Appendix B

Proponents' Plan of Development Supplement and Helicopter-Assisted Construction Assessment

Appendix B-1

Proponents' Plan of Development Supplement

Plan of Development Supplement

Gateway West Transmission Line Project

Segments 8 and 9

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APPENDICES

Appendix A Location Maps
Appendix B Morley Nelson Snake River Birds of Prey National Conservation Area DRAFT Mitigation and Enhancement Portfolio Proposal

ACRONYMS AND ABBREVIATIONS

BLM	U.S. Department of the Interior, Bureau of Land Management
BOPNCA	Morley Nelson Snake River Birds of Prey National Conservation Area
Companies	PacifiCorp, dba Rocky Mountain Power, and Idaho Power Company (Idaho Power)
EIS	Environmental Impact Statement
Gateway West	Gateway West Transmission Line Project
Idaho Power	Idaho Power Company
kV	kilovolt
MEP	Mitigation and Enhancement Portfolio (Appendix B)
MP	milepost
NLCS	National Landscape Conservation System
OCTC	Orchard Combat Training Center
POD	Plan of Development
Project	Gateway West Transmission Line Project
RAC	Resource Advisory Committee
ROD	Record of Decision
ROW	right-of-way
SR	State Route
WECC	Western Electricity Coordinating Council

1.0 INTRODUCTION

1.1 Background

PacifiCorp, doing business as Rocky Mountain Power, and Idaho Power Company (Companies) are proposing to construct and operate the Gateway West Transmission Line Project (Gateway West or Project) consisting of approximately 1,000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems.

The U.S. Department of the Interior, Bureau of Land Management (BLM) released the final environmental impact statement (Final EIS) on April 26, 2013, that identified alternative routes for Segments 8 and 9 in and near the Morley Nelson Snake River Birds of Prey National Conservation Area (BOPNCA) in southwestern Idaho (BLM 2013a). The BOPNCA was designated by Congress in 1993 and became part of the National Landscape Conservation System (NLCS) in 2000, which was formally established by Public Law 111-11 in 2009. The BLM-preferred alternatives for Segments 8 and 9 avoided the BOPNCA, based on guidelines in manuals developed in 2012 pursuant to Public Law 111-11. However, the BLM-preferred routes had potential impacts on the greater sage-grouse (*Centrocercus urophasianus*), scenic resources in Owyhee County, local communities, and private landowners.

The Record of Decision (ROD), issued by the BLM in November 2013, deferred the decision to grant rights-of-way (ROW) on federal lands for Segments 8 and 9 because the principal siting issue involves a requirement in the enabling legislation (Public Law 103-64) that the BOPNCA be managed "to provide for the conservation, protection and enhancement of raptor populations and habitats and the natural and environmental resources and values associated therewith, and of the scientific, cultural, and educational resources and values of the public lands in the conservation area" (BLM 2013b).

The intent of deferring the decision was to provide "additional time for federal, state, and local permitting agencies to pursue a consensus regarding siting routes in these segments" (BLM 2013b). In addition, the ROD stated that "the BLM needs more time to evaluate and refine" the Draft Mitigation and Enhancement Portfolio Proposal (MEP) prepared by the Companies "to ensure that it is sufficient" to meet the enhancement requirement of the enabling legislation.

In November 2013, BLM established the Boise District Resource Advisory Council (RAC) Subcommittee to examine options for resolving siting issues associated with Segments 8 and 9 of the Project and evaluate the MEP submitted by the Companies. In May 2014, the RAC Subcommittee issued its recommendations in two reports: the first report addressed routing options in or near the BOPNCA (Boise RAC Subcommittee 2014a) and the second concerned the revised MEP submitted by the Companies to the RAC Subcommittee in March 2014 (Boise RAC Subcommittee 2014b). The RAC Subcommittee recommendations were adopted by the Boise District RAC and forwarded on to BLM for action.

In response to the reports of the RAC Subcommittee, the Companies have agreed to adopt the route option recommendations. The Companies have also incorporated some of the RAC Subcommittee MEP recommendations for mitigation and enhancement into the Morley Nelson

Snake River Birds of Prey National Conservation Area DRAFT Mitigation and Enhancement Portfolio Proposal (August 2014 MEP) included as Appendix B.

1.2 Purpose of this Plan of Development Supplement

The purpose of this Plan of Development (POD) Supplement is to update the Companies' ongoing cooperative work with the BLM and the Boise RAC to reach agreement on routes for Segments 8 and 9. The Companies have been working cooperatively for 8 years with the BLM, cooperating agencies, and landowners to design the entire Project. The Companies have considered comments and have revised routing, standard operating procedures, and environmental protection measures including compensatory mitigation, such that the BLM can authorize the Project where it crosses public lands. This work has resulted in a ROD from the BLM for Segments 1 through 7 and Segment 10.

In order to show the adoption of the RAC-recommended routes and the MEP for Segments 8 and 9, the Companies now provide a revised SF-299 and POD. These documents present as the Proposed Action the revised routes recommended by the Boise RAC, provide details on reduced separation and on double-circuiting, and submit the August 2014 MEP that demonstrates that the Project as proposed will meet the requirements of the enabling legislation of the BOPNCA. If authorized to construct and operate the Project through BLM issuance of a ROW grant, the Companies will incorporate the changes described herein.

1.3 Applicability of the Plan of Development

The August 2013 POD (IPC and RMP, 2013a), issued to support the November 2013 Project ROD, outlines the stipulations and mitigation measures identified in the Final EIS that must be followed during construction, operation, and maintenance of the Project. The August 2013 POD is intended to be used Project-wide as 1) a summary of Project environmental requirements and protection measures, and 2) a description of the processes and procedures that will be used to ensure compliance (including the requirements of the U.S. Fish and Wildlife Service, BLM, Bureau of Reclamation, United States Forest Service, and other federal, state, and/or local agencies) as appropriate. This supplement provides additional details to support a ROD for Segments 8 and 9 and incorporates by reference relevant details found in the August 2013 POD and in the January 2013 POD (IPC and RMP, 2013b) issued to support the Final EIS.

The Companies intend to issue one or more PODs for portions of the Project as those portions go to construction. Those construction PODs will contain site-specific details showing the applicability of the environmental requirements and protection measures, and will be an enforceable stipulation of the Notices to Proceed issued for each portion of the Project as it goes to construction.

2.0 ROUTE CHANGES

The routes analyzed in the Final EIS showed the Companies' Proposed Routes for Segment 8 and 9 current at that time. The Proposed Route for Segment 8 diverged from the BLM's Preferred Route as indicated in the Final EIS at node 8e, trending due west across the BOPNCA, then avoiding several sensitive areas and terminating at the Hemingway Substation. The Proposed Route for Segment 9 largely avoided the BOPNCA and followed the West-wide Energy Corridor to the southwest of the towns of Bruneau and Grand View, trending northwest to terminate at the Hemingway Substation.

Since the issuance of the November 2013 ROD, which excluded Segments 8 and 9 from the decision, the Companies have continued discussions with the BLM and the Boise RAC, and

altered their Proposed Action for Segments 8 and 9 accordingly. In March 2014, the Companies submitted a revised MEP informally to the BLM and to the Boise RAC that altered the Companies' Segment 8 Proposed Route by substituting Alternatives 8D and 8E and the Companies' Segment 9 Proposed by substituting Alternative 9G.

The Proposed Routes for Segments 8 and 9, further revised based on the Boise RAC's recommendations, are detailed below. For each of these Segments, the first approximately 90 miles remains unchanged. Those first 90 miles were shown in the Final EIS as representing both the Companies' Proposed Route and the BLM's Preferred Route. Since there is no controversy over these portions of the routes, the Companies are proposing no changes to them. Similarly, the Boise RAC examined only the portions of each Segment where impacts to the BOPNCA were substantial and subject to additional discussion and revision. For the purposes of this POD, revisions to Segment 8 begin at the node identified as 8e in the Final EIS and as node 8-01 in Figure 2-1, while revisions to Segment 9 begin at Node 9g, identified as node 9-01 in Figure 2-2.

A detailed description of each route follows. Table 2-1 lists the location and land use features of the Segment 8 and 9 routes. Detailed maps are contained in Appendix A.

Table 2-1. Segments 8 and 9 Proposed Route Features

Feature	Segment 8 - Summer Lake Option 1 (miles)	Segment 9 - Baja Road-Murphy Flat South (miles)
Total Length	38	65.8
Ownership		
Bureau of Land Management	26.9	57.7
Bureau of Reclamation	2.7	.1
Private	6.2	5.0
State	2.0	5.5
Land Use		
BOPNCA	40.2	53.8
Orchard Combat Training Center	.5	0
Adjacent to Existing Transmission Lines	28.7	31

2.1 Segment 8

The majority of the Boise RAC Subcommittee concluded that the best route for Segment 8 is Summer Lake Option 1. The route option parallels the existing Midpoint to Hemingway 500-kV transmission line across the BOPNCA (Figure 2-1). As presented to the RAC Subcommittee by the Companies, the updated Western Electricity Coordinating Council (WECC) separation criteria allows the new transmission line to be 250 feet from the existing line under certain conditions (see Section 3.1). The RAC Subcommittee concluded that this route should minimize vegetation disturbance by reducing the amount of new access roads to be constructed and maintained within the BOPNCA and elsewhere.

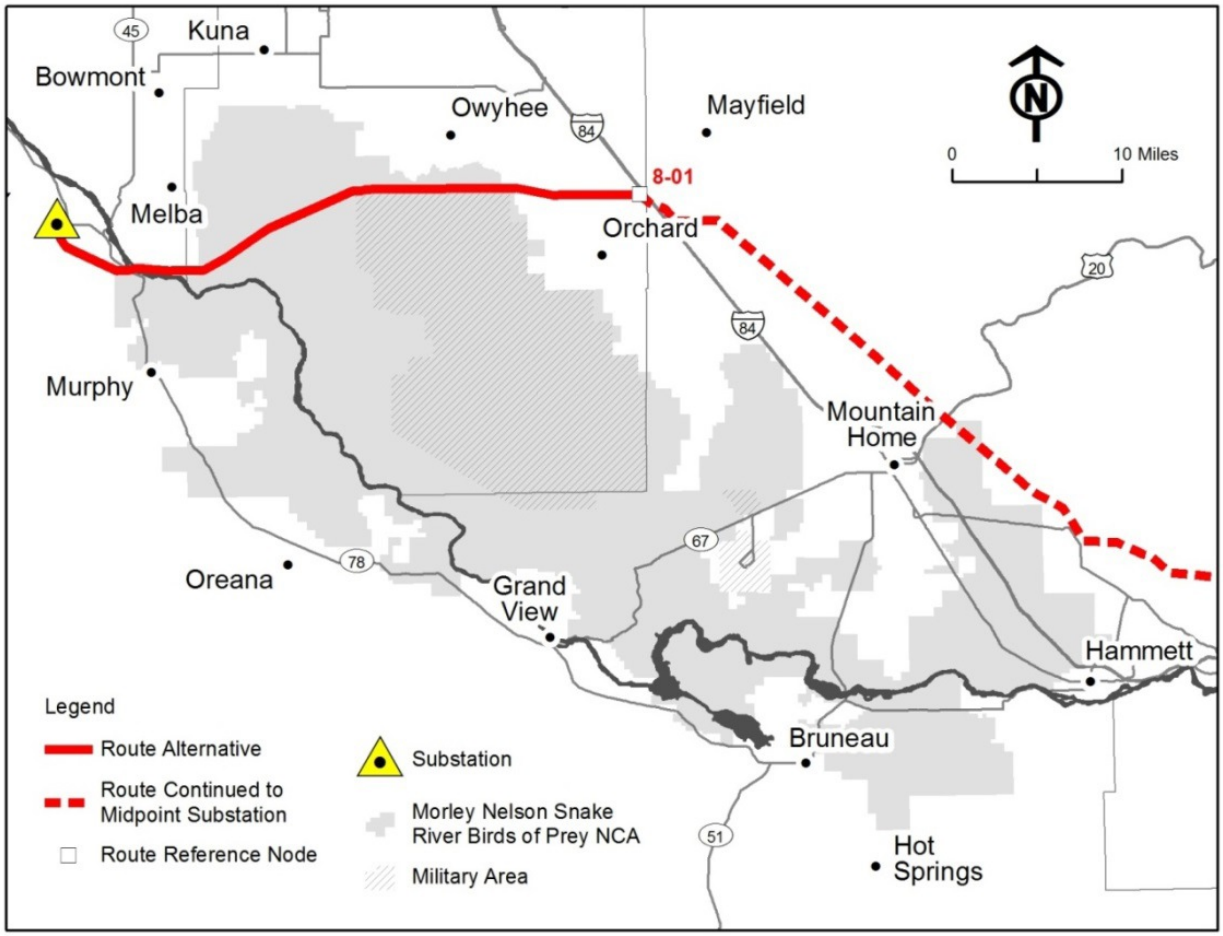


Figure 2-1. Summer Lake Option 1

The Summer Lake Option 1 route option begins at milepost (MP) 0.0 (MP 91.4 of the overall Segment 8 route and identified as 8-01 in Figure 2-1) and generally parallels the existing Midpoint to Hemingway 500-kV transmission line, running about 1,500 feet south of the line before turning northwest and then crossing the existing line at MP 7.1. From there, the alignment generally parallels 250 feet north of the existing line for the remaining 30 miles into the Hemingway Substation. At MP 8.2, the alignment crosses into the BOPNCA and follows the existing Midpoint to Hemingway 500-kV transmission line for approximately 8 miles, north of the boundary to the OCTC. At MP 12.7, the alignment crosses Pleasant Valley Road and continues west for approximately 3.5 miles. To avoid new agricultural impacts on private property and to minimize impacts to the OCTC's tank maneuver Alpha Sector, the alignment shifts south 250 feet at MP 16.2 and assumes the existing ROW of the Midpoint to Hemingway 500-kV transmission line. A 1.1-mile section of the existing Midpoint to Hemingway 500-kV line will be rebuilt 250 feet south within the Alpha Sector. At MP 16.8, the two routes resume their previous alignments, with the new Summer Lake Option 1 route 250 feet north of the existing Midpoint to Hemingway 500-kV line. The route crosses Swan Falls Road at MP 22.2 and the existing Bowmont to Canyon Creek 138-kV transmission line at MP 22.9. At MP 27, the alignment turns west (still parallel to the existing line), leaving the BOPNCA at MP 27.2, and crosses 2 miles of irrigated agriculture at the Canyon and Ada county lines, north of Celebration County Park, before crossing the Snake River between MPs 30.9 and 31.3 at the southern end of Noble

Island. The alignment then turns northwest and parallels the existing line for approximately 5 miles (crossing Hemingway Butte at MP 35.2), before turning north through the existing China Gulch subdivision and into the Hemingway Substation. Table 2-1, above, lists the features of the Segment 8 route.

