CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

3.1.1 Resource Sections

This chapter presents a detailed description of the affected environment and an analysis of the potential environmental consequences of both the proposed action and alternatives to the proposed action. The analysis addresses issues raised by agencies and the public during the scoping process; a detailed discussion of scoping is in Section 6.3.

Each resource section in this chapter identifies where substantial adverse or beneficial impact may result from the proposed project. A significance discussion is required by CEQ 1502.16 and is presented in Section 3.14; however, the final determination of significance is left to the authorized officers for each respective Record of Decision (ROD) for the federal agencies or the Montana Department of Environmental Quality's (MDEQ) Certification of Compliance under the Major Facility Siting Act (MFSA).

For all resource sections, the term proposed project refers to the proposed action, all alternative routes, and other action elements common to all action alternatives (e.g., communication facilities). The proposed action is all activities and routes submitted by NorthWestern Energy (NorthWestern in their request for a right-of-way (ROW) from the Bureau of Land Management (BLM), a Special Use Permit from the USDA Forest Service (USFS), and a Certificate of Compliance from MDEQ under the MFSA. The no action alternative is also addressed in this chapter as are alternative routes and alternative mitigating measures. Consistency with various land use management plans is discussed in detail in Chapter 5, but effects of potentially required amendments to these plans are discussed in Section 3.14.

Twelve sections address specific topics encompassing both the natural and the human environment:

- 3.2 Air and Atmospheric Values
- 3.3 Biological Resources (Wildlife)
- 3.4 Cultural Resources
- 3.5 Human Health and Safety
- 3.6 Land Use and Recreation
- 3.7 Socioeconomics
- 3.8 Soils and Geology
- 3.9 Paleontology
- 3.10 Vegetation
- 3.11 Visual Resources
- 3.12 Water and Wetland Resources
- 3.13 Environmental Justice

Each resource section presents a discussion of the existing environmental setting; this is followed by the analysis methods particular to that resource and the impacts analysis itself. The mitigation measures follow the impact analysis and include a discussion of the potential cost of mitigation (mitigation and mitigation costs are discussed in more detail below). Residual impacts are those that would remain after application of the mitigation measures. Section 3.14 presents an overall summary of effects of the proposed project including the agency-preferred alternative.

The geographic scope of analysis in Chapter 3 varies by resource. Each resource section defines the geographic area of analysis relevant to that resource. In addition to larger geographic areas specifically defined for individual resource analyses, two areas are defined here and used consistently throughout this EIS:

- *Right-of-way* is the area centered on the proposed transmission line for the construction, operation, and maintenance of the transmission line. The standard width used for the proposed project is 110 feet on either side of the centerline for a total ROW width of 220 feet. Additional lands would be required for associated facilities such as substations, communication facilities, and access roads. Access roads may be within the ROW, but also may occur outside of the ROW.

- *Temporal scope* of the analysis addresses the effects of the proposed action and no action alternative in three different temporal periods. These periods range from construction and post-construction recovery (short-term), to operations, maintenance, decommissioning and abandonment (long-term), and permanent changes. Short-term effects occur during construction and within the following 5 years. Long-term effects are those that would extend beyond this 5-year period. Examples of long-term effects include recovery of slow-growing vegetation, visual changes that last until decommissioning, and changes in agricultural activities. Permanent effects are those that could persist beyond the life of the project and could include conversion of habitats, habitat or population fragmentation, and socioeconomic effects.

The detailed structure in each section varies somewhat depending on the resource, the number of issues addressed, and overall complexity of the topic. Many of the detailed figures and tables are in appendices. Figures are consistent in format across all zones throughout the EIS. Because of this standardization, figure legends include data categories (e.g., National Park Service ownership) that may not be shown on every figure. Although detailed site-specific information was used in the analysis, it cannot feasibly be shown on the figures for a project of this scale. Detailed map information is available for most resource areas in Montana on the MDEQ interactive Internet-based mapping site (http://svc.mt.gov/deq/wmamsti/).

The proposed project would cross parts of both Idaho and Montana and would be between approximately 415 and 500 miles long. Because of the scale of the proposed project, the project area (extending from the northern terminus in Townsend, Montana, to the southern terminus at Midpoint Substation in Idaho) was broken into six analysis zones. Each zone contains from one to five route alternatives. In a given zone, each route alternative is broken into links at junctions with other potential routes (Figures 3.1-1 to 3.1-6). For all resources, detailed impact analyses are summarized by alternative within each zone. For some resources, individual links are discussed when specific, detailed resource information is required. Because the impact analysis is presented at the zone level, cumulative analysis is presented in Chapter 4 where the separate zones are analyzed collectively in the appropriate cumulative context.

