitable habitats prior to construction within previously un-surveyed areas within 100 feet of proposed disturbance. Additionally, sensitive species located in 2014 and 2015 will be re-surveyed to determine plant locations in relationship to proposed project impacts. 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 would 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.
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.
Gunnison Sage Grouse	
GUSG-1	Tri-State will utilize single-pole structures to reduce perching surfaces for GuSG avian predators through Dry Creek Basin.
GUSG-2	Tri-State and its contractor(s) will install perch discouragers on the remaining horizontal portions of the steel structure including the pole tops in Dry Creek Basin.
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.
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.
GUSG-5	Tri-State's transmission line and access road construction along the existing alignment will not occur within occupied habitat from March 15 through June 30th.
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 15 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.
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.
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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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 EA and BA. The environmental monitor is given full authority to stop or modify construction activities that may be affecting GuSG and other sensitive resources.
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.
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.
GUSG-12	Tri-State and its contractor(s) will treat noxious weeds infestations associated with construction and maintenance activities within the transmission ROW and administrative only access roads to minimize habitat effects impacts to GuSG.
GUSG-13	Tri-State will monitor 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 five years on the proposed rebuild and three years with an option to conduct two additional years, if warranted, on the reroute., This would include one year of monitoring to evaluate current perching activity on the existing 115-kV line. Tri-State will maintain and repair the perch discouragers for the life of the transmission line.
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 Resources Plan, Appendix B.*
GUSG-15	Establish and implement a fire prevention and suppression plan for construction 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
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.
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.
GUSG-18	Tri-State will treat noxious weeds infestations associated with construction and maintenance activities within the transmission ROW and administrative only access roads.
Cultural Resources	
CR-1	Prior to construction, 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.
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 the National Historic Preservation Act and enabling legislation.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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.
CR-4	Sensitive cultural resource locations (historic properties) in proximity to the ROW 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.
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.
CR-6	Tri-State and its contractors will comply with the site collection and mitigation plan approved by the BLM, USFS, and the State Historic Preservation Office (SHPO) to ensure unavoidable disturbance of cultural resources are properly mitigated.
Fire Prevention/Control	
FP-1	Construction vehicles shall be equipped with government approved spark arresters.
FP-2	Tri-State and its contractor(s) shall maintain in all construction vehicles a current list of local emergency response providers and methods of contact/communication.
FP-3	A fire plan would be included in the Final POD and would be adhered to during transmission construction and maintenance activities.
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 would minimize risk to the transmission line and federal, state, and private lands.
Hazardous Materials	
HM-1	Tri-State and its contractors shall 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 shall 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 shall 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 shall be furnished to the authorized officer concurrent with the filing of the reports to the involved federal agency or state government.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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 shall notify Tri-State of any spills so appropriate notifications can be made to the appropriate regulatory authorities/landowners and managers.
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 appropriate 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.
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.
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.
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.
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.
LU-4	The contractor shall 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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
LU-5	The contractor shall 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 shall 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 shall be corrected as necessary by the contractor. The land and facilities shall be restored as nearly as practicable to their original condition.
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.
LU-7	Tri-State will provide as-built drawings to federal agencies when construction is completed.
Noise	
N-1	Construction vehicles and equipment shall be maintained in proper operating condition and shall 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.
N-2	Devices called 'corona rings' have been specified at the energized end of each insulator in this line to further reduce the effects of corona.
Noxious Weeds	
NW-1	Tri-State will conduct a noxious weed inventory prior to construction to identify potential problem areas and if timing of construction permits, will pre-treat the ROW and associated access roads and other construction related disturbance areas prior to construction to reduce the spread of noxious weeds during construction activities. Noxious weed management will continue through the maintenance and operation phase of the project. Timing of noxious weed inventory is critical to getting a good inventory. Inventory should be based on plant physiology and phenology and will require completing multiple inventories throughout the growing season for different elevations and plant communities. Pre-treatment also requires that plant phenology be taken onto consideration in order to be effective. For some species, pre-treatment needs to occur for multiple years prior to the construction activity.
NW-2	The Final POD would include a reclamation and noxious weed management plan, which will be approved by the appropriate agency prior to the issuance of a ROW grant. The noxious weed management plan 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). Included in the noxious weed plan will be stipulations regarding reclamation, monitoring and treatment of noxious weed populations in the ROW resulting from transmission line construction and maintenance activities. The Final POD would also be in accordance with USFS direction for invasive species management (including Forest Service Manual 2900 invasive species management; Forest and/or regional invasive species strategy).
NW-3	On-site weed control will be conducted through herbicide use and a weed control plan approved by the BLM, USFS, CPW, and affected landowner (on private lands). Separate treatment plans and agreements would be done with each agency. Tri-State will work with the BLM to develop a Noxious Weed Plan. The BLM requires a Pesticide Use Proposal package, and would 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).

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
NW-4	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 provide a portable/mobile vehicle wash station on-site. Tri-State would require that all vehicles be washed prior to entering the project area; when travelling from an area invested 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.
NW-5	Pre-construction treatment of weeds in staging or temporary use areas will be conducted. Tri-State and its contractors will avoid or minimize travel through weed-infested areas, or restrict travel to those periods when spread of seed or propagules is least likely until the areas have been treated. Pre-treatment of invasives will be effective only if plant phenology and physiology are taken into consideration. The final staging areas and temporary use areas on federal lands would be reviewed and approved by the agencies prior to construction.
NW-6	Tri-State will hire an independent contractor to evaluate and report annually on List A and B invasive plant species on areas disturbed by construction. Where infestations of weedy species are noted by the contractor, Tri-State will treat noxious weeds using methods approved by the landowner and county weed coordinator on private land and BLM/FS/CPW on public lands. Treatments need to be based on plant phenology. Weed monitoring will be completed once a year for a period of three years on private and state lands or until self-sustaining native vegetation populations are established, whichever occurs first. Weed control and monitoring on federally-managed lands is required for the term of the ROW permit. Results will be recorded and submitted to the appropriate agency. On lands administered by the USFS, 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 GMUG NF and SJNF (this agreement covers 18 miles of the existing transmission ROW). Additional detail would be provided in the Final POD (*Appendix S, Noxious Weed Management Plan).*
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.
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. Tri-State will add hazard notifiers/deflectors to guy wires where trails are in the vicinity of guyed structures to prevent collisions.
R-2	Tri-State will work with CPW 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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
Soils and Geology	
S-1	Tri-State and its contractor(s) shall 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.
S-2	Movement of construction vehicles and equipment shall be limited to the ROW and approved access routes.
S-3	Excavated material not used in the backfilling of structures shall 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 shall then be regraded to approximate pre-construction contours and reseeded as specified in S-1 (above).
S-4	If present in sensitive areas (wetlands), topsoil will be removed, stockpiled, and re-spread at temporarily disturbed areas not needed for maintenance access.
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.
Traffic	
T-1	Tri-State and its contractor(s) shall make all necessary provisions for conformance with federal, state, and local traffic safety standards and shall conduct construction operations so as to offer the least possible obstruction and inconvenience to public traffic.
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 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.
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.
VG-2	Vegetation shall 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 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.
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 shall 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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
VG-4	Timber removal and slash paid for at current stumpage rates for similar timber in the National Forest unless waived by the District Ranger or authorized representative. Timber below merchantable size will be paid for at current damage appraisal value; and all slash and debris resulting from the cutting or destruction of such timber shall be disposed of as necessary or as the USFS may direct. All commercial timber must be marked, cruised and paid for by Tri-State prior to cutting. Timber removal and slash management will be coordinated and approved by the USFS/BLM per agency specifications outlined in the Plan of Development prior to construction and future maintenance activities. Tri-State will designate/flag the 150 ROW prior to construction. Tri-State will mark danger trees adjacent to the ROW and incompatible vegetation within the ROW required for removal. Trees to be removed will be painted with USFS tracer marking paint. Tri-State will hire a forestry contractor approved by the USFS to cruise the existing merchantable timber. Existing merchantable volume to be removed within and adjacent to ROW will be sold to Tri-State at the appraised rate, and Tri-State will arrange for removal/transfer/disposal of material.
VG-5	Tri-State and its contractor(s) shall 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 (Corps).
VG-6	On completion of the work, all temporary use areas shall 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, provide for proper drainage and prevent erosion.
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.
VG-8	All construction materials and debris will be removed from the project area.
VG-9	The Final POD would include a reclamation and noxious weed management plan, which would be approved by the appropriate agency prior to the issuance of a ROW grant.
Water Quality and Erosion	
WQ-1	A Storm Water Management Plan (SWMP) shall 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 would also be updated with specific water quality design measures once final engineering is complete.
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.
WQ-3	BMPs, approved by the agencies, 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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
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).
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.
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 shall 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.
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 such turbidity control methods 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 shall 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.
WQ-8	If new access roads are required for construction they will be designed to properly drain in order to prevent future erosion. Final new access road design will be reviewed and approved by the affected authorized agency road engineer prior to construction.
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).
WQ-10	Prior to construction, a wetland and waters of the U.S. delineation 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).
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.
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.