2.2 Segment 9

The majority of the Boise RAC Subcommittee members concluded that the best route for Segment 9 is Baja Road-Murphy Flat South. This route begins at MP 0.0 (MP 95.6 of the overall Segment 9 route and identified as 9-01 in Figure 2-2). This option will move the existing 138-kV line from its own structures to become part of a double-circuit structure also containing the new 500-kV line for most of the distance through the BOPNCA. The new double-circuit line will incorporate and replace existing 138-kV line near C.J. Strike Reservoir in Owyhee County and along Baja Road on public land in Ada and Elmore counties. The line will cross the Snake River near C.J. Strike Dam and above Swan Falls, near Sinker Butte, where an existing 138-kV transmission line crosses the Snake River. The new 500-kV line will traverse public land on Murphy Flat, avoiding historic Oregon Trail ruts. It will cross Highway 78 near the Rabbit Creek Trailhead, and continue north to the Hemingway Substation, outside of preliminary priority sage-grouse habitat and mainly out of view from most subdivisions in Owyhee County. The advantages of this route are that it will 1) minimize impacts on communities and private property in Owyhee County, 2) minimize the amount of new road that to be constructed and maintained within the BOPNCA and in unroaded areas in Owyhee County, and 3) minimize the construction of transmission towers and roads near greater sage-grouse leks and within greater sage-grouse habitat. Table 2-1, above, lists the features of the Segment 9 route.

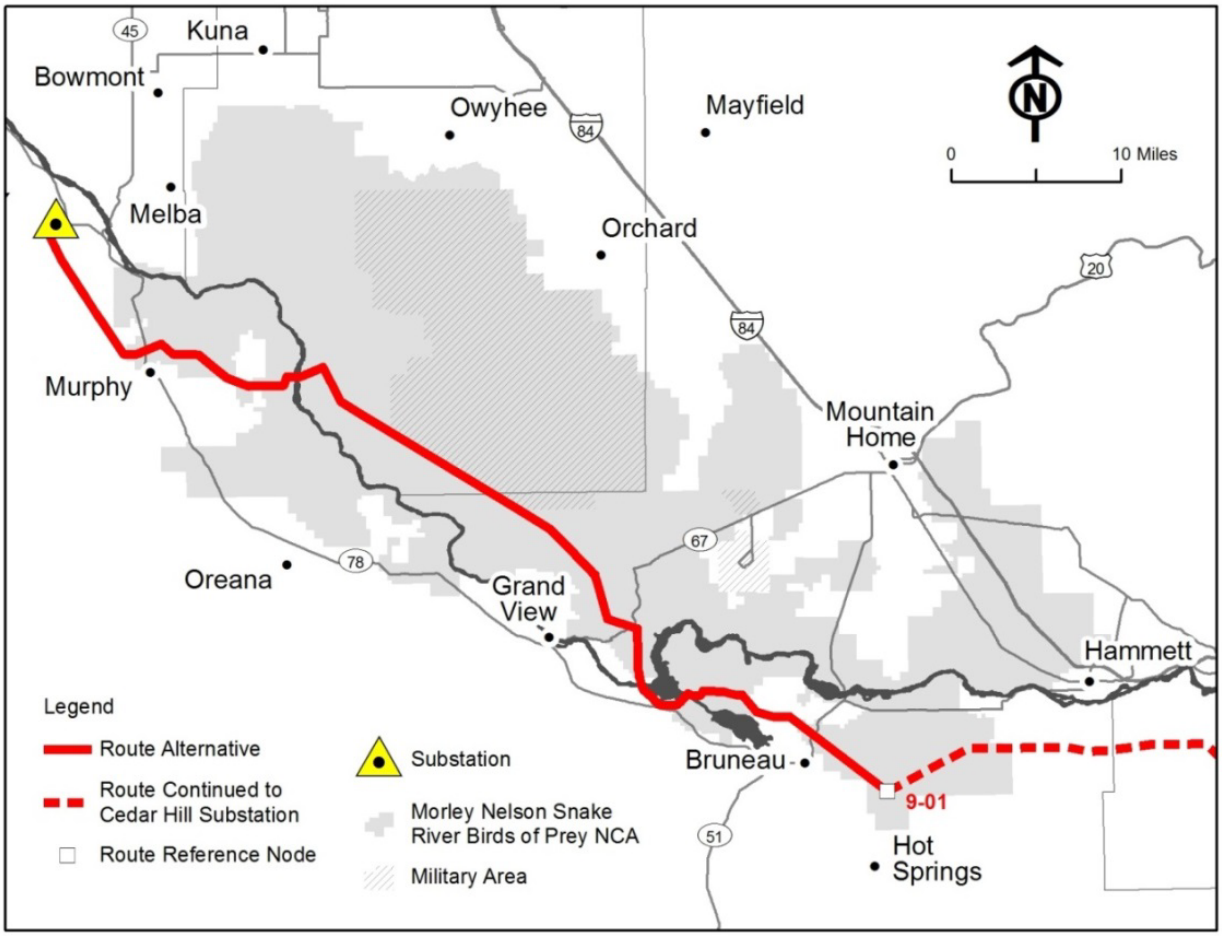


Figure 2-2. Baja Road-Murphy Flat South

The Baja Road-Murphy Flat South route generally follows the previous alignment for Alternative 9G studied in detail in the Final EIS. Beginning south of Bruneau Dunes State Park, within the BOPNCA, the route leaves the established utility corridor in a northwesterly direction, crossing State Route (SR) 51 at MP 5.5, and leaving the BOPNCA at MP 6.7. At MP 10.3, the route re-enters the BOPNCA, double-circuiting with the existing C.J. Strike to Bruneau Bridge 138-kV transmission line near or on the current ROW for approximately 3.3 miles. At MP 14, the two circuits separate for approximately 0.2 mile to permit a more feasible crossing of the Narrows between C.J. Strike Reservoir and the Bruneau Arm. On the west side of the Bruneau River, the two lines again become a double-circuit line across the Cove non-motorized and recreation areas, west approximately 2.1 miles to the C.J. Strike Dam, where the existing 138-kV line double-circuits with the existing Evander Andrews to C.J. Strike 138-kV line north toward Mountain Home. The route parallels the existing double-circuit 138-kV line approximately 200 feet to the west for 4 miles, crossing the Snake River downriver of the C.J. Strike Dam between MPs 17 and 18. At MP 20.8, the alignment shifts west, and then north again, to avoid encroachment in the Mountain Home Air Force Base-controlled airspace and to avoid new impacts to private agricultural lands. At MP 24.8, the alignment crosses the Grand View Highway and then joins the existing Bowmont to Canyon Creek 138-kV transmission line in a new double-circuit alignment along the south side of the Big Baja Road. The new double-circuit alignment proceeds northwest, generally parallel to Big Baja Road and adjacent to the southern

boundary of the OCTC, for 20.2 miles to a location southeast of Swan Falls and north of Tick Basin. Here, the two circuits separate before crossing the Snake River canyon between MPs 47.3 and 47.8 near the existing Sinker Creek to Tap 138-kV transmission line crossing south of Sinker Butte. On the west side of the canyon, the route turns briefly south, parallel to the existing 138-kV line, and then turns west adjacent to the existing Sinker Creek Substation access road. At MP 50.8, the route turns northwest along the east and west faces of several low hills to minimize impacts to irrigated agriculture and to the Oregon National Historic Trail. Near MP 56, the route descends off of the Murphy Rim and crosses the Con Shea Basin north of Murphy. After crossing SR 78 at MP 57.7 north of the Rabbit Creek trailhead, the alignment rejoins the original Segment 9 Proposed Route and continues in a northwesterly direction for approximately 9.5 miles into the Hemingway Substation.

2.3 Lower Voltage Transmission Line and Substation Removal

With acceptance of the August 2014 MEP, removal and modifications of certain lower voltage transmission lines and associated facilities will occur as described below.

2.3.1 Swan Falls to Bowmont Transmission Line

The existing Swan Falls to Bowmont transmission line is a 46-kV line that occurs within a 40-foot wide ROW and crosses approximately 10.8 miles of public lands managed by the BLM (Figure 2-3). As part of the August 2014 MEP, Idaho Power Company (Idaho Power) will remove approximately 7 miles of line on BLM-managed lands, including all structures (although structures may remain if requested by BLM), from the Bowmont Substation to Gage Substation; Idaho Power will continue to use the existing line from the Gage Substation to Ferry Substation to serve its customers. Idaho Power will construct an approximately 1-mile long section to connect the remaining portion of the line to the Idaho Power system. It is expected that the new construction will occur on private land. In addition, approximately 3.9 miles of existing 12.5-kV lines, including 0.25 mile on BLM lands, will be reconstructed. Further, approximately 4 miles of the existing 46-kV line on existing BLM ROW between the Gage and Ferry substations will be converted to a 12.5-kV distribution line. This will require a neutral conductor to be strung on the existing structures, and may also require structure replacements. Idaho Power is also proposing to remove the existing Gage Substation and associated equipment and apparatus. The Gage Substation is on BLM-managed land.

The following summarizes the planned facility removals and modifications affecting the Swan Falls to Bowmont transmission line and facilities:

- Remove approximately 7 miles of existing 46-kV line between the Bowmont and Gage substations.
- Remove Gage Substation.
- Convert approximately 4 miles of existing 46-kV Gage to Ferry/Swan Falls line to 12.5 kV. Structure replacements may be necessary.
- Reconstruct approximately 3.9 miles of existing lines south of Melba including 0.25 mile on public land. Structure replacement on reconstructed lines is assumed to be necessary.

2.3.2 Mountain Home to Bennett Transmission Line

The existing Mountain Home to Bennett transmission line (Line 210) is a 69-kV line with distribution underbuild (Figure 2-4). The 5.6 miles of the line on the BOPNCA without any distribution underbuild will be removed, including all structures (although structures may remain if requested by the BLM). Idaho Power will continue to use the remaining portion of the line to serve customers. Idaho Power will also reconstruct approximately 2.2 miles of the existing

feeder connection for the Sailor Creek (Glenn's Ferry), all of which is on private lands. Idaho Power will conduct maintenance on the remaining portion of the line; this will be determined as part of the engineering analysis to support the removal.

The following summarizes the planned facility removals and modifications affecting the Mountain Home to Bennett transmission line and facilities:

- Remove 5.6 mile portion of existing 69-kV Mountain Home-Bennett line.
- Reconstruct 2.2 miles of Sailor Creek (Glenn's Ferry) feeder line. Structure replacement on reconstructed lines is assumed to be necessary.