Long-term, short-term, and permanent impacts to various resources were determined on a resource-by-resource basis. Where potential ground disturbance associated with transmission line construction contributes to impact magnitude, resource areas used a disturbance model that estimated the areal extent of project components including structure types, splicing sites, pulling and tensioning sites, staging areas, and concrete batch plants (Tables 3.1-1 and 3.1-2). Use of the disturbance model allows a consistent approach for assessing potential effects associated with ground disturbance. Site-specific information for structure locations will be available when the engineering design phase of the proposed project is completed.

Table 3.1-1. Disturbance Model for Areas Temporarily Affected by the Proposed Project

	Self-Supporting Steel Lattice	Guyed V Steel Lattice	Self-Supporting Steel Tubular	Guyed Delta Steel Lattice
Structures	220 x 220 feet (1.1 acres per structure) 4.4 acres per mile (single circuit) 5.5 acres per mile (double circuit)	220 x 220 feet (1.1 acres per structure) 4.4 acres per mile	220 x 220 feet (1.1 acres per structure) 6.6 acres per mile	220 x 220 feet (1.1 acres per structure) 4.4 acres per mile
Mid-Span Conductor Splicing Sites	220 feet wide x 400 feet long One site approximately every 3.4 miles (approximate length of two conductor reels) Average of 2 acres every 3.4 miles for hydraulic application Average of 0.5 acre every 3.4 miles for implosive application			
Pulling/Tension Sites for Tangent Structures	220 feet wide x 600 feet long = 3 acres per tangent structure Approximately one tangent structure every 3 miles			
Pulling/Tension Sites for Strain Structures	Two sites required per strain structure (assume strain structures are required where the alignment changes more than 10°) 220 feet wide x 600 feet long x two sites = 6 acres per strain structure Average one strain structure every 3 miles Average of 2 acres of disturbance per mile			
Material Staging Sites	800 feet x 825 feet (~15 acres) One site every 30 miles			
Concrete Batch Plants	3- to 5-acre field batch plant for sections of tubular pole construction in remote areas Ready mix concrete from retail batch plants within 35-mile haul distance Use volumetric concrete trucks where minimal amount of concrete required			

Source: Adapted from disturbance model prepared by NorthWestern in April 2009.

This model estimates the amount of ground subject to temporary and permanent impacts. Temporary disturbances include, but are not limited to, tower construction areas, laydown yards, and splicing sites. Permanent impacts are associated with the actual tower footprints and access roads. The actual application of this model to the different resource areas is discussed in Sections 3.2 through 3.13.

3.1.2 Access Roads

The MFSA application stated that roads would be 14 feet wide (NorthWestern 2008a). While this is the official road dimension in the proposed action, transmission line construction experience indicates that wider roads may be needed in many, if not most, locations. To help ensure that the EIS analysis examines the widest standard roads possible, a road width of 24 feet (including both travel surface and shoulders) was used in the impact analysis. Actual disturbance in most areas is expected to be less than this. This conservative approach likely somewhat overestimates potential disturbance from roads; however, this approach evaluates the highest anticipated level of potential impact associated with the proposed project. Before construction, NorthWestern would be required to provide a complete Roads Management Plan for agency review and approval. This plan would include specific locations, widths, best management practices, closures, maintenance, and a variety of other topics intended to minimize the effects of roads.

Table 3.1-2. Disturbance Model for Land Permanently Affected by the Proposed Project

	Self-Supporting Steel Lattice	Guyed V Steel Lattice	Self-Supporting Steel Tubular	Guyed Delta Steel Lattice
Structures	50 x 50 feet (single and double circuit) 2,500 sq ft (0.05 acre) per structure 0.2 acres per mile, assuming four structures per mile	150 x 150 feet approximate dimension to guy anchors 22,500 sq ft (0.52 acre) per structure 2.1 acres per mile, assuming four structures per mile	10 x 10 feet 100 sq ft (0.002 acre) per structure 0.013 acres per mile, assuming six structures per mile	150 x 150 feet approximate dimension to guy anchors 22,500 sq ft (0.52 acre) per structure 2.1 acres per mile, assuming four structures per mile
Access Roads	Based on GIS data provided by NorthWestern and a standard overall width of 24 feet (includes 2-foot berm on either side of road for a 20-foot travel surface)			
Structure Foundations	Augered hole with reinforced concrete pier	Concrete spread footing for masts Helical anchors for guys	Augered hole with reinforced concrete pier	Concrete spread footing for masts Helical anchors for guys

Source: Adapted from disturbance model prepared by NorthWestern in April 2009.

