ATTACHMENT B-1
2010 SITING STUDY

Siting Study

August 2010

Boardman to Hemingway

Transmission Line Project

Prepared By:

IDAHO POWER®
An IDACORP Company

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1221 West Idaho Street
Boise, ID 83702

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Table of Contents

List of Appendices

List of Tables

List of Figures

Acronyms and Abbreviations

ACEC	area of critical environmental concern
ACSR	aluminum conductor steel reinforced
ANSI	American National Standards Institute
B2H Project	Boardman to Hemingway Transmission Line Project
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CAP	Community Advisory Process
EFSC	Energy Facility Siting Council
EFU	Exclusive Farm Use
GIS	geographic information system
I-84	Interstate 84
Idaho Power	Idaho Power Company
IDFG	Idaho Department of Fish and Game
IPUC	Idaho Public Utilities Commission
IRP	Integrated Resource Plan
kV	kilovolt
MP	milepost
MW	megawatt
NAD83	North American Datum of 1983
NEPA	National Environmental Policy Act
NFD	National Forest Development
NRCS	Natural Resources Conservation Service
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ONDA	Oregon Natural Desert Association
OPGW	optical ground wire
OPUC	Oregon Public Utilities Commission
PAT	Project Advisory Team
PGE	Portland General Electric
Project	Boardman to Hemingway Transmission Line Project
ROW	right-of-way
TNC	The Nature Conservancy
USFS	U.S. Department of Agriculture Forest Service
UTM	Universal Transverse Mercator

WECC	Western Electricity Coordinating Council
WSA	wilderness study area

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1 INTRODUCTION

1.1 Background and Objectives

This document presents the results of the transmission line siting conducted by Idaho Power Company for the proposed Boardman to Hemingway Transmission Line Project (B2H Project or Project). Idaho Power partnered with communities from northeast Oregon to southwest Idaho to create a Community Advisory Process (CAP) that was responsible for identifying proposed and alternative routes for the B2H Project. The overall objectives for siting the Project were to address community concerns while balancing regulatory requirements, construction difficulty, and overall costs. Data and methods used to analyze the 49 routes and/or route segments that were developed through the CAP and the results of the analysis are described in this document.

1.2 Project Overview

Idaho Power is proposing to construct, operate, and maintain a new, approximately 300-mile-long, single-circuit electric transmission line between northeast Oregon and southwest Idaho known as the Boardman to Hemingway Transmission Line Project. The overhead, 500 kilovolt (kV) transmission line will carry energy bi-directionally between a Portland General Electric (PGE) planned switching yard (Grassland Substation) adjacent to the Boardman Generating Plant, near the city of Boardman in Morrow County, Oregon, and the existing Idaho Power Hemingway Substation, located in Owyhee County, Idaho. The proposed transmission line will connect with other transmission lines at these substations to convey electricity on a regional scale and serve native loads. Federal, state, and private lands in five counties in Oregon and one in Idaho will be utilized to construct the proposed transmission line. Table 1.2-1 describes land ownership by county and major land managing agency and private owners.

Table 1.2-1. Route Mileage Summary by Land Manager/Owner

Segment	County	Miles	National Forest System		Bureau of Reclamation		BLM Public Lands		Department of Defense		State and Municipal		Private	
			Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
1	Morrow	36.2							8.1	22.4			28.1	77.6
2	Umatilla	60.9											60.9	100
3	Union	40.2	6.3	15.7			0.7	1.7			0.1	0.2	33.1	82.3
4	Baker	68.2					16.0	23.5			3.0	4.4	49.2	72.1
5	Malheur	70.7			0.5	0.7	46.8	66.2					23.4	33.1
6	Owyhee	23.5					17.3	73.6			3.5	14.9	2.7	11.5
Totals		**299.7**	**6.3**	2.1	**0.5**	0.2	**80.8**	27.0	**8.1**	2.7	**6.6**	2.2	**197.4**	65.9

The B2H Project is proposed for the following reasons:

1. To allow Idaho Power to meet its obligations to serve its retail customers located in the states of Idaho and Oregon.

2. To comply with the requirements of the Federal Energy Regulatory Commission that Idaho Power construct adequate transmission infrastructure to provide service to wholesale customers in accordance with Idaho Power's Open Access Transmission Tariff (2008).
3. To provide a cost effective resource which serves as a critical component of the Company's preferred resource portfolio presented in the 2009 Integrated Resource Plan (IRP) prepared by Idaho Power (2009) and submitted in December 2009 for acknowledgement to both the Idaho Public Utilities Commission (IPUC) and the Oregon Public Utility Commission (OPUC).
4. To allow Idaho Power to maintain reliable electric service pursuant to the standards set forth by the North American Electric Reliability Corporation and implemented by the Western Electricity Coordinating Council (WECC).
5. To relieve congestion of the existing transmission system and enhance the reliable, efficient and cost-effective energy transfer capability between the Pacific Northwest and Intermountain regions.