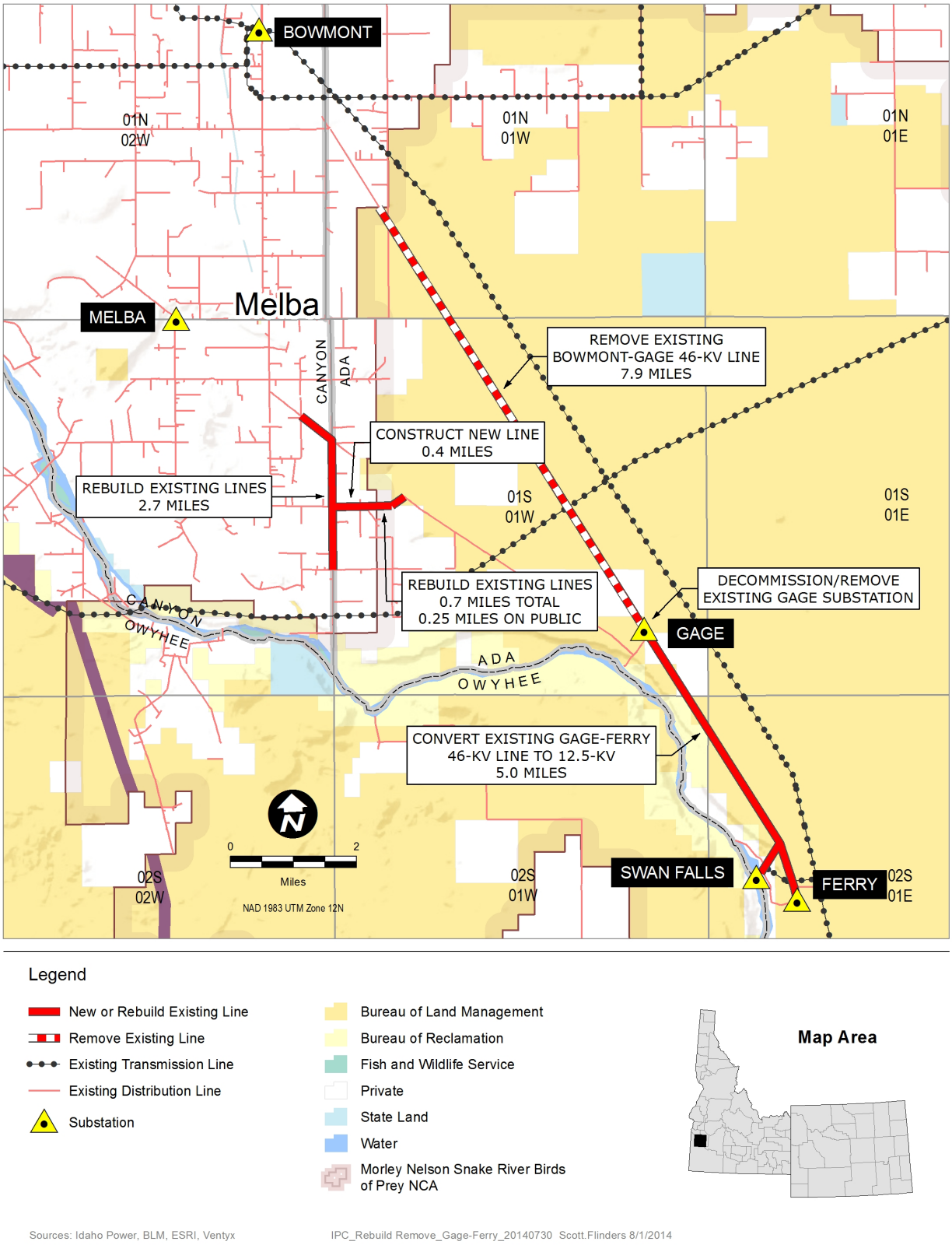


Figure 2-3. Swan Falls to Bowmont Transmission Line Modifications

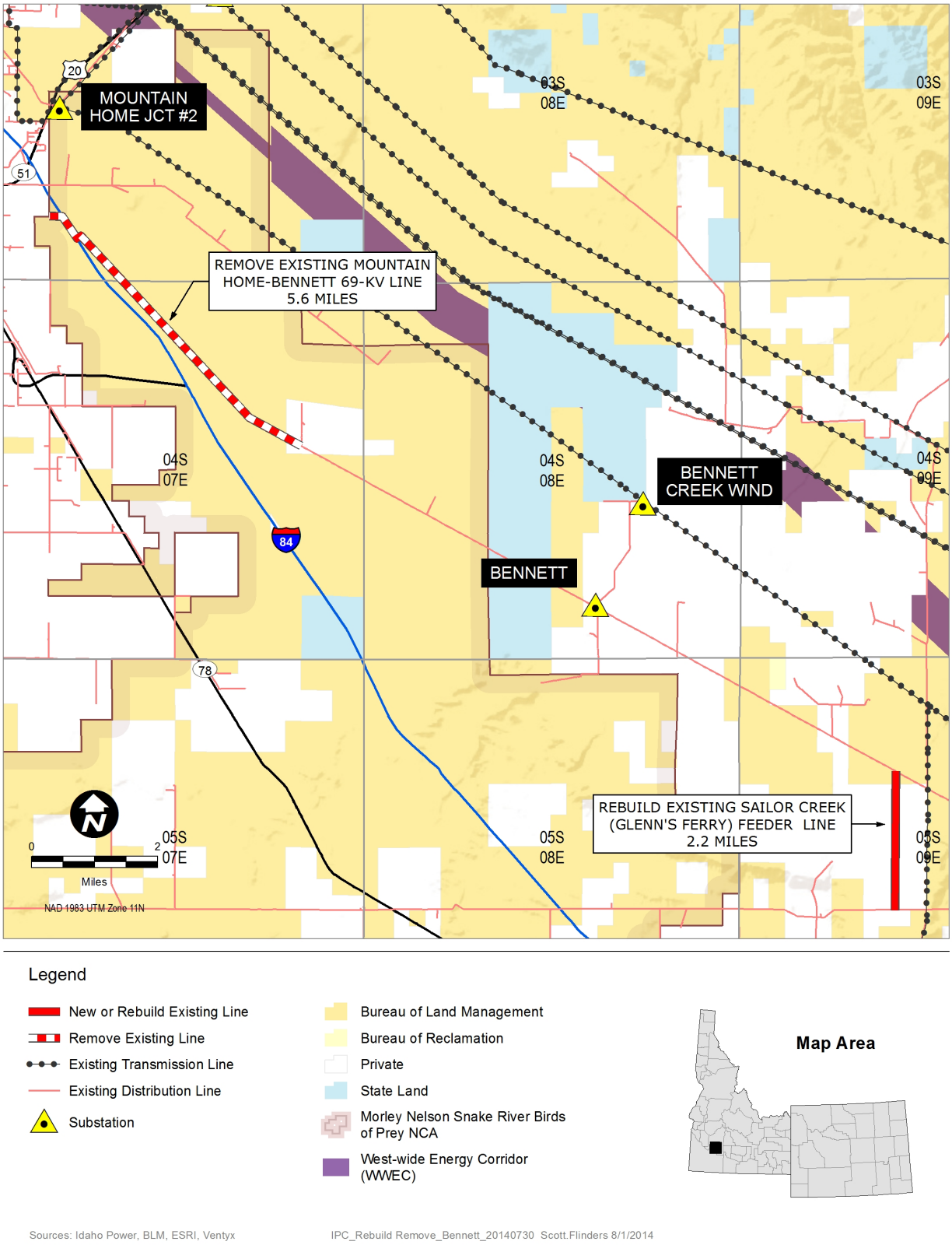


Figure 2-4. Mountain Home to Bennet Transmission Line Modifications

3.0 DESIGN CHANGES

Section 4.0 of the August 2013 POD provides a detailed description of the transmission facilities design features associated with the Gateway West segments requiring new transmission line construction, and is incorporated herein by reference. The discussion below focuses on additional design changes applicable to Segments 8 and 9 within or near the BOPNCA.

3.1 Segment 8 Line Separation

As part of their evaluation, the RAC Subcommittee asked the Companies about the feasibility of reducing the separation between the proposed Segment 8 single-circuit 500-kV transmission line and the existing 500-kV Midpoint to Hemingway line. The Companies reported that based on changes in WECC reliability criteria, line separation could be reduced in this case to approximately 250 feet. Based on the Companies' response, the RAC Subcommittee recommended a separation reduction across the BOPNCA, and the Companies have incorporated that change into a 28.7-mile portion of Segment 8. Figure 3-1 shows the reduced line separation ROW design and location of reduced separation to the existing Midpoint to Hemingway line.

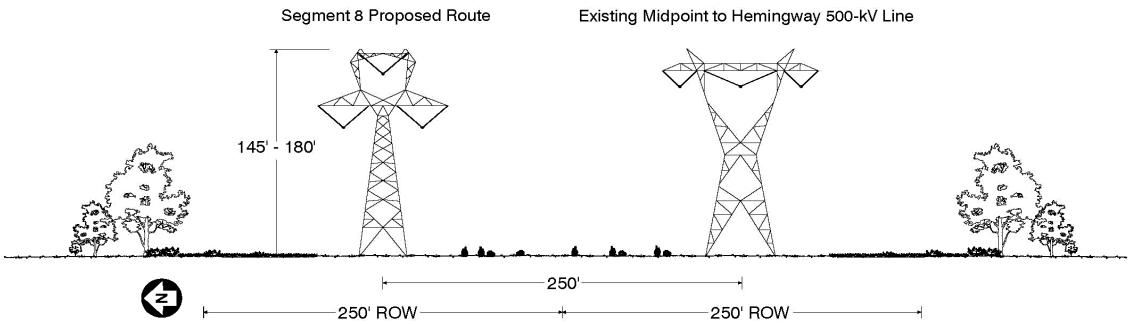
At the time the Gateway West Final EIS was prepared, the WECC recommended that high-voltage transmission lines be separated by at least "the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits" (WECC 2008). For Gateway West, the longest span length was assumed to be 1,500 feet, thereby dictating the minimum distance between existing and proposed transmission lines serving the same load (BLM 2013a).

The regional transmission planning criteria and guidelines were derived from planning standards developed by the North American Electric Reliability Council and were designed to reduce the risk of the following:

- A tower falling into an adjacent line
- A snagged shield wire dragged into adjacent line
- An aircraft flying into more than one circuit
- Fire, smoke, or dust shorting more than one circuit
- Lightning strikes affecting more than one line

In December 2011, WECC and the WECC Board of Directors relaxed its regional transmission planning criterion to a minimum of 250 feet from an existing line (BLM 2013a). This change became effective in April 2012. The separation of transmission lines within a common corridor or lines serving the same load is measured between the centerlines of the transmission lines. All utilities participating in WECC are still responsible for preventing outages and must use the best available planning and engineering to estimate the risk of outages regardless of separation. Under certain limited circumstances, the Companies are willing to consider reducing the separation between high-voltage lines for limited distances and under restricted circumstances.

The Companies plan to use existing roads near and beneath the existing 500-kV transmission line to minimize the overall disturbance footprint of the new line. Rather than constructing a completely new access road network for the Summer Lake Option 1 route, they will use short spur roads from existing roads to provide access to new towers.



Proposed 500-kV Single-Circuit Lattice Steel Tower Adjacent to the North Side of the Existing Midpoint to Hemingway Line (MPs 7.3 to 36)

Figure 3-1. Proposed Reduced Line Separation ROW Design Locations

3.2 Segment 9 Double-Circuit Segment

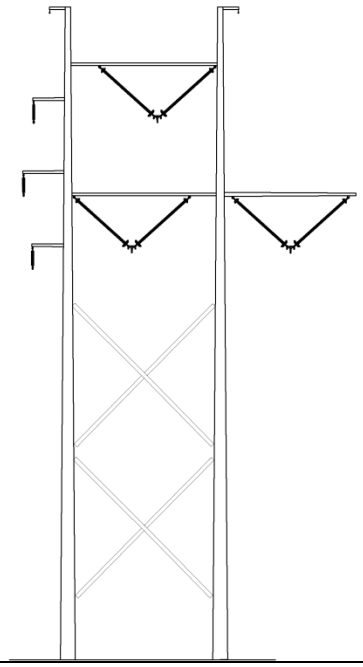
As part of their evaluation, the RAC Subcommittee asked the Companies about the feasibility of co-locating (double-circuiting) 5.4 miles of the existing CJ Strike to Bruneau Bridge and 20.2 miles of the Bowmont to Canyon Creek 138-kV transmission lines and on the same structures with the proposed Segment 9 single-circuit 500-kV line[1]. The Companies reported that double-circuiting would be feasible and have incorporated this change into the proposed Project.

Table 3-1 describes facility features for the double-circuit portion of Segment 9 in the BOPNCA that will be double-circuited. Figure 3-2 shows a sketch of the proposed double-circuit 500/138-kV structure. Figure 3-3 shows the ROW design configuration for the double-circuit portion of Segment 9 within the BOPNCA.

[1] In addition, the 138 and 500-kV circuits will separate on to single-circuit structures for approximately 0.2 mile to permit a more feasible crossing of the Narrows between C.J. Strike Reservoir and the Bruneau Arm.

Table 3-1. Summary of Segment 9 Project Transmission Facilities

Project Facility	Description

Double-Circuit 500/138-kV portion of Segment 9 in the BOPNCA
 
	• Three-phase 138-kV and three-phase 500-kV construction for all structure designs, conductor spacing and clearances[1/].
	• 500-kV Conductor: Bundled 1949.6 kcmil 42/7 aluminum conductor steel reinforced (ACSR)/TWD "Athabaska/TW", with three subconductors per phase. Non-specular (dull) finish rather than a shiny finish.
	  ○ Estimated subconductor diameter: 1.51 inches.
	  ○ 500-kV Bundle spacing: Distance between subconductors is 18 inches and 25 inches.
	• 138-kV Conductor: Single 715 kcmil 26/7 aluminum conductor steel reinforced (ACSR) "Starling". Non-specular (dull) finish rather than a shiny finish.
	  ○ Estimated conductor diameter: 1.05 inches
	• Non-reflective, non-refractive insulators.
	• One optical ground wire (OPGW) containing 48 fibers with diameter of 0.64 inch.
	• One EHS steel overhead ground wire with diameter of 0.50 inch.
	• Minimum ground clearance:
	  ○ 138-kV: 24 feet
	  ○ 500-kV: 35 feet
	• Structure types: double-circuit steel H-frame structures, dull galvanized or self-weathering steel.
	• Above-ground structure height: varies between 125 and 200 feet.
	• Approximate distance between structures: 900 to 1,200 feet.
	• ROW width: 250 feet
	• The exact quantity, distance between, and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.

1/ Project design follows the Avian Power Line Interaction Committee recommendations. Details for tower construction and components such as conductor spacing are provided in the August 2013 POD.