3.1.3 Mitigation

Mitigation for impacts to resources is typically accomplished in the following sequence: avoidance, minimization, and compensation for unavoidable or residual impacts. Because of the scale of the proposed project, these measures can be accurately implemented only if a project is selected in the ROD and detailed engineering work is completed. Mitigation measures and their sequence for the proposed project are shown below.

- *Avoid potential impacts to the maximum extent practicable*. Avoidance is typically conducted during the planning, permitting, and design phases.
- *Minimize unavoidable impacts to the extent appropriate and practicable*. Impact minimization is completed during the permitting, design, and construction phases.
- *Compensate for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been performed*. Compensatory mitigation is the last strategy for mitigation and is implemented after all avoidance and minimization measures have been explored and implemented. Compensation may also be required in those cases where it is recognized that impacts cannot be avoided in any of the subsequent phases of project implementation. Compensatory mitigation can range widely from an acre-per-acre replacement or provisions of funds, to conservation easements, or other measures negotiated with regulatory agencies, MDEQ, BLM, and USFS amongst others.

The process of applying mitigation measures to potential adverse effects of the proposed project used the following steps for all resource areas. First, the MFSA application (NorthWestern 2008a) was reviewed for avoidance or minimization measures committed to by NorthWestern. This review indicated that while numerous measures were suggested in the MFSA application, none was actually committed to (NorthWestern 2008a, pg 2-53). Because of this, no avoidance or minimization measures are included as

part of the proposed action as described in Chapter 2. Second, agency requirements were applied to the potential effects. These requirements include the draft MDEQ Environmental Specifications (Appendix B.4) and the USFS and BLM Interagency Operating Procedures (IOP) (USFS 2009b; BLM 2009c). The two sets of IOPs are included in the preliminary Plan of Development (POD) (Appendix B.4). The draft MDEQ Environmental Specifications and the two sets of IOPs are collectively referred to as agency stipulations throughout Chapter 3.

For this EIS, it was assumed that jurisdictions in Idaho would consider adopting measures similar to those in the draft MDEQ Environmental Specifications or the preliminary POD; therefore, specific measures for non-federal land in Idaho are not identified unless the impact was not addressed in the draft MDEQ Environmental Specifications or the preliminary POD. In addition, Idaho agencies responsible for management of wildlife [primarily U.S. Fish and Wildlife Service (USFWS), Idaho Department of Fish and Game (IDFG), BLM, and USFS] are in the process of developing a plan very similar to the wildlife monitoring and mitigation plan specified by MDEQ. This Idaho plan would be coordinated with Montana wildlife agencies and finalized before a ROD is issued. If the agency stipulations adequately reduced the magnitude of an impact to a level that was no longer considered substantially adverse, then no additional mitigation was developed. If there remained a substantial adverse impact, resource-specific mitigation measures were identified to minimize the impact. A discussion of residual impacts of the proposed project follows the mitigation discussion.

Mitigation costs are presented in this EIS because they are a requirement of the MFSA and the Montana Environmental Policy Act (MEPA). Cost estimates were developed based on expert opinion, discussion with resource specialists, or costs of specific physical devices such as bird flight diverters or non-reflecting insulators. Many of these costs were developed on a cost-per-acre basis and then applied to the length of an alternative; therefore, mitigation cost is directly proportional to alternative length. Other costs are less specific or would apply to any alternative selected. Examples of this include sage-grouse studies and waterfowl collision evaluations. In all cases, the costs discussed in Chapter 3 are estimates prepared so that MDEQ can evaluate potential mitigation costs between alternatives in accordance with their guidelines.

3.1.4 Process

The final POD will contain the USFS and BLM IOPs as well as the MDEQ Environmental Specifications as revised based on the comments received. Any final mitigation plans required by Idaho wildlife management agencies would also be included in the POD. The BLM will require a final POD before issuing a ROD for the proposed project. The MDEQ will include final Environmental Specifications as an integral component of their Certificate of Compliance. Working drafts of both the Environmental Specifications and the POD are in Appendix B.4. As required, both documents will be updated before the final project decision, and both will include all appropriate mitigation measures as required by the respective agencies.