Topic - No.	Applicant Committed Environmental Protection Measures and Design Features for Construction, Operation, and Maintenance
WQ-13	Vegetation removal will be limited to the area necessary for construction activities, and disturbed areas will be scarified and revegetated after construction.
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.
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; 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 fuel and chemical spills will be contained and cleaned up promptly.
WQ-16	Culverts or armored low water crossings 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.
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.
WQ-18	Intermittent or ephemeral streams will be crossed at right angles to the main channel.
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.
WQ-20	Implementation of EPMs outlined above under Vegetation and Soils will also minimize impacts to water quality and surface waters. Reclamation will occur soon as the season permits. Implementation of post-construction measures to stabilize areas of permanent and temporary disturbance.
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.

All EPMs discussed above would apply to the upgrade-in-place and the reroutes.

6.0 Project Construction

6.1 Project Schedule

Construction is proposed across two seasons from April to October in 2017 and 2018. The Nucla to Cahone line segment would be built first, followed by the Nucla to Montrose portion in 2018. The MNC transmission line is a vital part of the electrical power system on the western slope, and therefore, only a portion of the project can be built at one time 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 built. The existing Montrose and Cahone Substations must be modified and upgraded from 115-kV to 230-kV voltages before the 230-kV line can be operational. And the new 230-kV Nucla Substation must be operational before the line is completed. Also the existing Northern Fiber Optic Telecommunication Project OPGW fiber must remain in service at all times during construction and cannot be removed until the new OPGW is tested and operational on the new 230-kV line.

A critical consideration in the schedule is the connection of the new Montrose 230-kV yard to the existing Montrose 345-kV facility. There are two 345-kV lines that feed the existing Montrose 345-kV facility: the Montrose – Grand Junction line, and the Montrose – Hesperus line. These lines must be de-energized one at a time in order to support the electric system in the region. In order to minimize impacts to the electric system, both line outages need to coincide with a maintenance outage scheduled at the Craig Power Station. Maintenance at the Craig Power Station is scheduled several years in advance. The project schedule reflects a need for the new Montrose 230-kV yard construction to be complete and ready to connect during a planned Craig Power Station outage currently scheduled in the spring of 2017. These constraints, along with the seasonal constraints of constructing at high elevations and in rugged terrain present unique challenges to constructing this project. Table 5 shows the overall schedule and duration for construction of the project facilities.

Table 5: Construction Schedule

Construction Activity	Approximate Start Date	Duration	Comments
Construction Activities for the First Year (2016)			
Montrose 345-kV Substation – Phase I (yard expansion)	April 2016	5 months	Tri-State property
Nucla-Cahone– Access Construction/Improvement/Tree Cutting	May 2016	4 months	Tri-State property
Construction Activities for the Second Year (2017)			
Montrose 345-kV Substation – Phase II (energizing)	April 2017	6 weeks	345-kV substation outage is timed to coincide with Craig Station Units being taken off-line for routine maintenance.
Nucla-Montrose -Access Construction/Improvement/Tree Cutting	May 2017	4 months	
Nucla Substation – New 230-kV Substation	May 2017	6 months	On Tri-State property (to be acquired)
Cahone Substation – New 230-kV Substation	May 2017	6 months	
Nucla-Cahone – 230-kV T-Line Build	April 2017	7 months	
Nucla-Cahone 115-kV T-line Removal	June 2017	3 months	Part of the 115-kV structures must stay in place to support the OPGW
Nucla-Cahone Dolores River Crossing	June 2017	3 months	
Nucla-Cahone - Rehab and Revegetation	August 2017	3 months	
Construction Activities for the Third Year (2018)			
Montrose 230-kV Substation	May 2018	6 months	
Nucla-Montrose – 230-kV T-line Build	April 2018	7 months	
Nucla-Montrose – 115-kV T-line Removal	June 2018	3 months	Part of the 115-kV structures must stay in place to support the OPGW
Nucla-Montrose-Rehab and Revegetation	August 2018	3 months	

6.2 Construction Personnel

Project construction personnel will encompass a wide breadth of Tri-State staff and contractors. Transmission and substation construction requires a specialized workforce that will likely come from outside of the region. Other support contractors; such as environmental consultants, surveyors, and inspectors may come from the local workforce. Text below summarizes the construction workforce and equipment anticipated for the 115-kV transmission line and substation facilities. The construction workforce will 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
- Helicopter and helicopter support crew

Construction workforce needed at each facility is listed in Table 6. Table 6 includes totals of the construction workforce, however; the average at any given time would be much smaller. Photographs of typical construction equipment are shown at the end of this chapter.