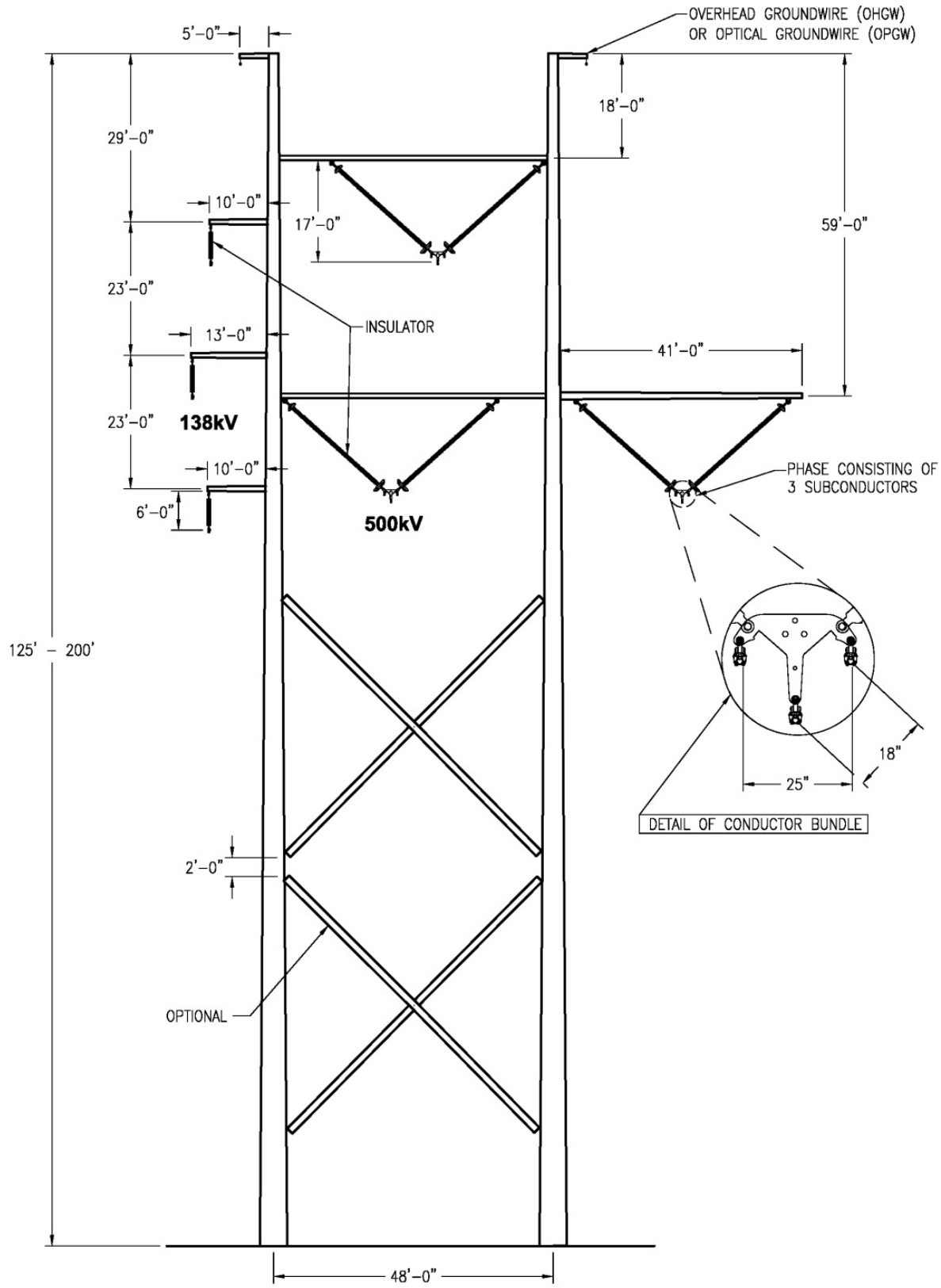


Figure 3-2. Typical Double-Circuit 500/138-kV Structure

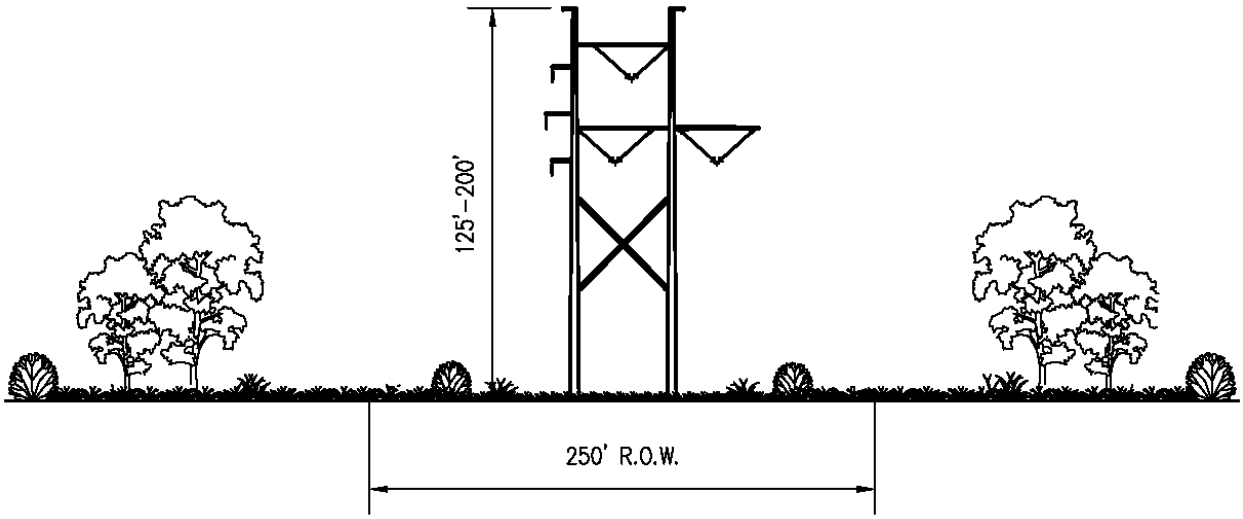


Figure 3-3. Double-Circuit 500/138-kV ROW Design

4.0 CONSTRUCTION AND OPERATION

4.1 Construction

Appendix B, Section 3.0 of the previously published POD describes the methods of constructing of the portions of Gateway West within the BOPNCA. Since the publication of the POD, the Companies have recommended and accepted the following modifications as part of the Project for portions of Segments 8 and 9 within the BOPNCA and provide new construction related information.

Segment 9 will construct approximately 25.6 miles of new double-circuit 500/138-kV transmission line. The construction methods for the steel pole H-Frame double-circuit 500/138-kV structure (Figure 3-2) are similar to the steel pole H-frame single-circuit structure described in Appendix B, of the August 2013 POD, Transmission Line and Substation Components.

The following sections describe the methods for removal of 25.6 miles of the existing C.J. Strike to Bruneau Bridge 138-kV and Bowmont to Canyon Creek 138-kV lines as described in Section 2.2 and removal and reconstructing of lower voltage lines and modify associated facilities upon approval of the August 2014 MEP as described in Section 2.3. The Companies propose to work with the BLM to identify structures the BLM would like to retain within BLM-managed lands. Those structures will still need to be accessed to remove the hardware and conductors but could be left if desired.

4.1.1 Access for Removal of Lines

In order to construct the double-circuit 500/138-kV line or reconstruct lower voltage lines, the existing lines must be removed. The 138-kV line will be replaced in its entirety, including structures. The lower voltage lines will reconstructed using a combination of reconducturing and structure replacement as needed. The lower voltage lines access can generally be confined to 15 feet to one side of the existing line.

Existing access roads or overland travel, including the roads and trails used for construction, maintenance, and inspection of the line, will be used to remove the existing line. All roads or access ways or required disturbance areas used for line removal work will be surveyed, cleared, and staked prior to any construction. On completion of line removal work, all access or spur roads shall be removed in their entirety and in accordance with project requirements and restrictions.

4.1.2 Site Preparation

In general, the existing pads surrounding existing structures are sufficient to allow access for the bucket trucks and small cranes needed to remove the structures. If needed, vegetation on the existing pads may be cut or crushed to allow safe equipment access. Grading will be used only if essential for worker safety. Erosion control measures as specified in the Stormwater Pollution Prevention Plan and Appendix Z of the August 2013 POD will be employed where needed.

4.1.3 Remove Conductors

The next step after establishment of access and a safe work area for the lineworkers is to remove the conductors and shield wire. To remove the conductors, the line is taken out of service. Bucket trucks are generally used to hoist the workers to the wire positions to allow workers to remove the hardware holding the wires in place, and drop the wires to the ground. In some cases, workers may climb the structures to accomplish this. A wire spooling machine is attached to one end of each wire after the wires are all on the ground. Each wire is wound onto reels to be hauled to one of the designated multi-use yards or to an approved off-site disposal

area. Guard equipment or structures will be deployed where energized lines are crossed to prevent the wires being removed from coming in contact with the energized wires.

4.1.4 Remove Transmission Structures

Structure removal follows wire removal. In most cases, a 20- to 30-ton lift capacity crane attaches to the structure's upper section and holds it in place while the poles are cut off near ground and the structure is laid to the ground for disassembly. In a few instances, workers in bucket trucks or climbing remove the insulators, hardware, braces, and crossarms in the air and lower them to the ground, leaving the poles standing. Once all the equipment has been removed, the poles are cut off near ground and allowed to fall (or may be supported by crane and lowered to ground). Guy wires and anchors, if any, will be removed at the same time. All materials are loaded onto trucks and hauled to a multi-purpose yard or to a preapproved disposal site. Any treated wood that is given away to an outside party will be accompanied by a Bill of Sale and Consumer Information Sheets that describe any health and environmental risks associated with different types of treated wood (i.e., proper and improper uses).

4.1.5 ROW Site Reclamation

After conductors, structures, and associated hardware have been removed, workers dig out around the base of the remaining pole section and cut off the pole below ground. The resulting holes are filled and compacted with soils that have been approved for backfill and from approved sources if not available on-site. The final step is to remove and restore work areas, pads, and other disturbed areas to a condition agreed upon by the landowner, tenant or managing agency. Appendix D of the August 2013 POD, the Reclamation Plan, and Appendix Z, Mitigation Measures, contain the plans and requirements for site restoration and reclamation.

4.1.6 Gage Substation Removal

The Gage substation is currently located within a 50-foot by 50-foot fenced area. Removal will require a disturbance area of approximately 100 feet by 100 feet to provide adequate space to remove the entire station. The existing fence and transformer will be removed as will the foundations and miscellaneous concrete to below ground level. The existing 46-kV transmission line will continue to pass through the site and connect to the existing 46-kV line to Ferry Substation and Swan Falls Power Plant. Once construction removal activities are complete, the site will be reclaimed. Appendix D of the August 2013 POD, the Reclamation Plan, and Appendix Z, Mitigation Measures, contain the plans and requirements for site restoration and reclamation.

4.2 Operation

Appendix B, Section 4.0 of the August 2013 POD describes routine and emergency response measures the Companies will employ during operation. These measures apply without change to the Project as proposed in the SF-299 and this POD Supplement for Segments 8 and 9.

5.0 DECOMMISSIONING

Appendix B, Section 5.0 of the August 2013 POD describes how the proposed transmission line would be removed from service at the end of the useful life of the Project including dismantling and removal of conductors, insulators, and hardware from the ROW. Structures would be removed, foundations would be removed to below ground surface, and following abandonment and removal of the transmission line structures and equipment, any areas disturbed during line dismantling would be reclaimed and rehabilitated. No changes are proposed to this approach in this POD Supplement.

As part of the August MEP described in Appendix B, portions of two existing lower-voltage power lines and one substation owned by IPC from areas within the BOPNCA will be removed. The removal methods will be the same as described in Appendix B, Section 5.0 of the August 2013 POD except that the BLM may specify that one or more power poles be left for perching and nesting opportunities for birds of prey.

6.0 MITIGATION AND ENHANCEMENT PORTFOLIO

The August 2014 MEP from the Companies included as Appendix B to this POD Supplement is intended to offer sufficient mitigation and enhancement for the resources and values for which the BOPNCA was designated to allow the BLM to complete its decision process for Segments 8 and 9 of the Project and issue a ROD for these segments. It was first submitted to the BLM as part of the Companies' comments on the Final EIS in 2013 and entered into the Administrative Record at that time. Subsequent to the issuance of the ROD, the Companies continued conversations with the BLM and subsequently with the Boise RAC and the RAC Subcommittee. A version of the MEP was issued in January 2014 and another version shared with the RAC Subcommittee in March 2014. Additional comments were provided by BLM in August 2014. The August 2014 MEP has been updated since the version prepared for the RAC Subcommittee and reflects the Companies' responses to the RAC Subcommittee recommendations and BLM comments.

7.0 LITERATURE CITED

BLM (U.S. Department of the Interior, Bureau of Land Management). 2013a. Final Environmental Impact Statement for the Gateway West Transmission Line Project. Wyoming State Office. Case File Numbers WYW-174598; IDI-35849. Cheyenne, WY. April 26.

BLM. 2013b. Record of Decision for the Gateway West Transmission Line Project. Wyoming State Office. Case File Numbers WYW-174598; IDI-35849. Cheyenne, WY. November 12.

Boise RAC Subcommittee (Boise District Resource Advisory Council Subcommittee). 2014a. Boise District Resource Advisory Council Subcommittee Report on Gateway West Segments 8 and 9 Route Options In or Near the Morley Nelson Snake River Birds of Prey National Conservation Area.