In short, the B2H Project will relieve existing congestion, alleviate reliability constraints, and provide additional capacity for the delivery of up to 250 megawatts (MW) of needed energy to Idaho Power's Boise service area by mid-2015 and an additional 175 MW by 2017.

The B2H Project is neither required to support any particular new generation project nor is it justified by any particular existing generation project. Rather, the B2H Project would serve as a crucial high-capacity connection between two key points in the existing bulk electric system. The bulk electric system can be thought of as a network of "hubs" and "spokes" in which substations serve as central "hubs" that send and receive electricity along distribution lines or "spokes." For this system to work reliably, there must be a network of high-capacity transmission lines connecting major "hubs." These high-capacity transmission lines are often the only way to transport electricity from where it is generated to where it is needed to serve load. Idaho Power's proposed B2H Project would serve as a crucial high-capacity "backbone" connecting the load served by Idaho Power's Hemingway Substation to electricity available in the Boardman, Oregon, vicinity, and vice versa, depending on the time of year.

2 APPROACH TO SITING

Idaho Power established a broad study area that encompassed the two fixed points for the Project—the proposed Grassland Substation and the existing Hemingway Substation—and established five Project Advisory Teams (PATs) representing five geographic areas within the study area. The PATs developed community criteria that they used in conjunction with regulatory and Idaho Power criteria to identify, develop, and recommend proposed and alternative routes. This section provides information on the study area, opportunities and constraints, and the CAP. Additional information is also included in the Preliminary POD (Idaho Power 2010).

2.1 Study Area

The study area for the proposed Project extends from the proposed Grassland Substation near the city of Boardman in Morrow County, Oregon, to the Hemingway Substation in Owyhee County, Idaho. This area includes much of eastern Oregon (7 counties) and southwest Idaho (4 counties) as shown on Figure 2.1-1. In total, the study area comprises all or portions of 11 counties as listed in Table 2.1-1 covering approximately 31,422 square miles, of which 44.3 percent is privately owned and 55.7 percent is federally and state owned.