Table 6: Anticipated Construction Workforce and Equipment

Activities	Crew Size	Equipment	Length of Time
	230-kV Overhead Line Construction 2017 and 2018		
Surveying & engineering	3 x 3-person crews	1 utility vehicle and All-Terrain Vehicle (ATV) per crew	4 to 5 months
Development of access roads and construction lay down sites	5 to 10 people	2 D-6 Caterpillars 2 all-wheel-drive motor graders 2 10-wheel dump trucks 2 water trucks	3 months
Dust abatement	1-2 people	1 water truck	3 months
Vegetation Management	4 to 10 people	Pickups Chipper Skidder Masticator Chain saws Haul trucks	forests - 1 week per mile; rangeland - none
Material hauling (All)	2 to 3 people per truck	2 pickup trucks 4 flatbed trucks with cranes 2 pole delivery trucks	2 months
Excavation of pole holes	3 x 3-person crews	2 rotary drilling rigs 4 backhoes 6 pickup trucks	4 months
Foundations and tower erection	3 x 4-person crews	6 pickup trucks/carryalls 2 cranes 6 boom trucks 3 material trucks (5 tons) 3 concrete trucks helicopters	6 months
Helicopter assistance	1 x 3 person crew	1 Helicopter 1 fuel truck 1 pick-up	6 months
Conductor and overhead ground wire installation	16 to 21 people	3 pickup trucks 3 manlifts/bucket trucks 2 hydraulic tensioning machines 2 reel trailers	5 months
Post-construction cleanup	6 people	2 pickup trucks 2 dump trucks 2 flatbed trucks	5 weeks
Reclamation	6 people	2 pickup trucks 2 flatbed trucks 1 backhoe 1 D-6 Caterpillar seeding equipment	6 weeks
Total	**Maximum each year 40 to 60 people**	**(equipment above)**	**Maximum 7 months**

Table 6: Anticipated Construction Workforce and Equipment (Continued)

Substation Construction									
	Montrose 345-kV Substation – Phase I (yard expansion) - 2016			Montrose 345-kV Substation – Phase II (energizing) - 2017			Montrose 230-kV Substation – 2018		
Activities	**Crew Size**	**Equipment**	**Length of Time**	**Crew Size**	**Equipment**	**Length of Time**	**Crew Size**	**Equipment**	**Length of Time**
Site grading and fencing	4 to 6 people	1 grader 14 2-4 pickup trucks 1 dozer 8N 1 excavator 325 2 trailers	4 to 6 weeks				4 to 6 people	1 grader 14 2-4 pickup trucks 1 dozer 8N 1 excavator 325 2 trailers	4 to 6 weeks
Foundation	4 people	1 pressure digger 3-4 concrete trucks 2 pickup trucks 3 material truck 1 backhoe 420	2 to 3 weeks				4 people	1 pressure digger 16 concrete trucks 6 pickup trucks 6 tractor/trails 6 material truck 1 backhoe 420	4 to 6 weeks
Structure assembly and erection	4-6 people	1 bucket truck 1 boom truck 1 manlift 2 pickup trucks 1 tractor/trailers	5 to 6 weeks	4-6 people	1 bucket truck 1 boom truck 1 manlift 2 pickup trucks 1 tractor/trailers	2-3 weeks	8 to 12 people	1 bucket truck 1 boom truck 1 manlift 10 pickup trucks 4 tractor/trailers 1 crane	4 to 6 weeks
Power system assembly							6 to 8 people	4-5 pickup trucks 1 crane	1 week
Gravel surfacing	5 to 6 people	1 bobcat 2 pickup trucks	2 weeks	4-6 people	1 bobcat 2 pickup trucks	1 week	5 to 6 people	2-3 pickup trucks 6-8 tractor/trailers 1 bobcat 1 10 wheel truck	1 to 2 weeks
Cleanup	4 people	1 bobcat 2 pickup trucks	1 week	4 people	1 bobcat 2 pickup trucks	2 weeks	4 people	1 bobcat 2 pickup trucks	2 weeks
Total	**21 to 26 people**	**(equipment above)**	**14 to 18 weeks**	**12 to 16 people**	**(equipment above)**	**5 to 6 weeks**	**31 to 40 people**	**(equipment above)**	**20 to 24 weeks**

Table 6: Anticipated Construction Workforce and Equipment (Continued)

	New Nucla 230-kV Substation 2017 - Construction			New Cahone 230-kV Substation 2017 - Construction		
Activities	**Crew Size**	**Equipment**	**Length of Time**	**Crew Size**	**Equipment**	**Length of Time**
Site grading and fencing	4 to 6 people	1 grader 14 2-4 pickup trucks 1 dozer 8N 1 excavator 325 2 trailers	4 to 6 weeks	4 to 6 people	1 grader 14 2-4 pickup trucks 1 dozer 8N 1 excavator 325 2 trailers	4 to 6 weeks
Foundation	4 people	1 pressure digger 16 concrete trucks 6 pickup trucks 6 tractor/trails 6 material truck 1 backhoe 420	4 to 6 weeks	4 people	1 pressure digger 16 concrete trucks 6 pickup trucks 6 tractor/trails 6 material truck 1 backhoe 420	4 to 6 weeks
Structure assembly and erection	8 to 12 people	1 bucket truck 1 boom truck 1 manlift 10 pickup trucks 4 tractor/trailers 1 crane	4 to 6 weeks	8 to 12 people	1 bucket truck 1 boom truck 1 manlift 10 pickup trucks 4 tractor/trailers 1 crane	4 to 6 weeks
Power system assembly	6 to 8 people	4-5 pickup trucks 1 crane	1 week	6 to 8 people	4-5 pickup trucks 1 crane	1 week
Gravel surfacing	5 to 6 people	2-3 pickup trucks 6-8 tractor/trailers 1 bobcat 1 10 wheel truck	1 to 2 weeks	5 to 6 people	2-3 pickup trucks 6-8 tractor/trailers 1 bobcat 1 10 wheel truck	1 to 2 weeks
Cleanup	4 people	1 bobcat 2 pickup trucks	2 weeks			
Total	**41 to 50 people**	**(equipment above)**	**20 to 24 weeks**	**27 to 36people**	**(equipment above)**	**14 to 21 weeks**

6.3 Preconstruction Activities

6.3.1 Permits and Approvals

Tri-State and its contractors would not initiate any construction or other surface disturbing activities on the right-of-way without obtaining all applicable federal, state and local permits. These approvals will also require an approved POD and prior written authorization of the Authorized Officer. On BLM administered lands, such authorization will be a written NTP (Form 2800-15) issued by the Authorized Officer or his/her delegated representative. Notices to Proceed would be required during construction, and each would authorize construction or use and occupancy only as therein expressly stated and only for the particular location or use and occupancy therein described, i.e., a construction phase or site location. The Authorized Officer would issue a NTP subject to such terms and conditions and approved plan of development as deemed necessary when the design, construction, use, occupancy, and operation proposals are in conformity with the terms and conditions.

6.3.2 ROW Preparation for Construction

In order to prepare the transmission ROW for construction there are several activities that must occur. These activities include: vegetation management on the transmission ROW, addressing potential danger trees adjacent to the transmission ROW and removing vegetation that impedes safe access of construction equipment.

Access roads would be cleared of woody brush and trees on the required driving surface (20 feet for construction and 16 feet for maintenance). Soft brush and grass would be crushed where road grading or pad construction was not required. Brush clearing along access roads has been conducted as part of ongoing access maintenance for the 115-kV line so this activity is expected to be limited to new access roads required for the 230-kV line.

Vegetation within approximately a 75-foot radius around each transmission structure will be removed to ensure maintenance and construction vehicles can safely set up next to the structure, to improve structure survivability in the case of wildfire, and to reduce risk of vehicle induced fires on the ROW during construction and maintenance activities.

The new MNC 230-kV Transmission Line will be regulated under NERC standards for reliability which includes vegetation management. Tri-State's long-term Transmission Vegetation Management Program objective includes creating sustainable ROWs with compatible (low growing) vegetation communities to reduce vegetation induced outages and risk of wildfire impacts to the transmission line. In order to meet NERC reliability standards and comply with internal guidance on vegetation management, Tri-State will create a sustainable ROW that will facilitate the safe operation of the power line for the first 10-12 years of the new authorizations/easements. Further description of Tri-State's Transmission Vegetation Management Program can be found in *Appendix T (Operations, Maintenance and Vegetation Management Plan).*

As part of the site preparation process, Tri-State will be removing incompatible (tall growing) vegetation from the 230-kV ROW prior to construction of the 230-kV transmission line. In addition, Tri-State will be removing danger trees off ROW that pose a grow-in, fall-in or blow-in hazard.