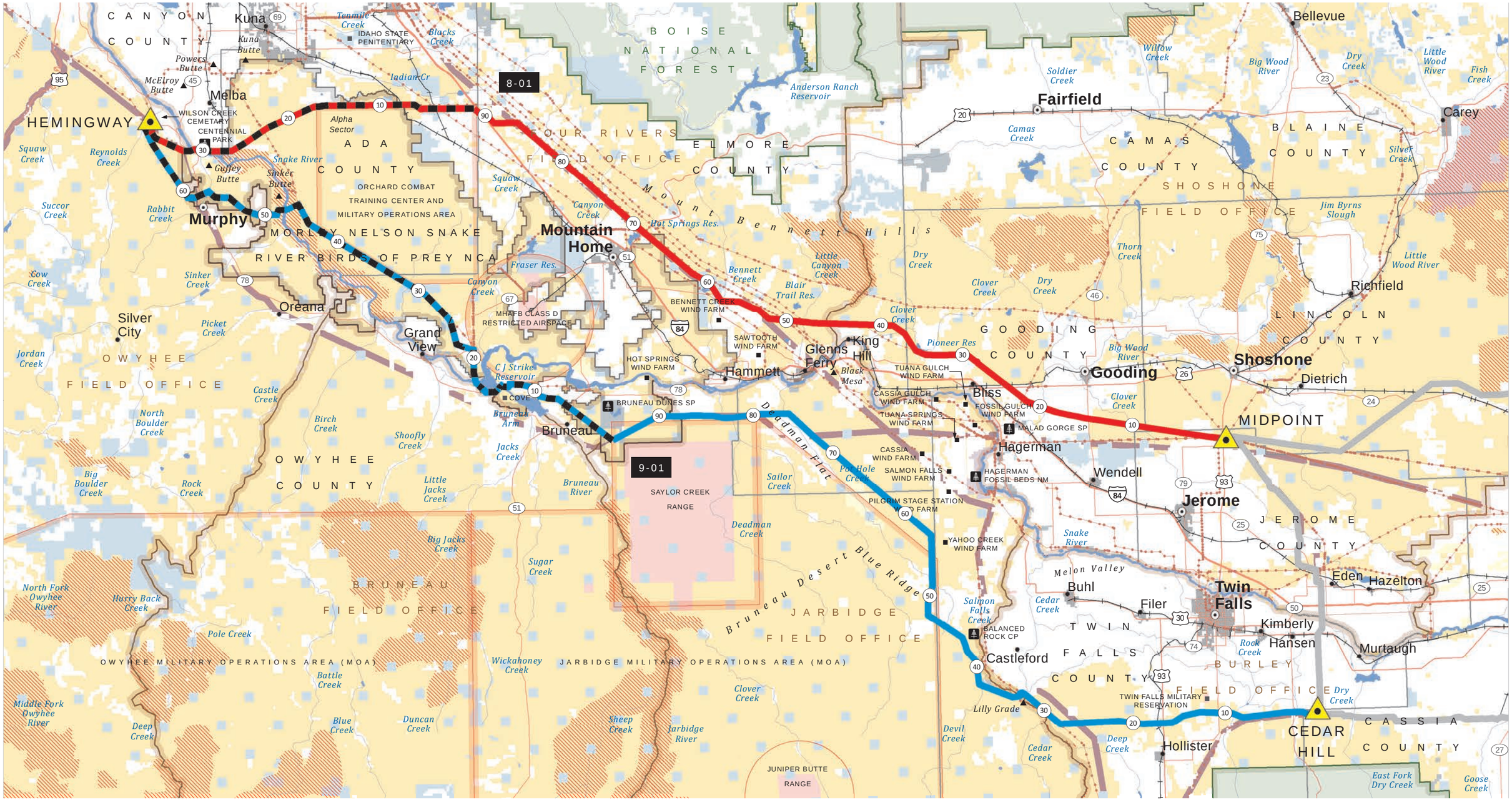
Boise RAC Subcommittee. 2014b. Boise District Resource Advisory Council Subcommittee Review and Comments on the Gateway West Transmission Line Project Mitigation and Enhancement Portfolio for the Morley Nelson Snake River Birds of Prey National Conservation Area.

IPC and RMP (Idaho Power Company and Rocky Mountain Power). 2013a. Gateway West Transmission Line Project Plan of Development. August.

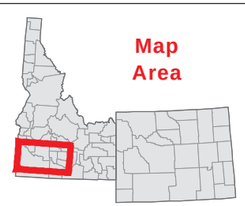
IPC and RMP (Idaho Power Company and Rocky Mountain Power). 2013b. Gateway West Transmission Line Project Plan of Development. January.

WECC (Western Electricity Coordinating Council). 2008. TPL – (001 thru 004) – WECC – 1 – CR — System Performance Criteria. Available online at http://www.wecc.biz/Standards/WECC%20Criteria/Forms/AllItems.aspx

APPENDIX A
LOCATION MAPS



0 10
Miles
NAD 1983 UTM Zone 11N (feet)



Segment 8
- Proposed
- Summer Lake Option 1

Segment 9
- Proposed
- Segment 9 Proposed

Other Features
- Substation
- Milepost
- Existing Transmission Lines (138-kV or greater)
- West Wide Energy Corridor (WWEC)
- Protected Area or Restricted Access
- City Limits

Land Status
- Bureau of Land Management
- National Forest
- National Park Service
- Fish and Wildlife Service
- Bureau of Reclamation
- Military Reservation/Corps of Engineers
- State
- State Wildlife, Park, Recreation or Other
- Private

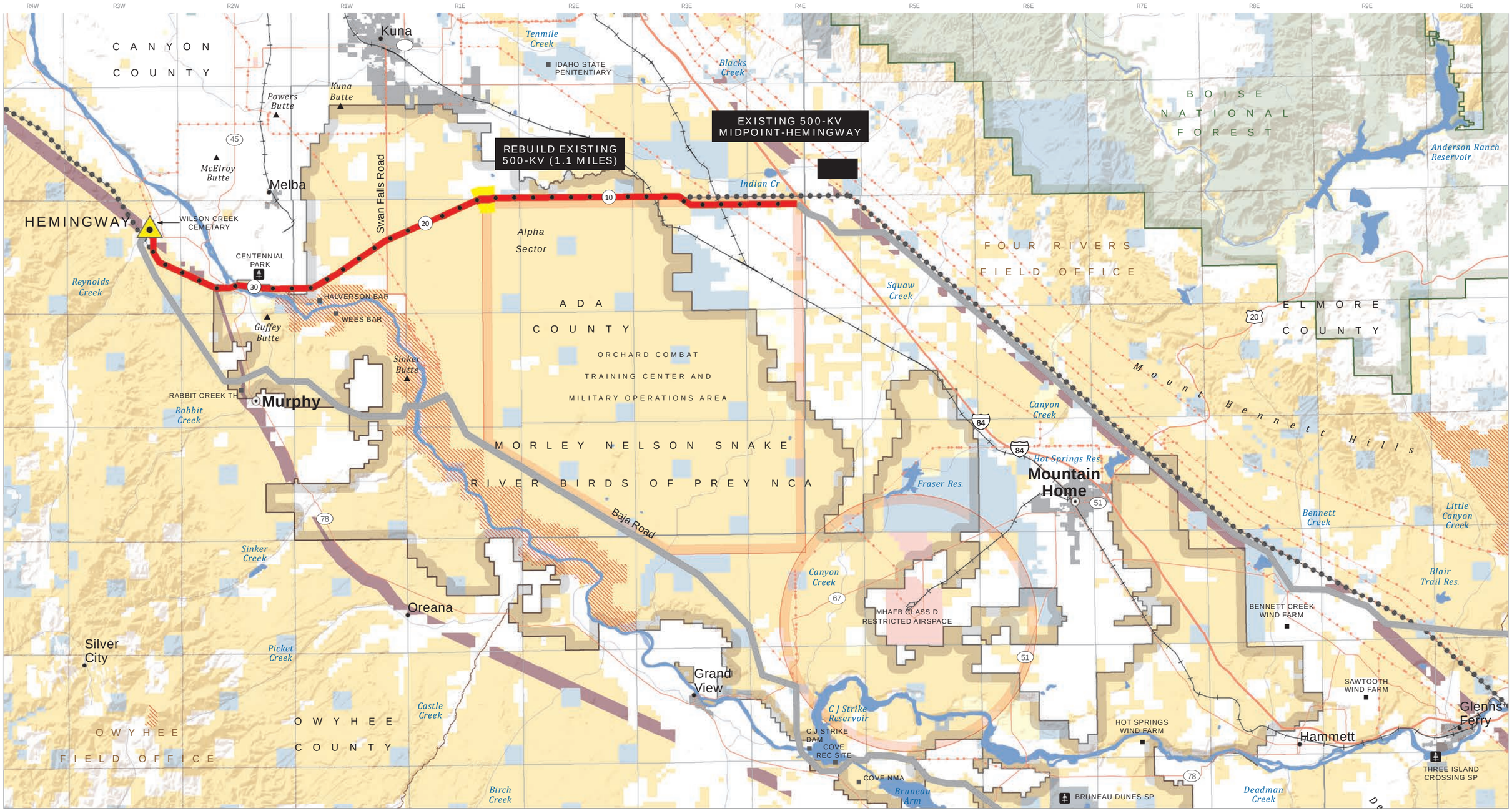
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

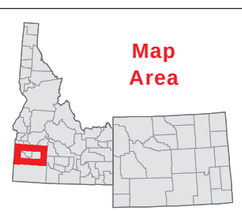
Segments 8 and 9 Overview
Appendix A-1

Sources | BLM; USFS; ESRI

POD_Appendix A-1 Overview Scott.Flinders 8/1/2014



0 5
Miles
NAD 1983 UTM Zone 11N (feet)



Segment 8
- Summer Lake Option 1
- Rebuild Existing 500-kV
- Other Route

Other Features
- Substation
- Ten Mile
- Mile
- Existing Midpoint-Heminway 500-kV Line
- Existing Transmission Lines (138-kV or greater)
- West Wide Energy Corridor (WWEC)
- Protected Area or Restricted Access
- City Limits

Land Status
- Bureau of Land Management
- National Forest
- Fish and Wildlife Service
- Bureau of Reclamation
- Military Reservation/Corps of Engineers
- State
- State Wildlife, Park, Recreation or Other
- Private

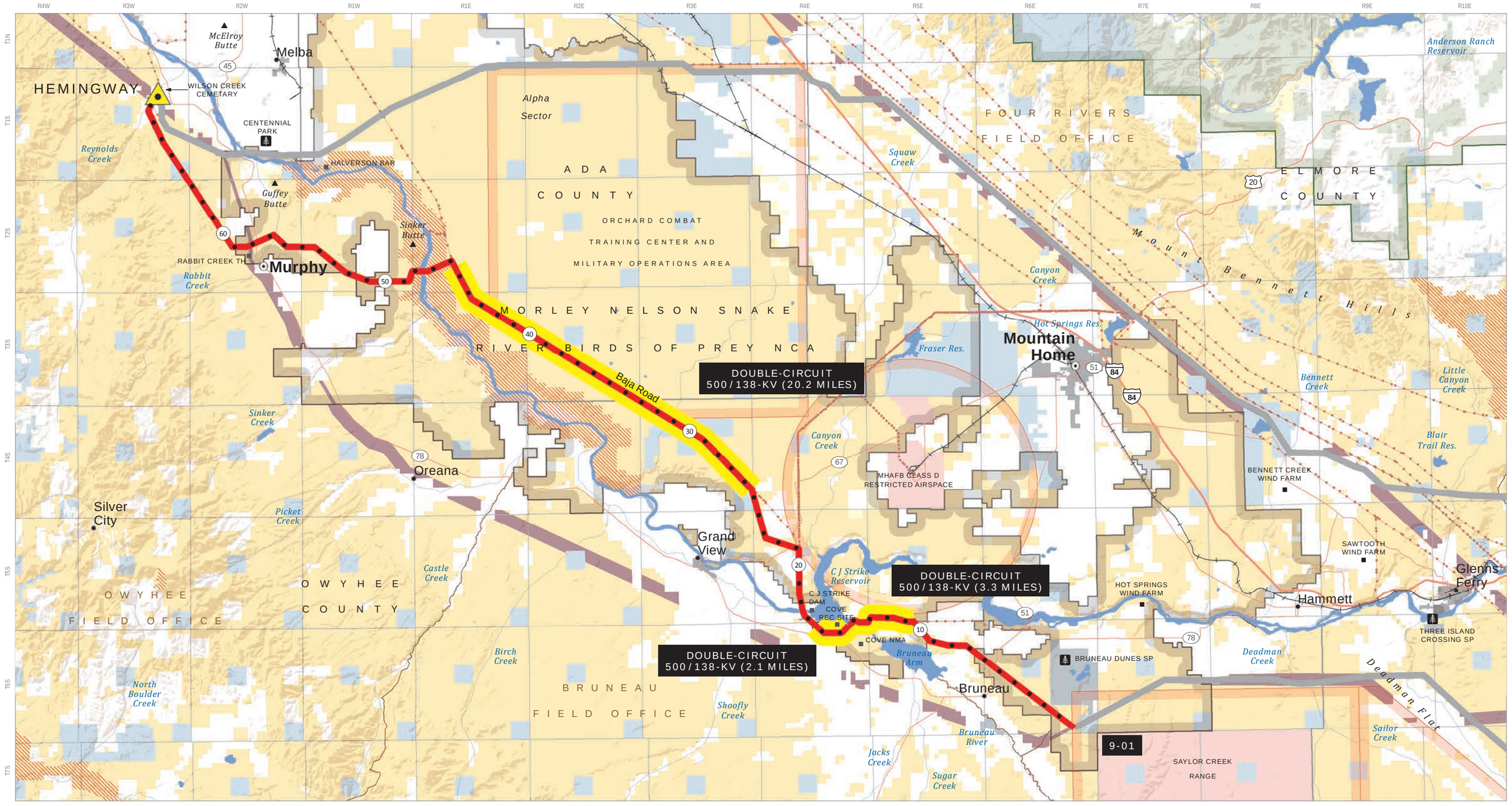
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 8
Summer Lake Option 1
Appendix A-2

Sources | BLM; USFS; ESRI

POD_Appendix A-2_Segment 8_v2 scott.flinders 8/6/2014



Map Area

0 5 Miles

NAD 1983 UTM Zone 11N (feet)

Segment 9

- Baja Road-Murphy Flat South
- Double-circuited Portion
- Other Route

Other Features

- Substation
- Ten Mile
- Mile
- Existing Transmission Lines (138-kV or greater)
- West Wide Energy Corridor (WWEC)
- Protected Area or Restricted Access
- City Limits

Land Status

- Bureau of Land Management
- National Forest
- Fish and Wildlife Service
- Bureau of Reclamation
- Military Reservation/Corps of Engineers
- State
- State Wildlife, Park, Recreation or Other
- Private

ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 9
Baja Road-Murphy Flat South
Appendix A-3

Sources | BLM; USFS; ESRI

POD_Appendix A-3_Segment 9 Scott.Flinders 8/1/2014

APPENDIX B
MORLEY NELSON SNAKE RIVER BIRDS OF PREY NATIONAL CONSERVATIONN AREA DRAFT MITIGATION AND ENHANCEMENT PORTFOLIO PROPOSAL

See Appendix C-1 of the SEIS to view the August 2014 Draft Mitigation and Enhancement Portfolio.