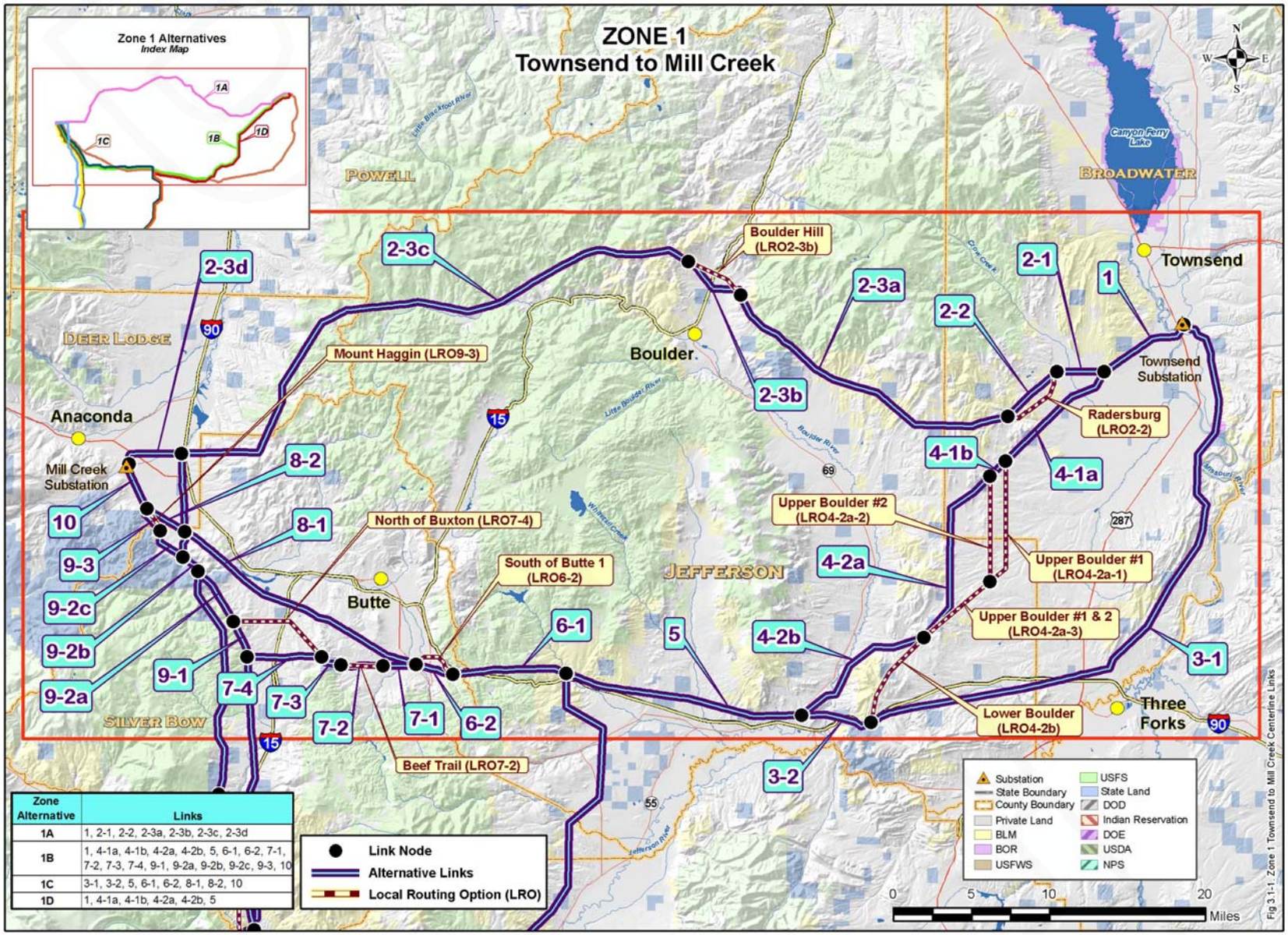

Figure 3.1-1. Zone 1 Townsend to Mill Creek - Centerline Links

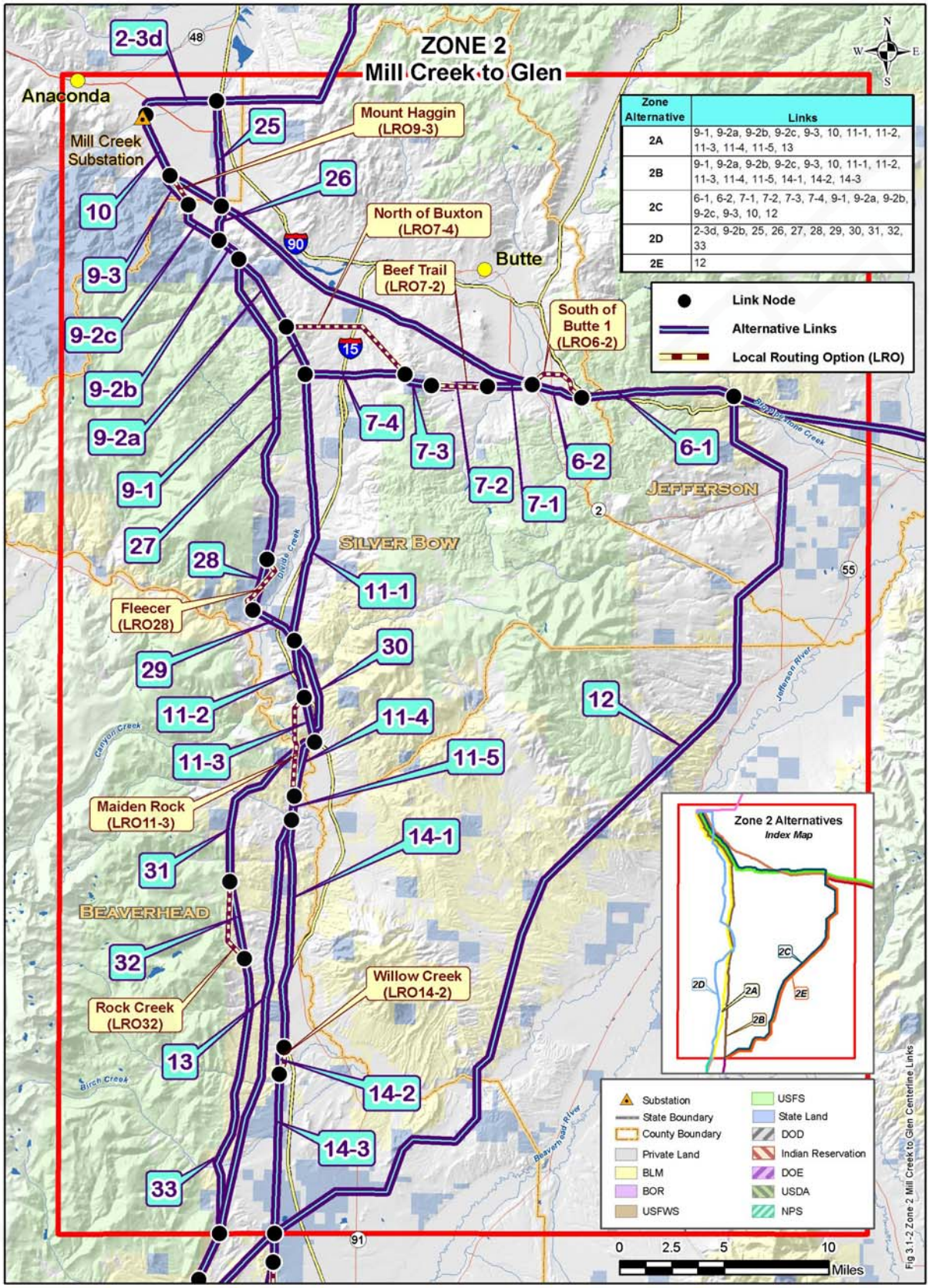