In addition to removing vegetation within the ROW, vegetation within approximately a 75-foot radius around each new transmission structure will 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.

Transmission ROW Tree Clearing Specifications for Lands Administered by the FS

On lands administered by the FS, Tri-State will coordinate directly with the FS foresters to map, flag, inventory/ cruise merchantable timber proposed for removal. Tri-State would delineate, flag, and map merchantable timber in the fall of 2015 or spring of 2016 using Global Positioning System (GPS) technology. Once the preliminary mapping is complete, the FS would design a formal cruise for specific areas along the ROW. The cruise method may vary depending on density and number of trees proposed for removal in any given area and according to the preference of each district's forester. Once the timber cruise has been designed, Tri-State would contract a FS approved specialist to complete the timber cruise. Once the timber cruise is complete, the FS would complete an appraisal of the timber to be removed and Tri-State would pay the market value of timber to be removed on and off-ROW. The Final POD will identify specific locations and acres of trees to be removed prior to construction of the 230-kV transmission line. The majority of the heavy timber to be removed is located on the Nucla-Cahone line segment, specifically north of the Dolores River Crossing.

Trees that are considered merchantable species for the project include ponderosa pine, lodgepole pine, Engelmann Spruce, Douglas-fir, subalpine fir, and aspen. For tree removal on the Dolores Ranger District, Tri-State will be required to pay for merchantable species over 5 inches at Diameter Breast Height (DBH). There will be different merchantability specifications according to species. Sawlogs on the GMUG NF and SJNF are defined as: 10" DBH for Douglas-fir and ponderosa pine, 8" DBH for Engelmann spruce and true fir, 7" DBH for aspen and lodgepole pine. Any trees => 10" DBH will be removed from the Forest to reduce fuel loading in the transmission ROW. Gambel oak, pinyon, and juniper are non-merchantable and will be masticated without measurement or accounting.

Tri-State would consult with the FS regarding design criteria for the treatment and removal of woody vegetation and include these specifications in the Final POD. Large merchantable trees removed during clearing activities would be hauled offsite to an approved disposal facility. Woody material could be masticated or spread on-site as directed by the agency authorized representative 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.

Chip depth would average 3-4 inches and could go up to 6 inches for up to 20% of the total treatment area on the San Juan National Forest. Chip depth would average of 2" or less across the project area (maximum of 6 inches in isolated locations) wherever possible on the GMUG NF in order to reduce negative impacts to native grass and herbaceous vegetation.

Slash depth will not exceed 2 feet on either Forest. Mastication must be below 6 inches and 75% of the treatment area must less than 4 inches on both Forests. If Tri-State and their contractors could not meet these standards due to volume, the material would be hauled off the Forest.

Trees and vegetation removed during clearing activities would be hauled offsite to an approved disposal facility or disposed of/masticated on-site as directed by the BLM and FS. 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

Transmission ROW Tree Clearing Specification for Lands Administered by the BLM

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 would 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 would be incorporated into the Final POD.

Tri-State will implement the EPMs in Table 4 that apply to vegetation management activities (VEG-1 through VEG-10)

6.3.3 Staking

Prior to the start of construction, the locations of project facilities, including structure sites, access roads, staging yards, pulling/stringing sites, and the centerline will be staked. This may occur along the entire route, or for a discrete section of the line depending on the construction schedule. In either case, staking will be completed prior to construction crews beginning work on any given section of the ROW.

The use of signs, flagging, or survey staking will be based on the engineering specifications and the final design and will be detailed in the final POD in *Appendix L, Framework Flagging, Fencing, and Signage Plan*. Some activities may occur on the ROW prior to surveying and staking, such as biological, cultural, and geotechnical work, but most of these activities will result in negligible or no ground disturbance. Excavation of archaeological sites in the ROW may result in some ground disturbance. Project staking will be an ongoing activity and will occur as needed throughout the duration of construction.

6.3.4 Environmental Surveys

Given the length of the transmission line as well as other seasonal constraints for the area, Tri-State will be constructing through the avian breeding season. Prior to construction beginning in spring/summer, raptor surveys (including eagle nest and roost sites) would be completed in accordance with project mitigation measures and protocols established by the BLM and the FS. If construction would occur during the winter months, communal roosting surveys would be conducted prior to construction in suitable or documented roosting and winter concentration habitats. Surveys would be conducted to determine whether active nests (i.e., containing eggs or young) are present in the project area. The survey results would be used to determine whether raptor-timing restrictions apply to the project area or need to be modified. If necessary, those restrictions would be included in the final POD.

Tri-State would coordinate with the BLM, CPW, and USFWS to review and collect active lek data within one mile of the proposed alignment prior to construction.

Survey results and their implications to the project construction schedule would be provided to, and approved by, the affected jurisdictional agencies (i.e., BLM and FS). Tri-State would delineate Waters of

the United States (WOUS) in the project area that may be impacted during project construction and obtain the appropriate Section 404 permit from the USACE.

To date, cultural surveys have been conducted on the existing roads and the 150-foot ROW. Additional surveys will occur prior to construction on areas not previously surveyed including substations, staging areas, new spur roads, existing access roads that require improvement beyond what is currently authorized in the 2006 POD, pull sites. Tri-State's contractor would report findings to the BLM and FS and prepare recovery plans if resources cannot be avoided entirely.

Habitats for sensitive plants were also surveyed and mapped in 2014. Areas not included in the 2014 surveys (temporary use areas, pad sites, new access roads, etc.) will be surveyed prior to construction.

Pre-construction survey results will be provided to the appropriate agency and EPMs will be implemented to first avoid and then if avoidance is not possible; minimize/mitigate effects to these resources.

Any additional surveys will be identified through consultation with federal and state agencies such as the Colorado State Historic Preservation Office, Colorado Department of Parks and Wildlife, USFWS and USACE.

6.3.5 Geotechnical Surveys

Geotechnical testing involving a truck-mounted boring rig will be used to test critical foundation sites such as at substations, the Dolores River crossing, and at turning structures on the transmission line. Testing is done along the line as well, with a boring taken every 1 mile on long straight sections. This work, which may require a temporary use permit from federal agencies, will be detailed in *Appendix M, Geotechnical Plan*. Surveys would be done in 2015, 2016 and possibly extend into 2017. If it is determined that blasting will be needed during construction, protocol will be detailed in *Appendix H, Blasting Plan.*

6.3.6 Environmental Training

All personnel involved with project construction will be required to attend an environmental briefing to review health and safety protocol (see *Appendix O-Health, Safety and Noise Plan*), emergency preparedness and response protocol (see *Appendix J-Emergency Preparedness Plan*), the environmental requirements approved by the agencies (see remaining Appendices in POD). Participants of the training program will be required to sign a form that acknowledges their commitment to complying with the EPMs and mitigation measures stipulated in the Final POD.

6.3.7 Environmental Monitoring

Tri-State will prepare a project specific *Environmental Monitoring and Compliance Plan (Appendix G)* that incorporates the project proposed EPMs (Chapter 5) and also the agency mitigation measures and stipulations. Tri-State will hire an experienced contractor, approved by the agencies to conduct monitoring. The environmental monitors will be assisted by resource specialists with expertise on specific sensitive resources such as cultural resources, biological resources, wetlands and stream crossing. This plan will incorporate measures for reporting variances from the proposed and approved action.