Gateway West Transmission Line Project
Addendum to August POD Supplement
Use of Baja Road and Disturbance Calculations

On August 7, 2014 PacifiCorp, doing business as Rocky Mountain Power (RMP), and Idaho Power Company's (IPC) collectively the Companies submitted to Bureau of Land Management (BLM) a Plan of Development Supplement for the Gateway West Transmission Line (Project or Gateway West). This addendum to the supplement describes use of the Baja Road and disturbance during construction and operation.

1.0 BAJA ROAD

Baja Road is the access road used for construction and maintenance of the existing 138-kV transmission lines. These lines would be removed and reconfigured onto a double-circuit 500/138-kV structure series for approximately 26.5miles of which, 18.3 miles is in the SRBOP and adjacent to Baja Road as part of the Baja Road-Murphy Flat South alternative identified by the Boise District Resource Advisory Council (RAC) and adopted by the Companies as part of the Segment 9 Proposed Route. The Companies intend to utilize the existing road with "no improvement". Project-wide, existing roads requiring "no Improvement" include existing maintained paved or all-weather surfaced roads that are able to be used in their current condition (PacifiCorp and Idaho Power, 2013). The Companies' construction standards will be met, including the use of a minimum travel surface width of 14 feet wide and requiring a travel surface width of up to 20 feet depending on the radius of curves. The use of the term 'no improvement' is intended to signify that no additional new disturbance will be created outside of the established disturbed area. As such, the existing roads requiring "no improvement" for access could include regular maintenance to make the road passable for construction. Regular maintenance could include but is not limited to minor blading activities, repair of washed out areas, wash boarded areas, depressions requiring graveling, approach installation, and other minor improvements within the established disturbed area.

The Baja Road meets the criteria for "no improvement". **Figure 1-1** shows the typical condition of the Baja Road adjacent to the existing 138-kv line. The view is looking south and the proposed location of the new double-circuit 500/138-kV line is on the right side of the road.

Figure 1-1. Current Condition of the Baja Road

Based on aerial imagery and field reconnaissance, the road has a 14 feet wide travel surface and the total established disturbed area or width is approximately 40 feet. The road is generally in excellent condition having been recently restored. There may be a few washboard areas, but the width and gravel surface should be sufficient without any additional improvements outside of the current travel way. The construction concept for installation of the planned 500/138-kV line would involve in most cases a stub road extending from the edge of the existing Baja Road to an approximately 1.4 acre construction pad (**Figure 1-2**). The centerline of the Proposed Route is approximately 140 feet off of the road centerline. The terrain is mostly flat, so overland travel to access the construction pads or structures for operation and maintenance would stay within the Project-wide travel way (14 foot wide during construction and 8 feet wide during operations). **Figure 1-1** and **Figure 1-3** illustrate the terrain and construction pad features.

Figure 1.2. Conceptual Stub Road Configuration from Baja Road.

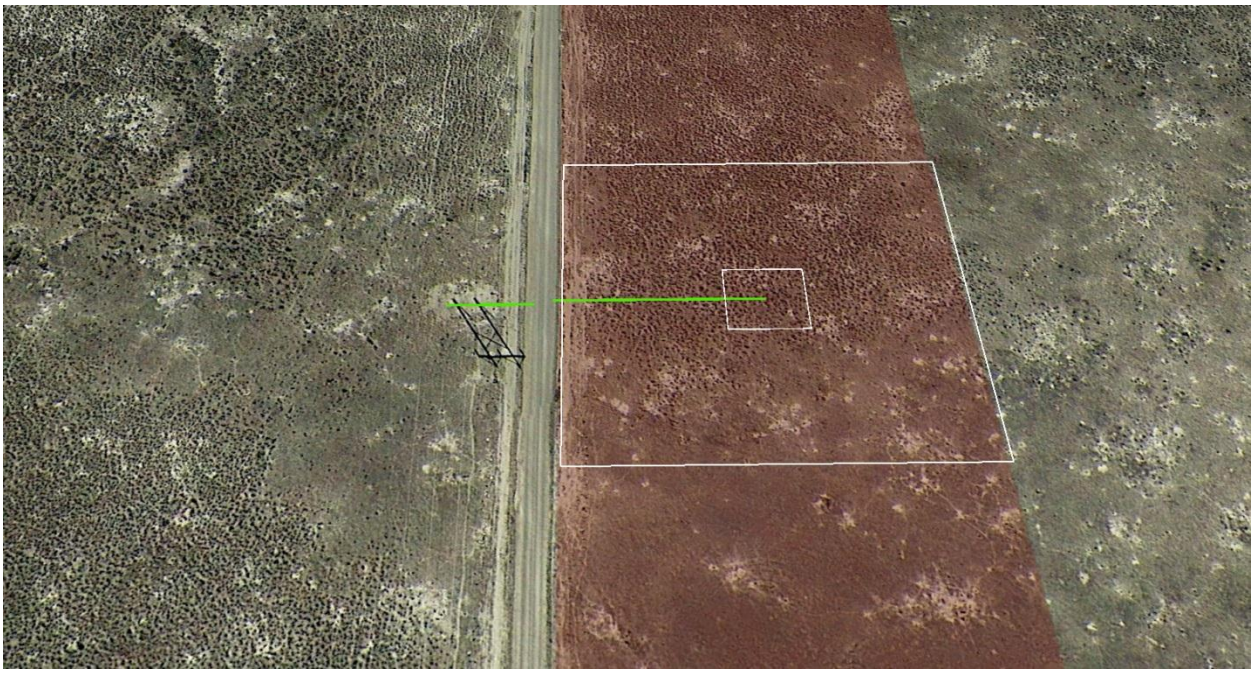


Figure 1-3. Conceptual Construction Work Area (large white box).

2.0 CONSTRUCTION AND OPERATION DISTURBANCE

The amount of land disturbed during construction and operation is a function of length, extent of facility improvements and location. **Table 2-1** shows the length, extent of new, rebuild and removed facilities and ownership associated with the proposed routes for Segment 8 (Summer Lake Option 1) and Segment 9 (Baja Road-Murphy Flat South).

Table 2-1. Segments 8 and 9 Proposed Route Features

Feature	Segment 8 - Summer Lake Option 1 (miles)	Segment 9 - Baja Road-Murphy Flat South (miles)
Total Length	38.3 (1.1 rebuild)	89.3 (20.9 removal)
Ownership		
Bureau of Land Management	27.1 (0.8)	75.3 (17.6)
Bureau of Reclamation	2.7	0.1
Private	6.2 (0.2)	5.1 (0.2)
State	2.0	8.5 (3.1)
Land Use		
BOPNCA	23.1 (1.1)	73.7 (20.9)
Orchard Combat Training Center	0.5	--
Adjacent to Existing Transmission Lines	30.7	55.0 (20.9)

Land disturbance as described in **Table 2-2** is the estimated amount of land that would be disturbed during construction or required to be permanently converted to operational uses. Estimates for construction disturbances are based on best professional judgment and experience with this type of project following the process described in Section 3.1 of the Gateway West EIS. Estimates were made of disturbance areas resulting from each construction activity involving structure placement, access roads, contractor and material staging areas, and new and expanded substations. For each route, the amount of disturbance reflects use of existing access roads meeting the definition of “no improvement” as described above. **Table 2-3** describes the dimensions of the structure construction pads and area permanently occupied by structures after restoration.

Table 2-2. Summary of Transmission Line Land Disturbance Resulting from Construction and Operations (1)(2)

Segment/Project Component	Land Affected During Construction (acres)	Land Affected During Operations (acres)
Segment 8		
Access - Existing Road, Improved	136	43
Access New Road	21	10
Deadend Pulling - 500-kV (1-SC)	121	-
Fly Yard	112	-
Pad - 500-kV	245	10
Pulling-Tensioning - 500-kV (1-SC)	17	-
Regeneration Site	-	-
Staging Area	40	-
Subtotal - Segment 8	**693**	**63**
Segment 9		

Table 2-2. Summary of Transmission Line Land Disturbance Resulting from Construction and Operations (1)(2)

Segment/Project Component	Land Affected During Construction (acres)	Land Affected During Operations (acres)
Access - Existing Road, Improved	195	60
Access - New Road	76	32
Deadend Pulling - 138-kV (1-SC)	21	
Deadend Pulling - 500/138-kV (1-DC)	96	-
Deadend Pulling - 500-kV (1-SC)	163	-
Fly Yard	212	-
Pad - 138-kV	1	0.2
Pad - 138-kV (Removal)	49	-
Pad - 500/138-kV (1-DC)	255	10
Pad - 500-kV	268	11
Pulling-Tensioning - 138-kV (1-SC)	1	-
Pulling-Tensioning - 500/138-kV (1-DC)	14	-
Pulling-Tensioning - 500kV (1-SC)	15	-
Regeneration Site (3)	1	0.5
Staging Area	60	-
Subtotal - Segment 9	**1428**	**114**
Total	**2121**	**177**

1/ The exact land requirements would depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, and economics. Alignment options may also slightly increase or decrease these values.
2/ Acreages in table are rounded to the nearest acre; columns therefore may not sum exactly.
3/ Values are given in 0.5-acre increments because regeneration sites are typically 0.5 acre each.

Assumptions/Notes:

1. ROW width for the 500-kV single circuit and 500/138-kV double circuit segments are 250 feet.
2. The staging areas would serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, fabrication assembly and stations for equipment maintenance, and concrete batch plants.
3. Staging/material storage yards/batch plants would be approximately 20 acres for single-circuit 500-kVand double-circuit 500/138-kV lines. They would be located at each end of a segment, and every 20 to 30 miles along the line.
4. Fly yards would be 10 to 15 acres located approximately every 5 miles. Values in table assume helicopter construction for all single-circuit 500-kV and double-circuit 500/138-kV construction. The construction contractor may choose to construct using ground-based techniques, therefore not utilizing fly yards.
5. For 500 kV, wiring pulling/splicing sites would be the ROW width x 600 feet located approximately every 3 miles; for 138-kV, ROW width x 400 feet located every 9,300 feet. Typically, only sites that would be off of the ROW would be at large angle dead-ends. It is estimated that one in four sites would be off of the ROW.

Table 2-3. Summary of Transmission Line Land Disturbance Resulting from Construction and Operations

Segment	Transmission Line Length (miles)	Structure Type	Typical Height (feet)	No. of Structures	Average Distance Between (feet)	Temporary Disturbance Area per structure (sq. feet.)	Permanent Disturbance Area per structure (sq. feet.)
8, 9	54.6	500-kV Single-Circuit Lattice Tower	145–180	358	1,200–1,300	ROW Width 250 feet x 250 feet = 1.42 acres	ROW Width 50 feet x 50 feet = 0.06 acre
9	0.5	500/138-kV Double-Circuit Lattice Tower	145–180	178	900-1,200	ROW Width 250 feet x 250 feet = 1.43 acres	ROW Width 50 feet x 50 feet = 0.06 acre

3.0 REFERENCES

IPC and RMP (Idaho Power Company and Rocky Mountain Power). 2013. Gateway West Transmission Line Project Plan of Development. August.

Appendix B-2

Proponents' Helicopter-Assisted Construction Assessment

Response to April 12, 2016, BLM Data Request

Use of Helicopter-Assisted Construction along Portions of Segments 8 and 9 of the Gateway West Transmission Line Project

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June 2016

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ACRONYMS AND ABBREVIATIONS

BLM	U.S. Department of the Interior, Bureau of Land Management
Companies	PacifiCorp, dba Rocky Mountain Power, and Idaho Power Company (Idaho Power)
FAA	Federal Aviation Administration
Gateway West	Gateway West Transmission Line Project
IPC	Idaho Power Company
kV	kilovolt
OPGW	fiber optic shield ground wire
POD	Plan of Development
Project	Gateway West Transmission Line Project
ROD	Record of Decision
RMP	Rocky Mountain Power
ROW	right-of-way
UTV	utility task vehicle

1.0 INTRODUCTION

On April 12, 2016, PacifiCorp, doing business as Rocky Mountain Power (RMP), and Idaho Power Company (IPC), collectively referred to as the Companies, were requested by the U.S. Department of the Interior, Bureau of Land Management (BLM) to describe helicopter-assisted construction techniques and provide supporting data associated with the portions of Routes 9K and 8G for the Gateway West Transmission Line Project (Project or Gateway West). The purpose of this response is provide specifics of how the Companies would implement helicopter-assisted construction, if mandated and only as an option if no other construction methodology could be employed, for the 33.8 miles of Routes 9K from the Hemingway Substation back to milepost 141 and 34.8 miles of 8G back to milepost 112. The beginning location is approximately 2 miles south of State Highway 78 and 5 miles southeast of Oreana (see Figure 1-1). This response incorporates by reference relevant details found in the August 2013 Plan of Development (POD) (IPC and RMP 2013), issued to support the Project Record of Decision (ROD) for the Project (it will be referred to hereafter as the ROD POD). These routes are part of alternatives identified by BLM and differ from the revised Proposed Routes as described in the August 2014 POD Supplement (IPC and RMP 2014). This response in no way suggests a preference for Routes 9K and 8G by the Companies.