Figure 3.1-2. Zone 2 Mill Creek to Glen - Centerline Links

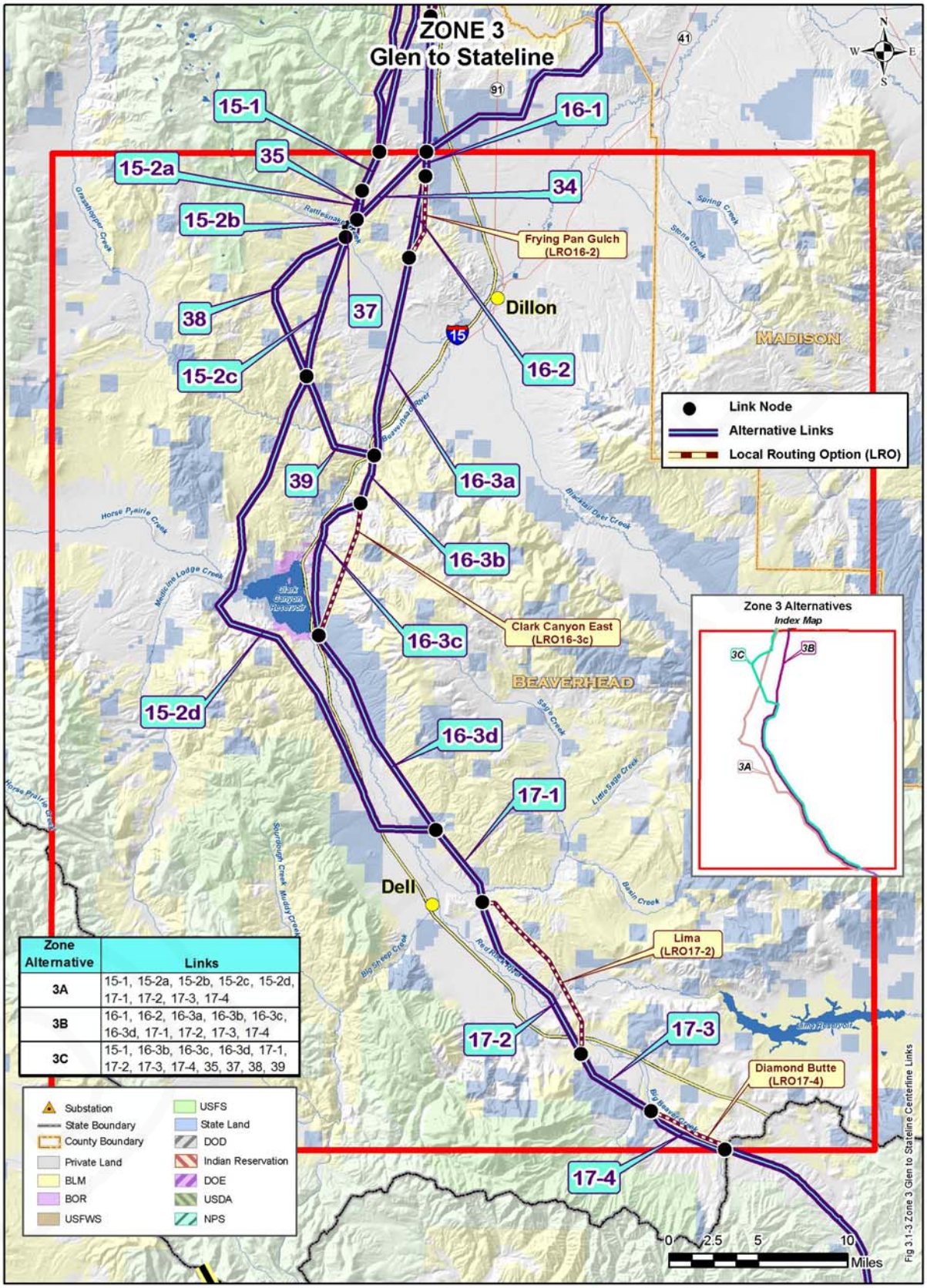