6.3.8 Flagging and Fencing

Sensitive resources identified during environmental surveys that are within or immediately adjacent to work areas will be marked in the field as determined by the environmental monitor and detailed in the final POD in *Appendix L, Flagging, Fencing, and Signage Plan.* Signs warning construction crews,

caution ribbon, pin flagging or plastic orange fencing may be used depending on the resource and site conditions. Resource areas requiring avoidance will be clearly marked as an exclusion zone and flagged or fenced so that crews do not inadvertently enter the area.

Once the ROW and SUA are issued and confirmation that EPMs have been met are provided to the BLM, the BLM and FS will issue a NTP to Tri-State. Tri-State can then begin establishing access and work areas to install the poles and string. To allow for work to continue in other locations along the line, the BLM and FS may issue more than one NTP. Additional NTPs would be issued as EPMs are satisfied and confirmed.

6.3.9 Traffic Control

Tri-State will be responsible for obtaining permits from the Colorado Department of Transportation and county road departments for use of highways and county roads as well as the FS for use of National FS Roads (NSFR). These permits usually include measures to minimize effects of construction traffic on the public. Details are presented in *Appendix R, Traffic and Transportation Management Plan*, and include protocol for the use of signs and flagman to control traffic. Tri-State will use guard structures across major roadways when stringing conductor and OPGW wire.

6.4 Transmission Line Construction Phasing

The MNC transmission line would be constructed in phases in order to maintain electrical service to the region. Construction of the transmission line is proposed across two seasons from April to October in 2017 and 2018. The Nucla to Cahone line segment would be built first, along with the new 230-kV substation and substation modifications, followed by the Nucla to Montrose portion in 2018. See Section 6.1.

Tri-State would use a variety of construction techniques and strategies to complete the project. 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 a short (7 months) outage timeframe, some portions of the line would likely be constructed using helicopters. The location and extent of helicopter use will be determined by Tri-State and the contractor once final engineering design is complete and detailed in *Appendix A (Access Road Siting)* of the final POD.

6.4.1 Removal of 115-kV Poles and Line

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 OPGW cable must remain operational throughout construction; Tri-State may leave the structure, or part of the structure, in the ground until the new line is constructed Tri-State may remove only a portion of the structure so one pole could remain to support the OPGW; or the OPGW cable may be moved to other temporary poles until construction is complete.

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. Fill material may come from cut and fills from other portions of the project area, or will be brought in from a local source if available. No borrow pits are proposed for the Project. In sensitive areas, poles could be cut slightly below ground, cut into manageable bolts and removed from the project site. The conductor, poles, and appurtenant hardware would be hauled to an approved offsite facility for recycling and/or disposal.

6.4.2 Staging Material

Staging areas previously discussed above will be used to store construction equipment and materials, provide vehicle parking and trailer for construction personnel. Poles, cross arms, insulators, and other hardware will be transferred from the staging areas and delivered to each structure site for erection and installation. Staging will begin prior to construction being initiated.

6.4.3 Construction Pads (Pad Sites)

Construction pads will be constructed where required ahead of the transmission line contractor being on-site, see description in section 4.3.4. If a relatively flat surface exists around a specific structure location, no grading would be required. Soft, short vegetation would be trampled or crushed. Pad sites would only be required in areas with moderate to severe terrain to ensure the safe set-up and operation of larger construction equipment. Grading will be the minimum necessary to create a level surface. Pads sites would have topsoil salvaged, replaced and reseeded following construction to reduce visual, erosion, and noxious weed related impacts (See section 6.3.2 and *Appendix T, Operations, Maintenance and Vegetation Management Plan).* Pads will be left in place when they are adjacent to structures within the ROW to allow for safe access for future maintenance equipment. If pad sites are required off ROW, they would be re-contoured post construction and reclaimed according to protocol in *Appendix P, Reclamation Plan.*

6.4.4 Foundation Drilling

Each wood pole structure requires a foundation hole approximately 2.5 feet in diameter by 7.5 to 13 feet deep depending on the pole height and subsurface conditions. Steel pole structures would also be 'direct-imbedded' about11-13 feet deep. Foundation holes will be augured with a truck-mounted or track-mounted auger. Foundation holes may also be augured by hand in areas inaccessible to vehicles and heavy equipment. If possible, spoil generated from auguring the holes will be used to tamp the pole in place. Usually excess soil can be mounded around the pole and spread around the 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 will be used to backfill and compact around the pole. Special care will be taken to ensure that spoil is not inadvertently placed on salvaged topsoil or on topsoil that was not segregated during grading activities (See section 6.3.3 and *Appendix T, Operations, Maintenance and Vegetation Management Plan).*

Steel Poles

Steel structures will be used across Dry Creek Basin at the Dolores River crossing and possibly at angle turning structures. Some steel structures will 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.

Concrete washouts would be constructed with an earthen berm lined with plastic or equivalent design that adequately contains the washout. During periods of inclement weather, washout stations shall be covered with plastic to prevent contact with rainwater. Once the washout has hardened, it would be removed from the ROW and hauled to an approved offsite disposal facility. Additional detail on washouts, locations, and disposal will be included in *Appendix Q, Stormwater Management Plan* in the final POD.

6.4.5 Structure Assembly

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. Finally, backfill material obtained from foundation holes spoil would then be placed around the structure and tamped in place.

Steel Structures

After a period of curing and testing of the concrete foundation, the steel poles would be placed onto the anchor bolts with a crane 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. Concrete wash areas would not be placed on Federal lands to the greatest extent possible.

Structures would be placed in the foundation hole as soon as possible after the hole has been drilled to avoid cave-ins. If the pole cannot be installed or concrete cannot be placed prior to the crew leaving the site for the day, the foundation hole would be fenced and/or covered with material strong enough to prevent wildlife/livestock entrapment for public safety.

6.4.6 Wire Stringing

Wire stringing 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 by using a bucket truck.

Reels of conductor and OPGW would be delivered to the various stringing sites along the ROW. These sites will generally be located within or adjacent to the ROW at angle structures. If the section of conductor or shield wire being installed is longer than what fits onto a standard reel (i.e. spool of conductor), two sections of wire would need to be spliced together. 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, or leader 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.

The pulling rope is then connected to the conductor or OPGW and used to thread the wires through the stringing blocks and down the line from the stringing site to the pull site with a mechanical pulling machine called a tensioner. Crews secure the wires with insulator support clamps and remove the stringing blocks. This process is also known as “clipping in the line”.

6.4.7 Conductor Splicing

Conductor splices to join two reels of wire would usually be made mid-span after the two reels of wire have been pulled. Tri-State's line construction contractor has some flexibility in selecting the splice locations, but preferably these mid-span splice locations require crew and truck access and are located along designated approved routes. However, it is possible that wire pulling sites may occur in locations that are not located over an access route.

To protect against accidental contact of the public with the wires during stringing operations, temporary guard structures would be installed at all public roads, railroads, highways, and utility line crossings (See *Appendix R, Traffic and Transportation Management Plan*). Guard structures will be installed similar to the H-frame structures; however, the height of the guard structure would vary depending on the width of the road or other resource. The location of guard structures proposed by Tri-State's line contractor would be reviewed by the environmental monitor, per the *Environmental Compliance and Monitoring Plan (Appendix G)* in the field to ensure that they do not impact any sensitive resources, such as sensitive plants, cultural sites, or jurisdictional drainages/wetlands. All guard structures are temporary and will be removed during clean-up activities.