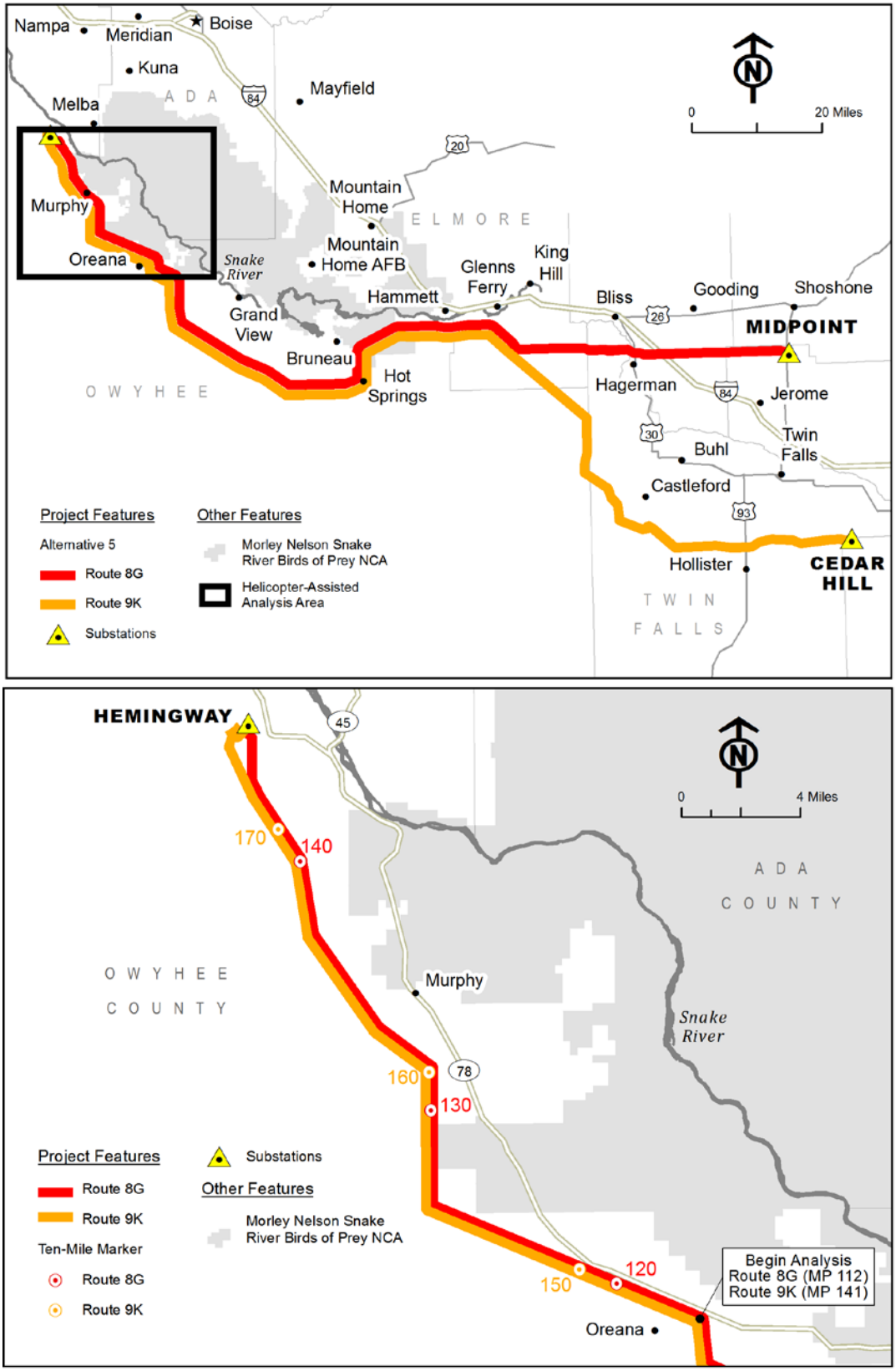

Figure 1-1. Routes 9K and 8G Vicinity and Location Maps

2.0 HELICOPTER CONSTRUCTION SCENARIOS

An important aspect in describing helicopter-assisted construction is defining the extent to which motorized vehicles would be involved given the location of the area being evaluated. The following describes two scenarios for helicopter construction and the rationale for selecting the helicopter-assisted approach described in Section 2.2.

2.1 Helicopter Support to Conventional Construction

The ROD POD, Appendix B, Section 3 describes in detail the activities associated with conventional construction including right-of-way (ROW) preparation/clearing, access roads, site preparation, foundation construction, structure erection, wire stringing, and cleanup and site reclamation.

As described in Sections 3.4 and 3.7 of the ROD POD, Appendix B, Project construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire stringing operations. Helicopters may also be used to support the administration and management of the Project by the Companies. The use of helicopter construction methods to support the conventional construction scenario will not change the length of the access road system required for operating the Project because vehicle access is required to each tower site regardless of the construction method employed. Helicopter operators performing this type of work for electric transmission construction must comply with applicable Federal Aviation Regulations Safety Requirements and Policies of the Federal Aviation Administration (FAA). The FAA has jurisdiction. Specific permits have not historically been required.

2.1.1 Tower Erection

Use of a helicopter for structure erection may be driven by various factors, including access to the structure locations, construction schedule, and/or construction economics.

When helicopter construction methods are employed, helicopter construction activities are based at a fly yard. The fly yards will be sited at locations to permit a maximum fly time of 4 to 8 minutes to reach structure locations, typically at about 5-mile intervals. Fly yards are used for material storage and erection of structure sections prior to transport to the final structure locations for installation. Additionally, fueling trucks, maintenance trucks, and operations crews are based in the fly yards. Appropriate dust control measures will be implemented at these fly yard locations as well as the locations where helicopters are used along the route.

Prior to installation, each tower structure is assembled in multiple sections at the fly yard. Tower sections or components are assembled by weight based on the lifting capacity of the helicopter in use. The lift capacity of helicopters is dependent on the elevation of the fly yard, the tower site, and the intervening terrain. The heavy lift helicopters that could be used to erect the single-circuit 500-kilovolt (kV) tower sections are rated to lift a maximum of 15,000 to 20,000 pounds per flight. Their capacity is reduced by several factors including elevation, ambient temperature and trip efficiency.

For Gateway West Segments 8G and 9K, a heavy lift helicopter should be capable of lifting maximum loads from 9,000 to 12,000 pounds per flight.

After assembly at the fly yard, the tower sections are attached by cables from the helicopter crane to the top four corners of the structure section and airlifted to the structure location. Upon arrival at the structure location, the section is placed directly on to the foundation or atop the previous structure section. Guide brackets attached on top of each section will assist in aligning the stacked sections. Once aligned correctly, line crews climb the structures to bolt the sections together permanently.

The first step to wire stringing is to install insulators (if not already installed on the structures during ground assembly) and stringing sheaves. Stringing sheaves are pulleys that are temporarily attached to the lower portion of the insulators at each transmission line support structure to allow conductors to be pulled along the line.

2.1.2 Stringing

Once the stringing sheaves and temporary clearance structures are in place, the initial stringing operation commences with the pulling of a lighter weight sock line through the sheaves along the same path the transmission line follows (ROD POD, Section 3.4.8). Typically, the sock line is pulled in via helicopter. The sock line is attached to the hard line, which follows the sock line as it is pulled through the sheaves. The hard line is then attached to the conductor, shield wire, or fiber optic shield ground wire (OPGW) to pull them through the sheaves into their final location. Pulling the lines may be accomplished by attaching them to a specialized wire-stringing vehicle. Following the initial stringing operation, pulling and tensioning the line is required to achieve the correct sagging of the transmission lines between support structures. Equipment at sites required for pulling and tensioning activities includes tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment. To the extent practicable, pulling and tensioning sites are located within the ROW. Depending on topography, minor grading may be required at some sites to create level pads for equipment.

2.1.3 Anticipated Helicopter Support to Conventional Construction in Routes 8G and 9K

Based on the location, terrain, tower designs/weights, and accessibility of Routes 8G and 9K, the Companies estimate that the use of helicopters in the conventional construction scenario would be limited to stringing operations to pull in the lighter weight sock line as previously described. All other construction activities are anticipated to utilize conventional techniques with ground based equipment as described in the ROD POD. The construction contractor, however, has the flexibility to employ helicopters to support construction based on several factors, including accessibility to the structure locations, construction schedule, and/or construction economics. As stated previously, use of helicopter construction methods in the conventional construction scenario will not change the length of the access road system required for operating the Project.

2.2 Helicopter-Assisted Construction

BLM requested that a scenario be developed in which the proposed construction and operation for the Project be done strictly by helicopters with absolutely minimized ground support techniques used, which would also include full reclamation of all access roads and temporary work sites in the subject area. Construction of Routes 8G and 9K using helicopter-only construction, while feasible, is exorbitantly expensive ($2M to $5M per mile more, depending on the foundation type used, helicopter efficiency and terrain). Helicopter-assisted construction, as described herein, is intended to meet BLM's objective of fully reclaiming all access roads and temporary worksites, minimizing permanent disturbance, while controlling the cost increase associated with construction using helicopters.

The primary differences between helicopter-assisted construction and conventional construction as described in Section 2.1 are as follows:

- The Companies agree to eliminate the long-term disturbance associated with construction of new roads to support ongoing operations and maintenance.
- Temporary roads will be built to support construction.
- All disturbance associated with these roads will be reclaimed at a level sufficient to meet underlying land management objectives.
- Where temporary road construction will result in disturbance that will not likely be sufficiently reclaimed, medium and heavy lift helicopters may be used to eliminate the need for robust access needed for large material and concrete delivery trucks as well as long boom heavy lift cranes.

Helicopter-assisted construction is a hybrid approach between conventional and helicopter-only techniques intended to reduce ground disturbance. This scenario utilizes low-impact vehicles and ground equipment to support the construction of foundations and tower erection.

Foundations are constructed using equipment specifically selected to minimize ground disturbance to the extent practicable. Some lattice tower erection may be completed within the limitations of the lower impact construction equipment. All other construction is supported by helicopters with sufficient lift capacity for the intended operation.

Helicopter-assisted construction can minimize vegetation clearing during construction because the disturbance is generally lessened with low-impact construction vehicles utilizing overland access. However, vegetation clearing required to support safe operation of the transmission line is not changed.

2.2.1 Construction Access Roads

Where existing roads are available to access the ROW, work areas, and/or the structure sites, they will be treated as "Existing Roads Requiring Improvement" as described in the ROD POD, Appendix B, Section 2.5. Differences in access road requirements between conventional and helicopter-assisted construction are discussed further as follows.

Where tower sites are not adjacent to existing roads, access for ground-based equipment to each tower site for foundation and tower erection would be achieved by overland travel and temporary access roads. As described in the ROD POD, Appendix B, Section 2.5.1, overland travel means following a staked road alignment, either cutting the vegetation and leaving the root crowns and then driving over it (clear-and-cut) or just driving over the vegetation if it is low enough (drive-and-crush). In either case, a blade may be used if needed to remove obstructions in limited places. Overland travel and temporary access road disturbances will be fully reclaimed in the helicopter-assisted construction scenario.

Overland travel will support low-impact vehicles, which may include, but are not limited to, conventional track-mounted construction vehicles such as drill rigs, track hoes, rubber-tired backhoes, and cranes. Wheeled equipment using oversized, low-pressure tires may be used to minimize impact/rutting by spreading the vehicle weight over a large surface area. Where overland travel cannot support the vehicles and equipment required, temporary access roads will be constructed to each structure site.

Access to fly yards and wire pulling/tensioning sites would require robust construction access roads development due to the equipment utilized. Fly yards will generally be sited adjacent to existing roads where practical to minimize any road construction; otherwise, temporary access roads will be constructed. Pulling/tensioning sites will require temporary access roads during construction to support the stringing equipment.

All temporary access roads and overland access will be reclaimed as described in the approved environmental plan with the mitigation measures prescribed for the given access type and condition.

2.2.2 Foundation Construction

Foundation construction will utilize the conventional ground-based approach where foundations are adjacent to existing roads or sites are accessible by temporary access roads capable of supporting the required construction equipment. Where overland travel or a temporary road to the foundation site is incapable of supporting the required equipment, helicopter-assisted construction techniques will be utilized as described below.

Excavation for drilled shaft concrete piers will be performed using a low-impact drill rig that has sufficient crowd and torque to complete the work. If the disturbance is deemed to be too great for the described drill rig, hand digging of the excavations may be considered. (see Appendix B, Figures B-1 and B-2) If it is determined that drilled shaft concrete pier foundation construction will result in excessive disturbance, alternative foundation types, such as micro-piles or rock anchors, may be considered.

Steel reinforcement cages for foundations will be tied at the site or delivered using a medium lift helicopter. Reinforcement may be set within the foundation excavation by low-impact vehicle or helicopter.

Ready-mix concrete will be dispatched from fixed concrete batch plants, or portable concrete batch plants may be utilized at multi-purpose areas/fly yards to mix concrete prior to dispatch to the foundation construction site. Concrete will be delivered to the

foundation construction site utilizing methods selected to produce the least disturbance considering the level of access available to the site. Delivery methods, listed from most potential for disturbance to least, may include but are not limited to the following:

- Conventional highway-capable concrete truck. Concrete is tailgated into excavation.
- Conventional highway-capable concrete delivery truck transports concrete to a location sufficiently close to the construction site, where a concrete pumping truck pumps the fresh concrete to the delivery location.
- Concrete will be delivered to the multi-purpose area/helicopter fly yard nearest the structure site by conventional highway-capable concrete delivery truck. A 1 or 2 cubic yard bucket transported by medium-lift helicopter delivers concrete to the construction site. (see Figures B-3 and B-4) Multiple helicopters may be utilized for concrete delivery.