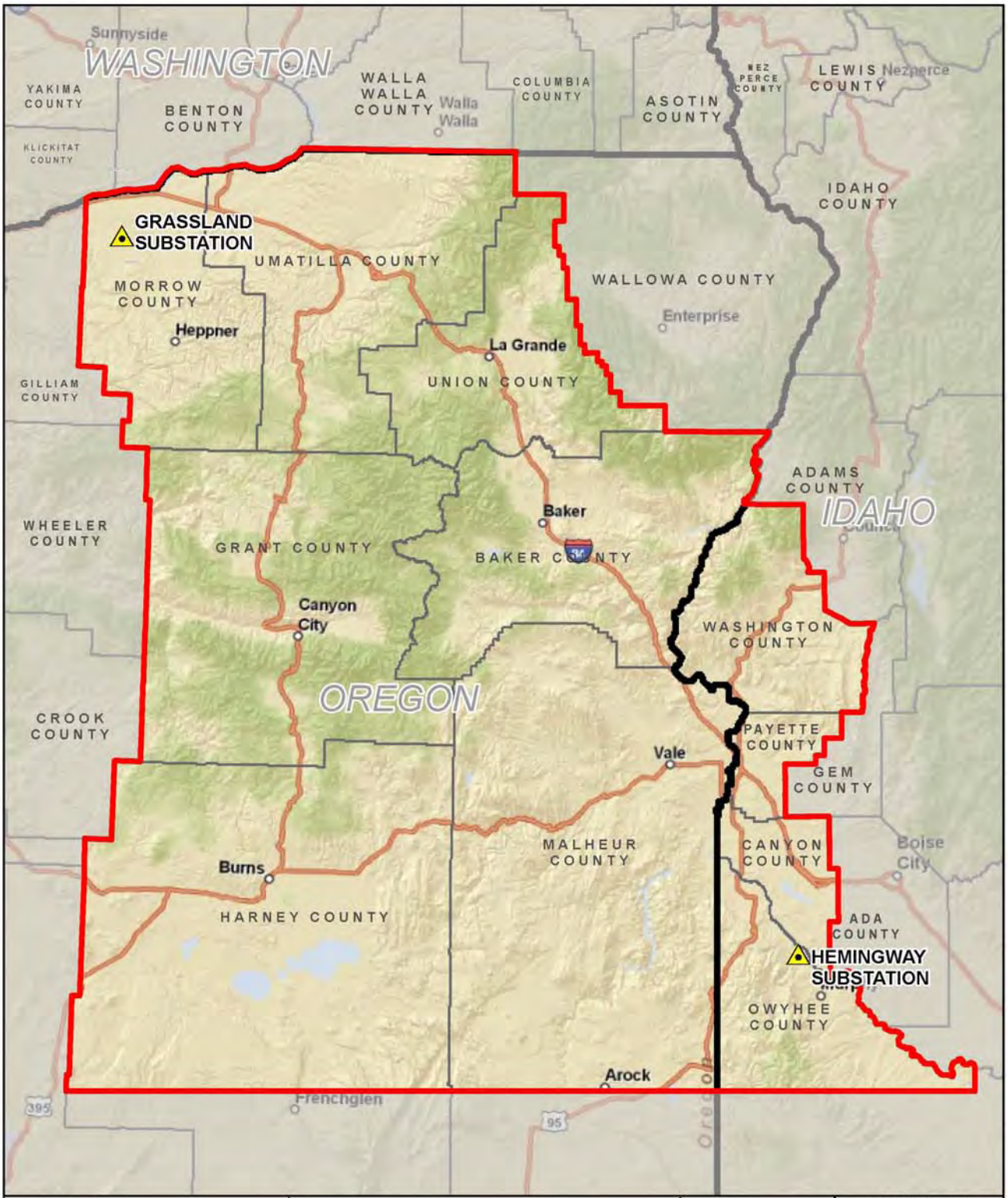
Table 2.1-1. Counties in the Study Area

Oregon Counties	Idaho Counties
Morrow County	Washington County
Umatilla County	Canyon County
Union County	Payette County
Baker County	Owyhee County (portion)
Malheur County (portion)	
Grant County	
Harney County (portion)	

Proceeding south and east the study area transitions from a large agricultural area south of the Columbia River, to the mountains in the middle of the study area, and to a large irrigated valley along the Snake River. Development is greatest in the Snake River valley, especially on the Idaho side of the river, and along Interstate 84 (I-84) around Baker City, La Grande, Pendleton, Hermiston, and Boardman. There are four national forests covering large portions of the central mountainous area, which are managed by the U.S. Department of Agriculture Forest Service (USFS) for a large number of biological, scenic, recreation and other resources. The Bureau of Land Management (BLM) manages a variety of resources and a large portion of the high desert areas in the southern part of the study area.

2.2 Constraints and Opportunities

Constraints are defined as resources or conditions that potentially limit transmission line routing because of relative sensitivity to facility construction or operation. Opportunities are defined as resources or conditions that can accommodate transmission line construction and operation because of their physical characteristics or regulatory designations. See Appendix A for a list of spatial (geographic information system [GIS]) constraints and opportunities along with data sources considered for this Project.


Sunnyside
WASHINGTON
YAKIMA COUNTY
BENTON COUNTY
KLICKITAT COUNTY
WALLA WALLA COUNTY
Walla Walla
COLUMBIA COUNTY
ASOTIN COUNTY
NEZ PERCE COUNTY
LEWIS COUNTY
Nezperce
IDAHO COUNTY
GRASSLAND SUBSTATION
UMATILLA COUNTY
MORROW COUNTY
Heppner
WALLOWA COUNTY
Enterprise
La Grande
UNION COUNTY
GILLIAM COUNTY
ADAMS COUNTY
IDAHO
WHEELER COUNTY
Baker
GRANT COUNTY
BAKER COUNTY
Canyon City
WASHINGTON COUNTY
OREGON
CROOK COUNTY
PAYETTE COUNTY
Vale
GEM COUNTY
MALHEUR COUNTY
CANYON COUNTY
Boise City
Burns
HARNEY COUNTY
ADA COUNTY
HEMINGWAY SUBSTATION
OWYHEE COUNTY
Arock
Frenchglen
395
95
FIGURE 2.1-1
STUDY AREA
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Substation
Study Area
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

2.2.1 Constraints

Geographically the study area comprises three general landscapes—agricultural areas, mountains, and high desert. Each has a unique set of constraints (see Figure 2.2.1-1) to be considered in identifying and evaluating feasible routes for development of a new transmission line.