6.4.8 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 Figure 7 for existing marker ball configuration). Markings would be made in accordance with the Federal Aviation Administration's (FAA) Advisory Circular 70/7460-1K, Obstruction Marking and Lighting (FAA 2007). The spacing of the balls would be 200 feet on alternate wires (there would be two ground wires for these typically long canyon spans.) The color of the marker balls would be orange, white, and yellow in an alternating pattern as recommended by AC 70/7460 -1K. Aerial marker balls would be installed by Tri-State's line construction contractor using helicopters.

In addition, any areas identified during Tri-State's collision risk assessment study 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 *(See Appendix B, Biological Resource Protection Plan).*

6.4.9 OPGW Installation

The OPGW on the transmission line consists of fiber optic embedded in the static shield wire and transmission line pole mounted splice cases. OPGW installation is similar to conductor wire installation see above.

The OPGW has many fibers contained in a central tube internal to the stranded shield conductor for protection. The actual fibers themselves are approximately the diameter of a human hair. The OPGW is approximately 0.625 inch in diameter and requires suspension hardware specially adapted for OPGW. Typical splice case separation distances can range from 3 to 4 miles.

Splice cases allow a continuous connection of individual optic fibers from beginning to end of the transmission line and are typically rectangular in shape with a wrap-around shield of galvanized steel. To minimize visual impacts, the galvanized steel will have a weathered finish. The overall size of this assembly is approximately 42 inches high by 18 inches wide by 12 inches. Around the perimeter of the rectangular splice case assembly is a fiber storage rack, designed to store enough fiber for maintenance crews to be able to pull the splice case down off of the transmission line poles to the ground for repair.

A new OPGW wire would be installed on the 230-kV structures. When the new OPGW is installed, tested, and operational, the old OPGW and the supporting 115-kV poles would be removed.

6.5 New Access Road Construction

Project construction will 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 existing public roads are shown in the *Map Atlas (Appendix W)*. The existing access system currently utilized for maintaining the 115-kV line will be used along with new short spur roads and/or overland access to the new 230-kV structure sites and other work areas. Improvements to existing access roads or construction of new spur roads will vary depending on the terrain and conditions. Forest road permits may include mitigation of road impacts on National Forest System Roads, such as surface rock replacement.

New spur roads to individual 230-kV structure sites will be constructed if overland or down line access is not feasible due to either vegetation or terrain. An estimate of 6 miles of additional new access road construction would be required for construction and long-term maintenance for the 230-kV transmission line. Final location of new roads will be included in the Final POD once structures have been sited and reviewed in the field.

In order to minimize impacts, 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 will be equipped with government approved spark arresters where feasible.

Improvement levels for all access routes were evaluated, classified for levels of improvement and designated as administrative access in the 2006 Plan of Development for the 115-kV line. At that time, about 60% of the road system was considered to require little or no improvement. About 6% of the roads (including down-line access on the ROW) needed brush removal, 22% needed minor grading and about 13% of the roads needed moderate to extensive grading to restore grades and drainage crossings. Other improvements needed are generally characterized in the 2006 EA and POD and have been incorporated in the EPMs in Chapter 5).

Recent field reviews of the road system indicate that brush and tree removal is needed on a larger percentage of the ROW than noted in 2006. Road improvement needs for construction will be evaluated in 2016 and 2017 and detailed in the final POD.

During construction, dust control measures would be implemented to avoid or minimize air quality issues related to fugitive dust from construction traffic on the project area's natural surface roads. All water for fugitive dust control would be purchased from holders of existing, currently valid water rights such as municipalities or agricultural water users.

Siting, improvements, management, and restoration of roads is detailed in *Appendix A (Access Road Siting and Management Plan)* and *Appendix R (Traffic and Transportation Plan).* Tri-State utilizes the following classifications for identifying new road improvements. Tri-State will incorporate and match their road design categories with those used on BLM and FS administered lands as part of the final POD atlas.

Existing Roads

The existing road category includes public and private paved, gravel-surfaced, well-defined two-track, or natural surface access roads that require no improvement (grading, widening, fill, drainage etc.) to facilitate construction of a transmission line and/or substation facilities. Post-construction, the only reclamation required is expected to be fixing any damage that might have occurred during construction.

Improvement Level I (Overland Access)

Roads in this improvement category are overland access only or roads that require minor removal of tall woody vegetation. No soil disturbance or grading is permitted in this category. Vegetation must be removed by hand and cut at the ground level. Post construction or future maintenance activity, reclamation may require re-seeding and restoration of the access road right-of-way to natural pre-construction conditions. Re-vegetation will require the planting of low-growing plant species that would continue to facilitate vehicle access in the future.

Improvement Level II (Minor Grading)

Level II includes new or existing access roads that require minor grading (one foot or less) and removal of tall woody vegetation with the use of hand tools and/or mechanical equipment. Post construction, reclamation will depend on whether the road will be a permanent or temporary access road. Re-vegetation will require the planting of low-growing plant species that would continue to facilitate vehicle access in the future.

Improvement Level III (Moderate to Heavy Grading)

Level III includes new or existing access roads that require more substantial grading to accommodate construction vehicles. For construction contracting purposes this category has been broken into two sub-categories. Post construction, reclamation will depend on whether the road will be a permanent or temporary access road.

Level III (A): Existing or new access roads requiring 1-3 feet of grading.

Level III (B): Existing or new access roads requiring greater than 3 feet of grading.

Tri-State would comply with all seasonal restrictions and EPMs for threatened, endangered, special status species or wildlife described in permit conditions pertaining to routine construction and maintenance activities on the new 230-kV (See Chapter 5, EPMs and related *Appendices* to this POD).

Stream Crossings

Within access roads, there could be a surface water crossing such as ephemeral, intermittent, or perennial drainage, arroyos, and wetlands. Those areas requiring improvement to facilitate 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.

Stream crossings requiring any fill, culverts or other alteration would be subject to Section 404 permits under the Clean Water Act. Permits are administered by the USACE lines have a special nationwide permit, NWP 12 and NWP 3 (access roads), which outlines conditions and criteria regarding what is allowable for activity in Waters of the United States. An individual permit may be required if impacts exceed the 0.5 acre threshold. Tri-State will begin identifying stream crossings and any improvements in 2015 and 2016 and work with the USACE on any permits *(see Appendix U, Permits and Authorizations).*

Tri-State's permit requirements for water crossings are detailed in *Appendix F, Water Resources Protection Plan.*

6.5.1 Clearing and Grading

Where grading is not required, low-lying vegetation will be trampled instead of removed 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 will be bladed or cut at ground level. Grading will be required for access roads, some structure sites, staging yards and work areas. Grading will be limited to the minimum necessary to provide a safe work area for crews and equipment. Special care will be taken to avoid damage to trees, shrubs, and vegetation adjacent to designated work areas *(See section 6.3.2 and Appendix T Operations, Maintenance and Vegetation Management Plan).*

Where possible, topsoil will be salvaged from temporary work areas where grading is required, including pull/stringing sites, temporary access and spur roads. Topsoil will be salvaged to the actual depth (first color change) to a maximum of 12 inches and protected for use during restoration. Topsoil will not be salvaged from foundation holes or where permanent impacts have been designed (i.e., existing access roads, guy wires, or substation expansions). If possible, some topsoil will be salvaged during substation construction and will be used outside the yard on cut slopes where reclamation and revegetation is planned.