2.2.3 Tower Erection

Tower erection will utilize conventional ground based approach where towers are adjacent to existing roads or accessible by a temporary road that supports the needed construction equipment. Where overland travel or a temporary road to structure sites is incapable of supporting the required equipment, helicopter-assisted construction techniques will be utilized as described below.

Structure erection may utilize low-impact vehicles when appropriate. It is expected these low-impact vehicles will have height limitations predicating the use of helicopters to assist structure completion. Low-impact vehicles may be used to erect lattice towers to top of the structure waist. Heavy or medium lift helicopters would then lift the remaining assemblies to complete the structure. (see Figures B-5 and B-6) Where low-impact vehicles cannot be utilized to support the structure erection, assemblies will be temporarily guyed until the structure is self-supporting.

The use of helicopters for tower erection is described in more detail in Section 2.1.1.

2.2.4 Stringing

The use of helicopters for wire stringing is described in Section 2.1.2. In the helicopter-assisted construction scenario, the sock lines will be installed using a small helicopter. (see Figures B-7 through B-9) The sock line facilitates pulling the heavier conductor through the blocks between pulling and tensioning sites. In areas not accessed by temporary roads, crews that have hiked, been transported by all-terrain vehicle (ATV) or utility task vehicle (UTV), or flown in by helicopter will be used to clip and dead-end the conductor section.

3.0 HELICOPTER-ASSISTED CONSTRUCTION DETAILS

3.1 Construction Layout

Appendix A provides mapping for an indicative construction layout for Routes 9K and 8G utilizing helicopter-assisted construction techniques. The indicative layout is a desktop engineering exercise to preliminarily locate multi-purpose yards, fly yards,

access roads, structures, and pulling/tensioning sites. Helicopter equipment used to support construction is described in the ROD POD, Appendix B, Section 3.7.2. Final engineering using survey-grade topographic data and further field reconnaissance will result in changes to the construction layout. The main difference between the conventional and helicopter-assisted construction layouts pertains to the access road system. In the helicopter-assisted construction scenario, there will be no new permanent roads constructed. Existing roads (with and without improvements) will be utilized to the extent practical. All new roads that will be used for construction and operation in the conventional scenario will be temporary in the helicopter-assisted scenario and fully reclaimed. All other work areas, including fly yards, will remain unchanged in location, size, disturbance, and reclamation methods. Table 3-1 shows the dimensions and acres that would be affected during construction and operations for each component of the indicative layout. For existing roads needing improvement, reclamation would be limited to the additional disturbance beyond the existing road width.

Table 3-1. Dimensions and Acres of Project Components

Route 9K/8G Project Component	Conventional Construction Buffers		Helicopter-Assisted Buffers	
	Const.	**Opns.**	**Const.**	**Opns.**
Access - Existing Road, Improved (width)	26.2 feet	8 feet	26.2 feet	8 feet [1/]
Access New and Temporary Road (width)	26.2 feet	8 feet	26.2 feet	0 (reclaimed)
Dead-end Pulling - 500-kV (1-SC)	6.89 acres	0 (reclaimed)	6.89 acres	0 (reclaimed)
Fly Yard	12.5 acres	0 (reclaimed)	12.5 acres	0 (reclaimed)
Pad - 500-kV	1.43 acres	0.057 acre	1.43 acres	0.057 acre
Pulling-Tensioning - 500-kV (1-SC)	4.00 acres	0 (reclaimed)	4.00 acres	0 (reclaimed)
Multipurpose Area	20 acres	0 (reclaimed)	20 acres	0 (reclaimed)

1/ BLM may determine that some existing roads should be abandoned. Under that condition, the Companies would reclaim the whole disturbed roadway width.

The construction layout in Appendix A assumes both routes will ultimately be constructed. To minimize disturbance, the access road system utilizes a common shared road for access along both routes with spur roads as needed to structures of each route.

It is anticipated that Segment 9 would be constructed first. Segment 8 would follow at about the same time or years later depending on economic conditions. For the disturbance estimates shown in Table 3-3, one construction event followed immediately by reclamation will occur. No allowance has been made for a second construction or reclamation event if Segment 8 is constructed several years later.

3.2 Helicopter Construction Operations

Helicopters will operate from multipurpose areas (Appendix A, Page 7 of 9) and fly yards. Helicopters will fly from these areas to each structure site with multiple trips transporting workers, materials, and equipment. Multiple helicopters and helicopter types will be utilized based on construction activities and production rates required. The flight paths will intersect "important" sage-grouse management areas for travel to a

majority of tower sites in the last approximately 22 miles for Routes 8G and 9K, but should avoid “priority” sage-grouse management areas.

With helicopter-assisted construction, flight times depend on several factors including accessibility, type of low impact vehicles employed by construction contractor, helicopters available and employed by construction contractor, location of fly yards relative to structures, foundation design/type employed, amount of concrete required for foundations, and weight of structures.

Foundations – Initial helicopter activities for drilled pier foundation construction requires four to six trips between the fly yard and structure site to deliver concrete forms and four rebar cages, one set for each drilled pier foundation, as well as another four trips to haul out the concrete forms after concrete has hardened. Drilled pier foundations supporting 500-kV single-circuit lattice steel structures typically require 41 to 93 cubic yards of concrete (ROD POD, Appendix B, Table 2.1-2) depending on structure type and underlying soil conditions. The predominant structure type is a tangent lattice tower that typically requires an estimated 41 cubic yard of concrete; a smaller percentage of dead-end towers require much more concrete volume. Where concrete must be delivered with a medium lift helicopter with a 1-2 cubic yard bucket, it would require approximately 40 to 80 trips (10 to 20 trips for each of four foundations) between the fly yard and the structure site. As noted previously, multiple helicopters may be required to complete a concrete pour before concrete sets/hardens. Drilled pier foundations would typically take 2 to 4 days to install with helicopter erection.

Tower Erection – Using a combination of medium and heavy lift helicopters requires six to eight trips from the fly yard to the structure site for the predominant tangent lattice tower type. Medium lift helicopters are typically used to set the legs and base of the tower while the heavy lift helicopters will set the main body and upper portions of the tower. Heavier lattice dead-end towers are anticipated to require up to 12 trips to erect. Typically, it is estimated that 4 or 5 towers per day can be erected with continuous helicopter operation. This estimate accounts for the number of lifts, the time needed for ground crews between lifts, helicopter refueling and other items that will impact productivity.

Wire Stringing – During wire stringing, sock line pulling would require an estimated 15 to 30 days of continuous flight along the ROW with landings at the fly yards as needed for fueling, maintenance, breaks, etc.

Workers – While helicopters are in operation during construction, it is anticipated that the construction contractor will utilize light and medium duty helicopters to ferry workers from fly yards to structure sites and from structure site to structure site. This could require 10 to 20 additional trips per day.

It is estimated that a vast majority of structure locations can be accessed with temporary access roads that can be successfully reclaimed, thereby supporting conventional construction techniques. It is estimated that less than 5 percent of the structure locations will utilize helicopter-assisted construction techniques. In summary, based on the helicopter operations described above, up to 800 trips are estimated between fly

yards and structure sites in the last 34 miles for either Route 8G and 9K (up to 1,600 trips total).

Construction of the approximately 34 miles for either segment is anticipated to take 10 to 12 months total, of which it is estimated 2 to 3 months will require helicopter operations.

The total workforce for helicopter-assisted construction would increase approximately 10 to 15 percent compared to conventional construction due to the additional workers required to support helicopter operations. It is anticipated that the percentage of local workers for the additional work force would be the same in both construction scenarios.

3.3 Reclamation

As described in Section 2.2.1, where tower sites are not adjacent to existing roads, access for ground-based equipment to each tower site for foundation and tower erection would be achieved by overland travel with minimal grading and temporary access roads.

Fly yards and wire pulling/tensioning sites will require robust construction access roads due to the equipment utilized. Fly yards will generally be sited adjacent to existing roads where practical to minimize any road construction; otherwise, temporary access roads will be constructed. Pulling/tensioning sites will require temporary access roads during construction to support the stringing equipment.

Prior to construction and as part of developing the construction POD, the Companies will consult with BLM representatives on the full reclamation goals, methods, and monitoring/success requirements for temporary roads, dead-end pulling and pulling/tensioning sites, multipurpose yards, and fly yards that will be disturbed. Based on site-specific conditions, a full reclamation plan will be prepared prescribing reclamation by milepost for BLM review and approval. The final plan will become a specification of the construction contract.

3.4 Operations

The ROD POD, Appendix B, Section 4.0 describes operations and maintenance for the conventional construction scenario for the Project. This section below describes the differences during operation and maintenance of the line under the helicopter-assisted construction scenario.

Inspection of the entire transmission line system is conducted semi-annually. Aerial inspection is conducted by helicopter semi-annually and requires two or three crew members, including the pilot.

In the conventional construction scenario, detailed ground inspections using four-wheel-drive trucks or ATVs take place annually using access roads to each structure. In the helicopter-assisted construction scenario, a majority of structure sites will not have access roads for ground-based inspections. Structure sites that do not have access roads during operation will require pedestrian inspections. ATV/UTV overland access would be utilized for inspections where available and coordinated with the agency prior to use.

When maintenance activities are required, structures will be accessed in the same fashion as during initial construction of the line using helicopter-assisted construction methods. Temporary roads will be built and/or overland travel utilized to access the structure along the same access path used during initial construction. Helicopters will be used to support maintenance activities as needed.

Elimination of permanent access roads to each structure site that would typically support high reach bucket trucks and other equipment will limit the Companies' ability to utilize live-line maintenance techniques. This may result in extended line outages depending on maintenance required.

Vegetation clearing required to support safe operation of the transmission line, as described in the ROD POD, Appendix B, Section 4.1.5, will not change.

3.5 Disturbance Calculations

For Routes 8G and 9K, the Companies have agreed to minimize construction disturbance and eliminate the long-term disturbance associated with new permanent access roads for operations and maintenance. For Routes 8G and 9K, all construction ground access will be considered temporary. Existing roads requiring improvement will be returned to preconstruction widths. Emergency ground access may be required to facilitate reclamation.

During Project operation, the Companies would conduct annual inspections for portions of the line without ground access utilizing specialized aerial and pedestrian patrols. Emergency repair and maintenance activities are expected to be infrequent. When access is required, it will be constructed along the same routes used during construction. In those cases, the Companies will complete the repairs and coordinate with BLM on reclamation requirements.

Table 3-2 summarizes the four types of roads needed for accessing the transmission line structures for the Project.

Table 3-2. Typical Road Requirements on Routes 8G and 9K

	Conventional Construction		**Helicopter Construction with Reclaimed Ground Disturbance**	
Road Type	**Access Roads for Construction**	**Access Roads for Routine Operations**	**Access Roads for Construction**	**Access Roads for Routine Operations**
Existing roads requiring no improvement	No change	No change	No change	No change
Existing roads requiring improvement	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	For routine activities, an 8-foot portion of the road will be used and vehicles will drive over the vegetation (“two-track”).	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	For routine activities, an 8-foot portion of the road will be used and vehicles will drive over the vegetation (“two-track”).
New roads	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	For routine activities, an 8-foot portion of the road will be used and vehicles will drive over the vegetation (“two-	None	None.

		track”).		
Temporary roads	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	None—contours will be restored, and the road will be ripped and seeded.	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	None—contours will be restored, and the road will be ripped and seeded.

Table 3-3 provides a summary of construction and operations disturbance for the conventional and helicopter-assisted construction scenarios.

Table 3-3. Comparison of Helicopter versus No Helicopter Transmission Line Land Disturbance Following Routes 9K and 8G

Route 9K/8G Project Component	Conventional Construction (acres)[1/]		Helicopter-Assisted Construction (acres)[2/]	
	Const.	**Opns.**	**Const.**	**Opns.**
Access - Existing Road, Improved	166.3	52.5 [3/]	166.3	52.5 [3/,4/]
Access New Road	73.8	31.5	73.8	–
Dead-end Pulling - 500-kV (1-SC)	165.1	–	165.1	–
Fly Yard	62.4	–	62.4	–
Pad - 500-kV	420.6	16.7	420.6	16.7
Pulling-Tensioning - 500-kV (1-SC)	74.0	–	74.0	–
Regeneration Site	–	–	–	–
Multipurpose Area	20.0	–	20.0	–
Total	**982.2**	**100.7**	**982.2**	**69.2**

1/ See Section 2.1
2/ See Section 2.2
3/ Consistent with the NEPA analysis, the existing road would likely be improved over its previous existing condition and therefore still represents operational disturbance.
4/ Makes the same assumption as Note 3. BLM may determine that some existing roads should be abandoned. Under that condition, the Companies would reclaim the whole disturbed roadway width.

4.0 LITERATURE CITED

IPC and RMP (Idaho Power Company and Rocky Mountain Power). 2013. Gateway West Transmission Line Project Plan of Development. August.

IPC and RMP. 2014. Gateway West Transmission Line Plan of Development Supplement. August.

APPENDIX A
Indicative Layout Map Book

APPENDIX B
Graphic Examples of Helicopter-Assisted Construction

Figure B-1 Hand Digging

Figure B-2 Completed Hand Dig

Figure B-3 Concrete Flight

Figure B-4 Concrete Landing

Figure B-5 Body Lift

Figure B-6 Bridge Lift

Figure B-7 Pulling Sock

FigureB-8 Needle

Figure B-9 Threading the Needle