Figure 3.1-3. Zone 3 Glen to Stateline - Centerline Links

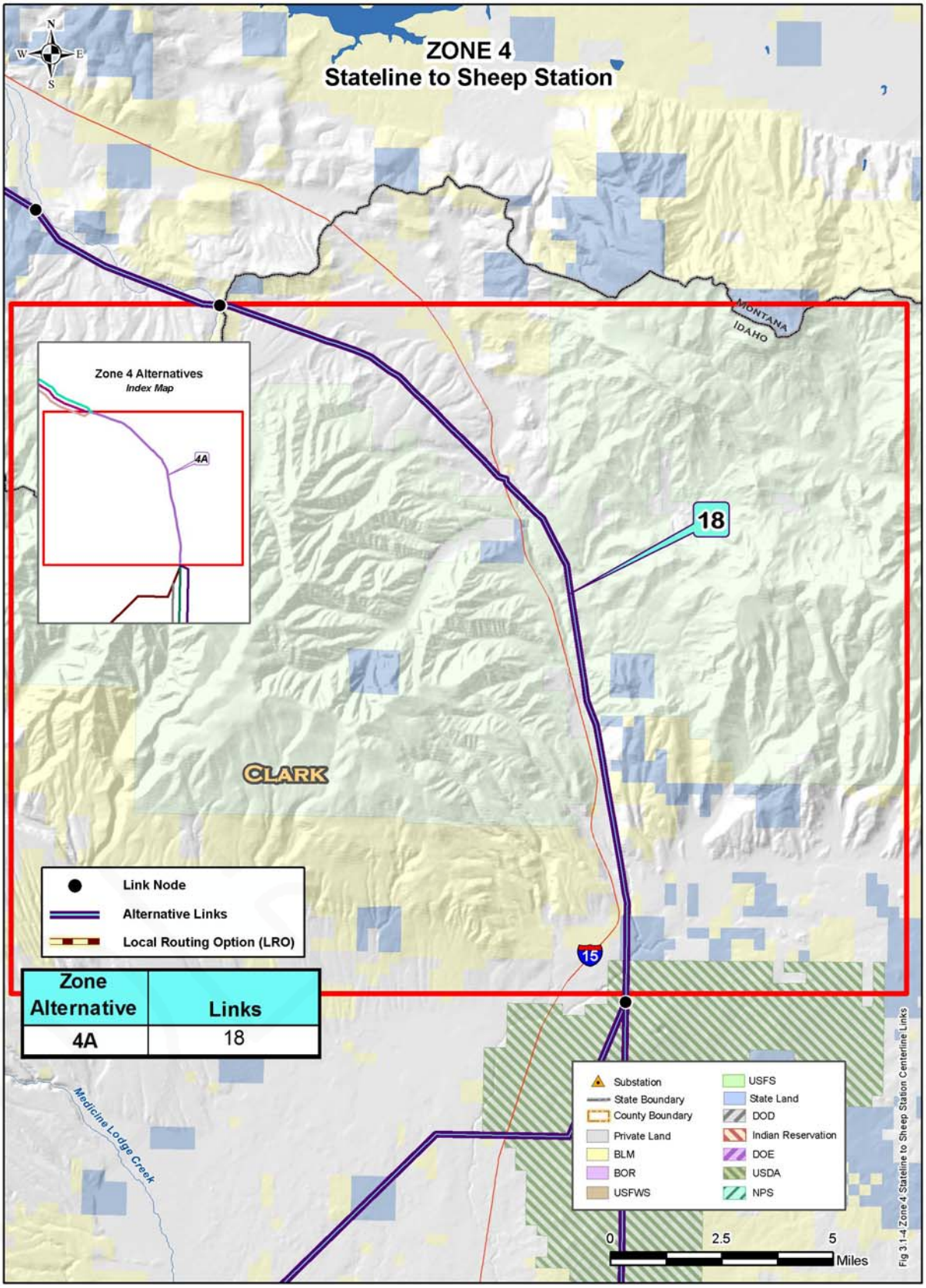

Figure 3.1-4. Zone 4 Stateline