- Agricultural Areas—There are large agricultural areas throughout the study area. Morrow and Umatilla Counties include many farms with pivot irrigation as well as vast areas of dry agriculture, urban areas like Boardman and Pendleton and smaller communities like Pilot Rock. Additionally, there are a growing number of wind farms, government-owned lands like the Boardman Bombing Range, historic resources like the Oregon National Historic Trail, and habitat for protected species like the Oregon-listed endangered Washington ground squirrel.

  In the middle portion of the study there is considerable farming, much of which is irrigated in Baker and Union Counties. Development in these two counties has occurred around Baker City, La Grande, and a number of smaller communities. Both counties also include large mountainous areas and large tracts of National Forest.

  In the southern counties, including Malheur County, Oregon, and the Idaho portion of the study area, conditions are similar with much irrigated farmland and less dry agriculture in the Snake River Valley. There is also much more development, especially in Idaho counties, and I-84 is the major transportation corridor.

  A siting constraint unique to Oregon is the protection provided to Exclusive Farm Use (EFU) zones under Oregon law regarding utility facility siting. The Energy Facility Siting Council (EFSC) will not issue the necessary site certificate for a utility project sited on EFU-zoned lands unless reasonable alternatives have been considered and found unsuitable.

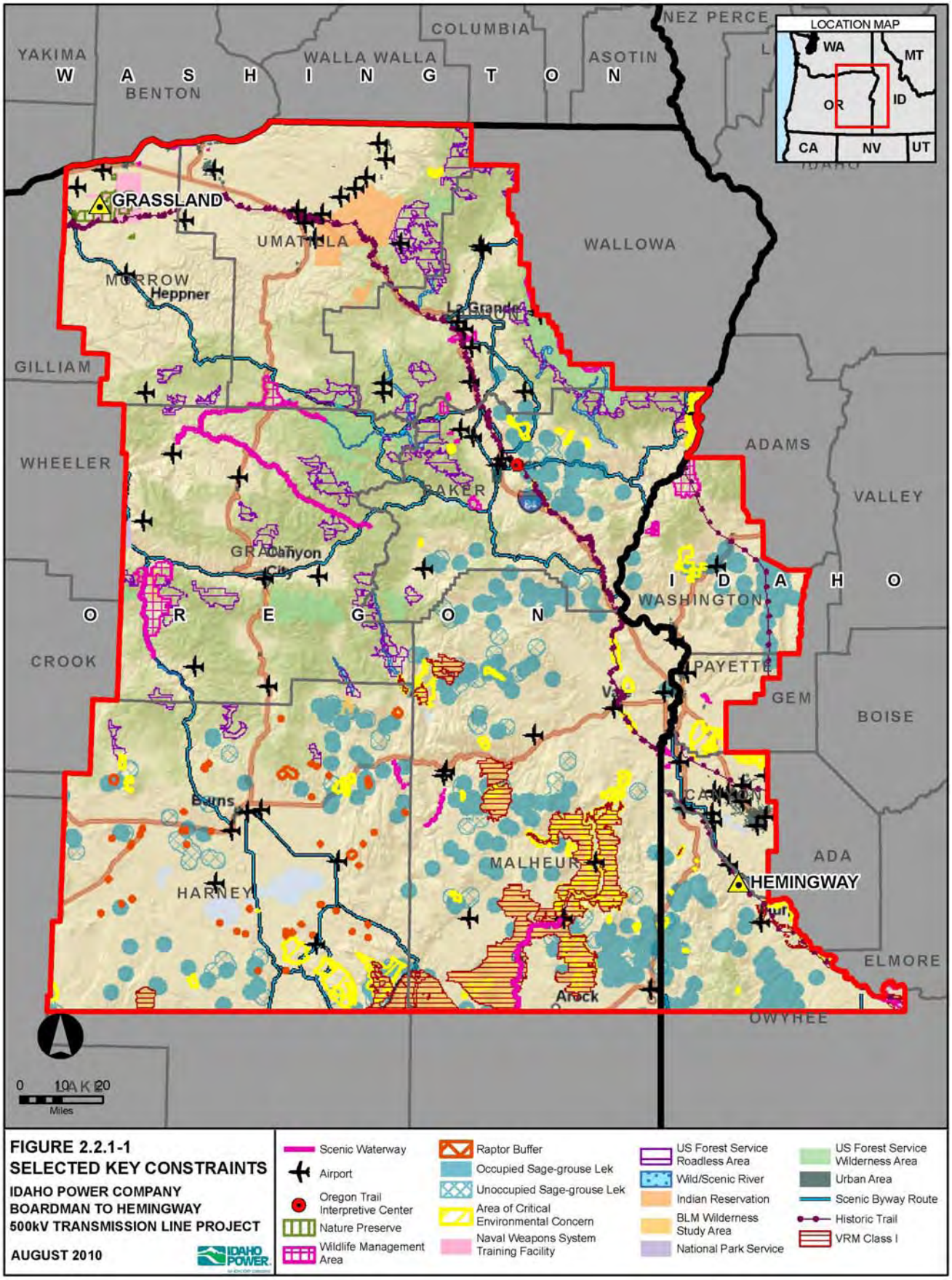
- High Desert Areas—Areas of high desert extend across much of the southern half of the study area north and west into Baker and Grant Counties. Much of the land is managed by the BLM and is designated as areas of critical environmental concern (ACECs), wilderness study areas (WSAs), and other special resource management areas. There are large areas of sage-grouse leks, associated 2-mile lek exclusion buffers, and sage-grouse habitat. There are a number of small cities and towns but overall developed areas occupy a very small percentage of the high desert region.