6.5.2 Erosion Control and Restoration

Immediately following 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), will be installed as needed to minimize erosion and prevent sediment from leaving work areas. The location of erosion and sediment control measures will be determined as part of the *Stormwater Management Plan (See Appendix Q).* Perimeter sediment controls will be installed prior to ground disturbance. Severely compacted soils will be de-compacted using an implement capable of relieving compaction without mixing soil horizons. If field traffic has been limited to dry soil conditions, de-compaction may not be needed. Areas where cement trucks are utilized (steel structures) will likely experience a greater degree of compaction. The degree of compaction and whether surface or subsurface de-compaction is required will be determined by the environmental monitor and in coordination with the appropriate agency authorized representative. Similarly, the agency representative and environmental monitor will approve the de-compaction method prior to implementation.

6.5.3 Restricting Public Access

Construction activities will require some new access through existing fences. Permanent gates will 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 will be kept closed except to briefly allow the passage of equipment during construction. All gates will remain closed, unless the landowner or land management agency has given specified instructions to leave a gate open.

Temporary access and spur roads not needed during the operation and maintenance phase of the project would be recontoured, seeded and mulched. This specifically applies to spur roads to the 115-kV line which will be needed to remove the 115-kV line but will not be needed to access the 230-kV line. New access roads to the 230-kV structures and areas disturbed by construction will be left in place but will be seeded with the seed mixes provided by agencies and landowners to minimize visual, erosion, and noxious weed related effects. Seed mixes will be listed in the *Stormwater Management Plan (Appendix*

Q) and Reclamation Plan (Appendix P). Compacted soils may need to be scarified or ripped prior to seeding as determined by the BLM or FS.

Tri-State will work with the BLM and FS to restrict public access to roads to be utilized solely for transmission line construction and long-term maintenance that may result in travel management concerns. Currently, Tri-State and the FS 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. This is an area east of Dolores Canyon.

Tri-State will work with the BLM and FS to identify transmission line access points where gates or bollards (other types of closure devices) could be installed to block public access to the transmission line right-of-way. Such gates or bollards will allow Tri-State to access its transmission line, but the ROW will be closed to public vehicle use.

Any gates or bollards installed by Tri-State on behalf of the BLM and FS will be in compliance with existing BLM and FS travel management plans. Tri-State will work with recreation and range specialists from the agencies to ensure access is addressed for all uses. All rights-of-way will be accessible by BLM or FS personnel at any time especially in the event of emergencies, such as fires. Tri-State will provide funding for the BLM and FS to install instructional signing 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 FS approval.

Appendices detailing requirements for use, access limitations, signage, and reclamation of temporary roads are found in *Appendices A (Access Road Siting), L (Flagging, Fencing and Signage Plan),* and *R (Traffic and Transportation Management Plan).*

6.6 Substation Construction

The same preconstruction activities would occur before substation construction including Environmental Training. Construction activities include site grading, concrete foundations, conduit system, ground grid, cable trench, chain link fencing, installation of the electrical equipment enclosure, installation of steel structures, circuit breakers, switches, bus work, transmission line structures and conductors, site surfacing with crushed rock and power and control cable installation.

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 SWPPP
- 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.
- Conducting site cleanup, stabilization, and revegetation, as necessary

Once the substations are energized and in operation, substation monitoring and control functions would be performed remotely by Tri-State from its operation center. Project substations would not be staffed; however, a remotely monitored security system would be installed. No permanent lighting fixtures would be required for substation operation, though lighting would be placed around the building for use during inspection and other maintenance activities. Lighting standards will have shades to direct light toward the ground.

Maintenance activities would include equipment testing, equipment monitoring and repair, emergency and routine procedures for service continuity, preventive maintenance, maintaining drainage improvements and substation access roads, and stabilizing soils. Routine operations activities would typically occur monthly and a major maintenance inspection would take place once a year.

Tri-State's construction contractor and environmental monitors would be working with a five- to eight-man crew and various equipment and they would be typically working five ten-hour days. The duration of the work would typically be 3 to 5 months for each substation.

6.6.1 Site work

Using lath and flagging, the surveyor will mark the limits of construction and the proposed subgrade elevations. The site will be cleared and temporary erosion and sediment control barriers (i.e., silt fence, straw wattles, and/or straw bales), will be installed as needed to minimize erosion and prevent sediment from leaving work areas. The location of erosion and sediment control measures will be determined by the environmental monitor and according to the procedures described in the *Stormwater Management Plan Appendix Q*. Tri-State shall implement the project's Stormwater Management Plan (SWMP) during all phases of construction.

Topsoil that will be used during restoration will be salvaged to the actual depth (first color change) to a maximum of 12 inches and protected for later use. Topsoil will not be salvaged from where permanent facilities are to be constructed. Tri-State will salvage some topsoil to assist in revegetation of the finished site. The site will be graded and compacted extensively to the subgrade elevations indicated. For expansion at Montrose and Cahone substations existing loads will be cut over to the new installation in a manner to minimize interruptions to customer service.

Tri-State will employ measures, such as use of watering trucks, identified in the *Dust Control and Air Quality Plan (Appendix I)* for all construction activities.

6.6.2 Below Grade Construction

Using lath and flagging, the surveyor will mark the locations of each foundation. Reinforced concrete piers and slabs will be constructed using truck-mounted augers, backhoes, and similar equipment. Excess spoil will be spread around the graded area or removed from the site. Trenches will be dug for the installation of buried conduit and for copper grounding conductors. The conduit and ground mat will be installed and the trenches will be backfilled. Gravel surfacing will be installed over the substation pad to provide electrical isolation, to prevent rutting, and to inhibit weed growth.

6.6.3 Above Grade Construction

Steel structures within the substation will be erected and connected to the ground mat followed by the installation of conductor, aluminum bus work, disconnect switches, circuit switchers, cable terminations, metering units, voltage regulators, station service transformers, and similar equipment. Pad-mounted equipment to be installed includes pre-fabricated control buildings, power transformers, and power circuit breakers. Ground wires will be strung between the ground masts to provide lightning protection.

6.6.4 Control and Protection Installation

Protective relaying and control panels will be installed in the control building. Control cables will be installed in the buried conduit and terminated at each end to connect the electrical equipment to the control house.

Following installation of the equipment and prior to energizing, the incoming transmission lines will be connected, all controls will be adjusted to their specified settings, and the substation will be tested.

6.6.5 Site Restoration

Restoration of the site outside the substation fence will commence once that area is no longer needed to support construction. Restoration will include replacement of topsoil and re-vegetation of areas outside of the substation boundaries with grasses and forbs (See *Appendix P, Reclamation Plan*).

Fencing will be installed around the perimeter of the substation to provide security during and after construction.

6.7 Stormwater Management

Tri-State will submit an application to the CDPHE for coverage under the Stormwater Construction Permit at least 10 days before construction. Separate SWMPs will be prepared for each substation, each transmission line segment, or any area exceeding more than 1 acre of disturbance. SWMPs will be available on site and may be modified by the stormwater inspector as appropriate during construction. All sites would be monitored until they reach permanent stabilization. Permanent stabilization would occur when disturbed sites reach 70% of pre-existing vegetative cover. *Appendix F(Water Resources Protection Measures), Appendix Q (Stormwater Pollution Prevention Plan)* and EPMs included in Chapter 5 for Water Resources and Quality would be implemented to reduce impacts to surface waters and water quality and erosion related effects.