to Sheep Station - Centerline Links

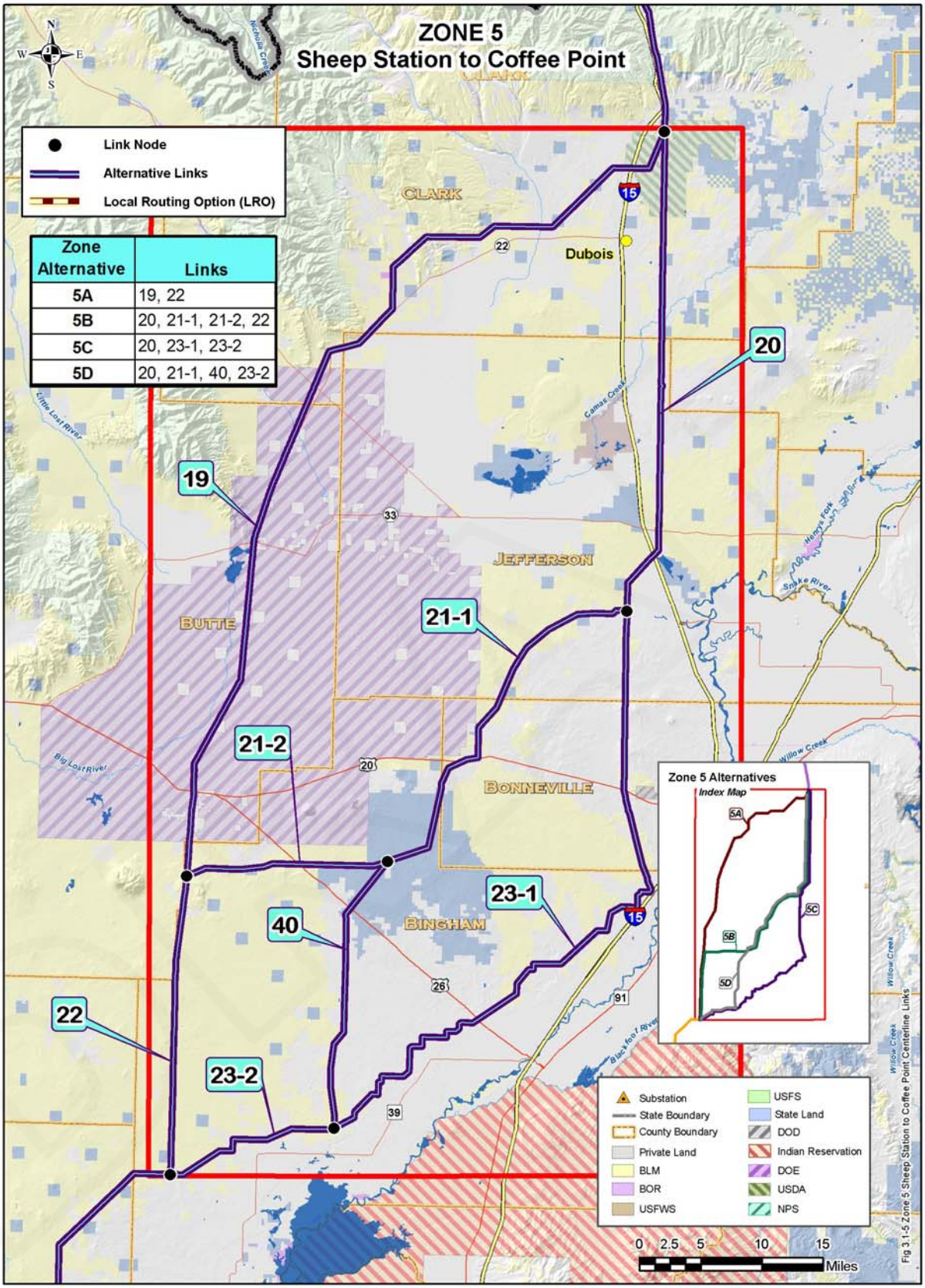

Figure 3.1-5. Zone 5 Sheep Station to Coffee Point - Centerline Links

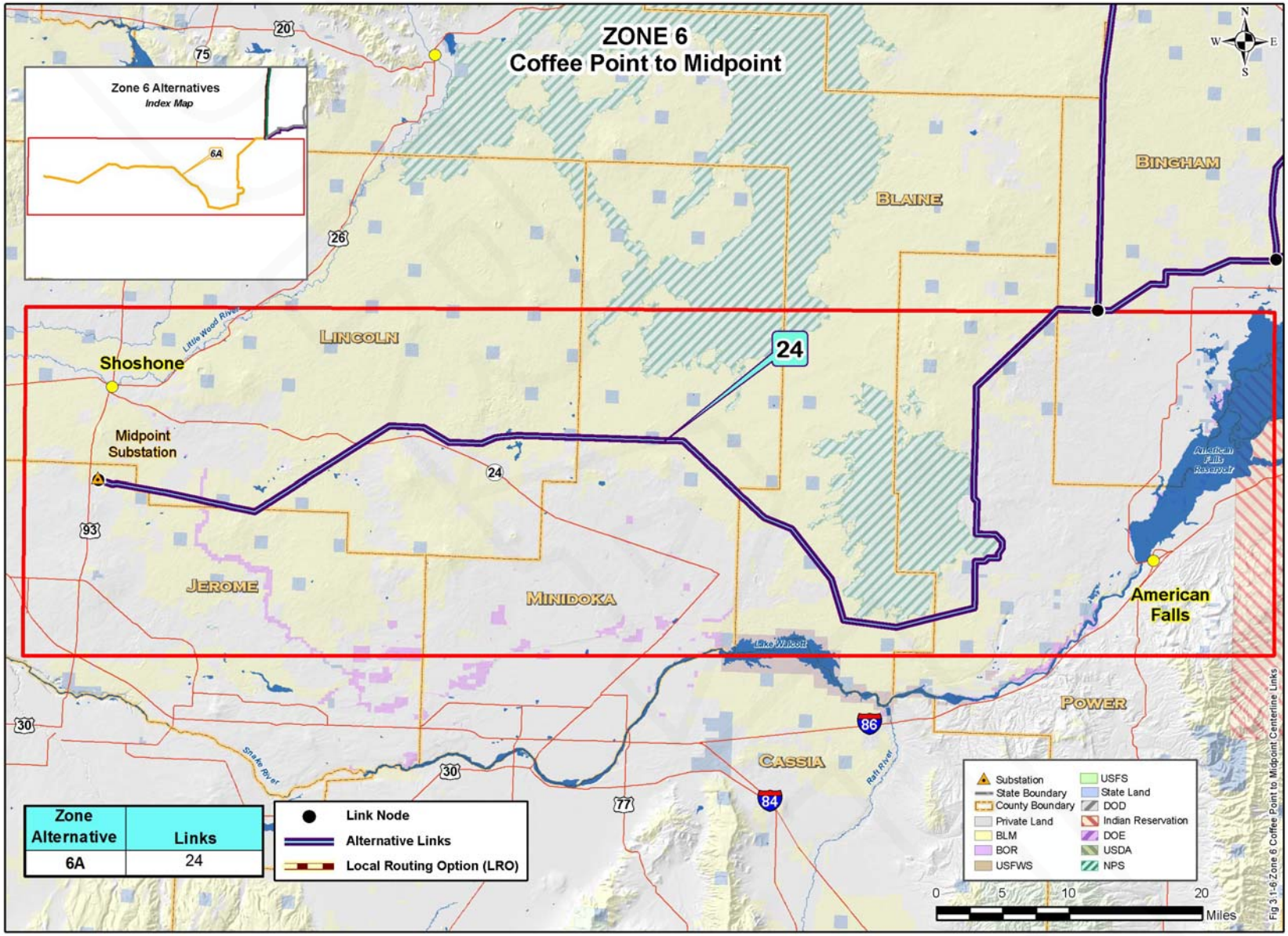

Figure 3.1-6. Zone 6 Coffee Point to Midpoint - Centerline Links