- Mountainous Areas—The mountainous areas such as the Blue Mountains have rugged topography with many areas of steep slopes in excess of 35 percent and other areas of unstable slopes that present design and construction challenges. National Forests including the Wallowa-Whitman, Malheur, Umatilla, and Ochoco occupy much of the forested mountainous area. Some of the most challenging resource and/or land use constraints in these areas include wilderness areas, WSAs, wild and scenic rivers, special status streams, visual resource retention and preservation lands, and inventoried roadless areas.

Constraints were considered from both an environmental and a regulatory perspective as well as from a community perspective. The CAP, discussed further in Section 2.6, allowed citizens to identify resources important to the communities, which may or may not fall under regulatory guidance. Appendix B provides the community criteria collected from the five PATs during the CAP.

2.2.2 Opportunities

In the study area, the most extensive opportunities are existing transmission lines and the utility corridors designated by the U.S. Department of Energy as West-wide Energy Corridors, the USFS, and the BLM.


LOCATION MAP
WA
MT
OR
ID
CA
NV
UT
YAKIMA
BENTON
COLUMBIA
WALLA WALLA
ASOTIN
NEZ PERCE
GRASSLAND
UMATILLA
WALLOWA
MORROW
Heppner
La Grande
GILLIAM
WHEELER
ADAMS
VALLEY
BAKER
Canyon City
OREGON
IDAHO
WASHINGTON
CROOK
PAYETTE
GEM
BOISE
Burns
CANYON
ADA
MALHEUR
HEMINGWAY
HARNEY
ELMORE
Arock
OWYHEE
0 10 20
Miles
FIGURE 2.2.1-1
SELECTED KEY CONSTRAINTS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Scenic Waterway
Airport
Oregon Trail Interpretive Center
Nature Preserve
Wildlife Management Area
Raptor Buffer
Occupied Sage-grouse Lek
Unoccupied Sage-grouse Lek
Area of Critical Environmental Concern
Naval Weapons System Training Facility
US Forest Service Roadless Area
Wild/Scenic River
Indian Reservation
BLM Wilderness Study Area
National Park Service
US Forest Service Wilderness Area
Urban Area
Scenic Byway Route
Historic Trail
VRM Class I

The PATs and Idaho Power sought to maximize the use of existing and designated corridors where practicable.

2.3 Data Sources

ArcGIS software was the main tool used in the analysis and siting of the B2H Project transmission line. GIS data were collected from a wide range of sources including federal, state, and local governments and agencies; conservation organizations; and other private organizations. In some cases, digital data were not available and the necessary GIS layers were created from existing hard copy maps and reports. Additionally, many online resource centers were used to gain unlimited access to various data sets.