Temporary Controls/Best Management Practices (BMPS)

Temporary and permanent 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, marshalling yards, pole sites where grading is required, pad sites, and work areas adjacent to sensitive resource areas. Where erosion and sediment control features are required, they would be installed immediately after initial soil disturbance. Temporary erosion controls would be properly maintained throughout construction (on a daily basis in areas of active construction) and repaired as necessary until replaced by permanent stabilization measures during restoration.

Temporary types of erosion control devices may include but are not limited to sediment barriers such as spreading of mulch, use of wattles and erosion control blankets, and installation of silt fence. The appropriate device will be determined based on site conditions and in coordination with the affected

agencies. Mulch can also be used to hold soils in place post ground disturbance. Location of control devices will be included in the stormwater management plan.

Permanent Controls and BMPs

Slope breakers (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 along the transmission line. Slope breakers are typically constructed with native soil, but can also be made from straw wattles, excelsior logs, logs, or sand bags. In general, temporary slope breakers are not required for pole sites, marshaling yards, or wire pulling/stringing areas due to the relatively short slope length and gentle steepness of the disturbed work areas. However, a slope breaker may be installed above the disturbed area to divert run-on if deemed necessary by the environmental monitor. For access, spur roads, temporary slope breakers or rolling dips would be installed where necessary to standard specifications. The number, location, and design of slope breakers would be approved by the affected agency and documented in the stormwater management plan Disturbed ground not needed for permanent use would be seeded and mulched as specified in the SWMP and landowner/land management agencies.

6.8 Post Construction

Final clean-up and restoration activities will begin once the transmission structures are built and the OPGW and conductor wires have been installed All temporarily disturbed areas as defined above will be returned to preconstruction conditions and seeded with an approved native mix as required in the *Appendix P, Reclamation Plan* or as specified by landowners and land management agencies.

6.8.1 Clean-Up

Upon completion of construction, Tri-State will remove all construction debris and materials, including poles, unused/split conductor and guy wire, excess conduit and cable, trash, signage, and survey lath from the ROW and dispose of it at a licensed waste or recycling facility. Brush piles generated during clearing operations will also be removed from the ROW and disposed of at a licensed facility, unless previously approved by the landowner or land management agency. In addition, Tri-State will repair and restore driveways, roads, trails, landscaping, or other features damaged during construction of the project.

6.8.2 Restoration and Revegetation

Once clean-up has been completed and all construction debris and materials have been removed from work areas, disturbed areas will be prepared and reseeded per the *Reclamation Plan (Appendix P)* or as specified by land owners or land management agencies.

Interim reclamation activities would be completed to stabilize the ROW and associated access while allowing long-term maintenance of the transmission line. In appropriate areas, cleared topsoil material will be segregated and spread on top of the disturbed area following completion of construction activities—providing a source of natural seeds. Disturbed areas will be reseeded utilizing agency specified seed mixtures. Seeds will be applied according to the project revegetation plan and will be certified as weed free. If drill seeding is not feasible due to terrain or other constraints, seed will be hand broadcast and raked in. For hand broadcasting, the seed rate will be doubled. Certified weed free straw mulch will also be spread over the disturbed area and crimped in as topography allows. Interim reclamation will be performed as soon as possible, in consultation with agency representatives, after ground disturbing and other maintenance activities are completed.

“Final reclamation” will be performed when the transmission line is no longer in service and/or removed from federal property. Specific requirements for final reclamation are not addressed in detail in this POD,

as Tri-State has no plans to remove the transmission facilities from service. If the line is taken out of service and removed from federal lands in the future, Tri-State would develop a detailed final reclamation plan for the ROW in accordance with the federal requirements in place at that time.

Interim reclamation activities will be deemed complete when the BLM has verified that vegetation within the disturbed areas recovers to at least 70% of the pre-existing condition. Areas of disturbance will be reseeded in the appropriate season following the above-described procedures if vegetation is not adequately established within two years of initial seeding activities.

Figure 17: Typical Transmission Line Construction Equipment

Figure 18: Pole Truck Off-Loading Poles at Structure to be Replaced

Figure 19: Pole Truck Navigating Road, Trucks Have Rear Steerage

Figure 20: Reels of Conductor and Tensioning Equipment Used for Construction

Figure 21: Helicopter Supporting Ground Based Wiring Equipment

Figure 22: Erickson Air Crane Used in Power Line Construction

Figure 23: Top of Steel Structure Being Flown in with "Air Crane" Helicopter

Figure 24: Tri-State's LineTrac Vehicle Used for Maintenance Work in Remote, Steep Terrain with Limited Access

7.0 Decommissioning and Final Restoration

Tri-State may request renewal of the ROW grant or elect to terminate it. Prior to expiration of the ROW grant, Tri-State will arrange a meeting with the appropriate land management agency's Authorized Officer to discuss the status of the grant, review the condition of the ROW, and determine future use. If renewed, the ROW will be subject to environmental review and the regulations existing at the time of renewal. The Authorized Officer may include additional terms and conditions as deemed necessary to protect the public interest.

The land management agency may suspend all or any part of the construction / reconstruction activities (and/or terminate the special-use authorization without administrative proceedings) upon breach of any conditions within this POD. Prior to suspension, revocation, or termination, the agency shall provide Tri-State written notice of the grounds for such action and a reasonable time prior to correct potential noncompliance actions. If applicable and requested, an on-the-ground review shall be arranged within 10 days of the suspension, revocation, or termination to affirm, modify, or cancel this action.

If the grant is terminated, all improvements will be removed from public lands within 90 days of the termination. Tri-State and the Authorized Officer would work together on developing a reclamation plan that ensures that the ROW is restored, stabilized, revegetated, and monitored.

Tri-State does not anticipate terminating the ROW grant in the future.

8.0 References

The following documents and reports have been prepared to support the Plan of Development.

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10.0 Appendices

Appendix A - Framework Access Road Siting and Management Plan
Appendix B - Framework Biological Resource Protection Measures
Appendix C - Framework Cultural Resources Protection Measures
Appendix D - Framework Paleontological Resources Plan
Appendix E - Framework Visual Resources Protection Measures
Appendix F - Framework Water Resources Protection Measures
Appendix G - Framework Environmental Monitoring and Compliance Plan
Appendix H - Framework Blasting Plan
Appendix I - Framework Dust Control and Air Quality Plan
Appendix J - Framework Emergency Preparedness Plan
Appendix-K - Framework Fire Protection Plan
Appendix L - Framework Flagging, Fencing, and Signage Plan
Appendix M - Framework Geotechnical Plan
Appendix N - Framework Hazardous Materials Management and Oil Spill Plan
Appendix O - Framework Health, Safety and Noise Plan
Appendix P - Framework Reclamation Plan
Appendix Q - Framework Stormwater Management Plan
Appendix R - Framework Traffic and Transportation Management Plan
Appendix S - Framework Noxious Weed Management Plan
Appendix T - Draft Operations, Maintenance and Vegetation Management
Appendix U - Permits and Authorizations
Appendix V - Right of Way Legal Descriptions
Appendix W - Map Atlas