Data collected for the project ranged from general geographic raster-based data, like aerial imagery and topographic maps to vector-based data including state parks, recreation sites, and special management areas. Over 75 different datasets were collected depicting various land use types within the study area. Information on biological resources, like sage-grouse habitat and elk and deer winter range data, were collected along with cultural data including the Oregon National Historic Trail and existing intact ”trailruts.” Water and wetland resource data were also compiled, as were geologic data including landslide and soil information. Datasets were gathered on visually sensitive areas as well, including scenic byways.

In addition to these sources, letters from knowledgeable landowners, stakeholder input at public meetings, and information from local agency staff members directly influenced the siting process.

2.4 GIS Database

Using ArcGIS software, a comprehensive digital spatial database was developed and used extensively in the siting process. Datasets as listed in Appendix A were compiled into a master constraint/opportunity geodatabase, which then supported subsequent analyses and map production.

Before importing the data into the master geodatabase, datasets underwent several geoprocessing steps to maximize efficiency and organization. Data were initially placed into a Source Data folder under an appropriately named subfolder based on the agency or website where the data originated or were located. Datasets were then projected to a common spatial coordinate system, North American Datum of 1983 (NAD83) Universal Transverse Mercator (UTM) Zone 11N, allowing for proper display and consistent analysis of all data going forward. Data were clipped to the study area, attributed with additional fields to be used in later analyses, dissolved and exploded as needed, and finally imported to the master geodatabase that resides outside the Source Data folder.

Not all data were incorporated into the geodatabase using the above geoprocessing steps alone. For several datasets, additional steps were required to obtain the specific resource desired for analysis and display. For example, through various geoprocessing steps, 0-15 percent, 15-25 percent, 25-35 percent and greater than 35 percent slope datasets were derived from a digital elevation model. Soils data underwent various analyses to first classify the data into irrigated soil capability classes, which then allowed for the display and analysis of prime farmlands.

Generally, the data within the master geodatabase were organized by resource type. Nine feature datasets support this organization, grouping similar resources into the following categories: cultural resources, land use features (including ownership data), zoning (state and county), linear features, geologic, biologic and visual resources, and water and wetlands resources.

The master geodatabase is continually being updated as existing data are frequently updated, new data are generated, and spatial locations change as resources vary over time across the landscape. The above detailed process is applied to each new dataset and either replaces or is added to the master geodatabase. Metadata, when available, accompany the data.

Currently over 160 datasets reside in the master constraints geodatabase allowing for display of more than 370 different resources, land uses, and geographic features within the Project study area.

2.5 Consultation

As part of the routing process Idaho Power also contacted and received input from federal and state agencies, the U.S. Navy, and The Nature Conservancy (TNC) as described below.

2.5.1 Bureau of Land Management

In gathering data on constraints and opportunities in the study area, Idaho Power representatives met with BLM staff in the Burns, Prineville, and Vale Districts. Of the three districts, Vale has been the federal lead for the B2H Project for over 2 years and is familiar with the CAP and previous routing efforts. Once the alternatives were identified, Idaho Power requested that the Vale District identify potential issues related to the routes within their management area.

The Burns and Prineville Districts were brought into the routing process in the fall of 2009. In October 2009, Idaho Power met with the Burns District at their office in Hines, Oregon. At the meeting, B2H representatives presented the Project and its current status and discussed the routes with several of the BLM staff. The Burns District also provided a number of GIS data layers with geographic information on constraints and opportunities.

A similar meeting was held with the Prineville District on October 22, 2009, in Prineville and again the Project was presented to several of the BLM staff and a discussion of various constraints and opportunities followed. Following the meeting, a GIS layer with PAT routes was sent to the Prineville District and the District sent GIS layers with additional constraint and opportunity data to Idaho Power.

2.5.2 U.S. Forest Service

The USFS has been a cooperating agency in the National Environmental Policy Act (NEPA) process for the B2H project since 2008 and has participated in a number of the Project and PAT meetings. Initially the USFS was represented by the Wallowa-Whitman National Forest, but in 2009 USFS participation expanded to include the Ochoco, Malheur, and Umatilla National Forests during the CAP. On October 23, 2009, Idaho Power met with representatives from all three National Forests to present the project, its status, and the CAP siting process. As a result of the meeting, a GIS layer of current CAP routes was sent to the USFS for their review and a list of potential concerns was sent to Idaho Power.

2.5.3 The Nature Conservancy

In October 2009, Idaho Power requested information from TNC regarding the B2H Project and in particular the Boardman Grassland Conservation Area managed by TNC for the Oregon Department of Fish and Wildlife (ODFW). On November 24, 2009, a comprehensive response was sent to Idaho Power addressing the Conservation Area and the routes proposed by the PATs.

The letter addresses the Conservation Area in more detail, stating that the ODFW holds a perpetual conservation easement on and over the Conservation Area that specifically prohibits many activities. Relevant prohibitions include “Construction or placement of buildings or structures including temporary

living quarters of any sort, mobile homes, or utility towers or other structures," "Construction of roads or vehicle trails," and "Cutting, removing or destruction of native vegetation." Concerning the Conservation Area, "the Conservancy does not support any transmission line development on, across or immediately adjacent to any of the 22,642-acre property, the adjacent Naval Weapons Systems Training facility, or Horn Butte ACEC."

2.5.4 Oregon Department of Fish and Wildlife

ODFW provided input to the siting process in several ways:

Boardman Grasslands Conservation Easement— In a letter dated October 22, 2009, ODFW explains that while the Boardman Grasslands Conservation Easement is managed by TNC, it is owned by Threemile Farms. Threemile Farms purchased this tract of land from the State of Oregon and it was during this 93,000-acre land transfer that the Conservation Area was designated. The State of Oregon, through the ODFW, retained a Conservation Easement on part of the land, the 22,600-acre Conservation Area, as part of the sale agreement. Language within the conservation easement provides conservation measures for the following species: Washington ground squirrel, ferruginous hawks, loggerhead shrikes, and sage sparrows.

In the letter, ODFW points to the section of the Boardman Grasslands Conservation Easement that specifies prohibited activities and states that "Construction or placement of buildings or structures including temporary living quarters of any sort, mobile homes, or utility towers or other structures" is prohibited. The letter concludes that "the Department cannot support any route of the proposed transmission line that crosses any portion of the Conservation Area."

Route Selection Guidance—One of the B2H Project goals has always been to work closely with state and federal agencies to obtain current and accurate data, agency feedback regarding potential routes and resource concerns, and to adhere to agency policy and guidelines. ODFW specialists have provided special status species occurrence data (e.g., raptor nest locations) along with ROW siting guidelines for the avoidance of special status species locations and crucial habitat types that have been carefully considered during the routing process. Spatial and temporal ROW siting guidelines have included, but are not limited to, seasonal restrictions for big game winter range, and avoidance buffers for sensitive fish-bearing streams, raptor nests, sage-grouse leks, wetlands containing sensitive species, and occupied Washington ground squirrel habitat.

ODFW has been the primary contact for greater sage-grouse management considerations. The B2H Project has initiated survey efforts, including preliminary route review in areas containing sensitive wildlife habitats. Several ODFW specialists have participated in Web-based meetings to review route alternatives and provide insight about wildlife considerations and potential solutions. During these Web meetings, ODFW specialists also recommended areas to be surveyed for greater sage-grouse, and have conducted follow-up ground surveys to verify the presence of potential leks identified during aerial surveys. Close coordination between Idaho Power and ODFW has resulted in an effective working team to evaluate potential resource constraints that can affect transmission line routes.

2.5.5 U.S. Navy

The U.S. Navy operates the Boardman Bombing Range, which is a significant geographic constraint to approaching the proposed Grassland Substation, the northern terminus of the proposed B2H Project. Idaho Power has had several contacts with the Navy to discuss routing around or across the approach zones to and within the Bombing Range itself. To date, the Navy has confirmed that the off-range approach zones could be crossed but with very short structures (100 feet tall or less). The Navy has taken a position that the proposed transmission line should not be located across the northern portion of the

range. Idaho Power and PGE (Cascade Crossing Project) continue to discuss this issue in light of trying to balance Navy concerns with adjacent private landowner concerns.

2.6 Community Advisory Process

Idaho Power partnered with communities from northeast Oregon to southwest Idaho to identify proposed and alternative routes for the B2H Project.

The initial process of identifying a route began in 2008. Following public scoping meetings conducted by the BLM and Oregon EFSC in October 2008, Idaho Power initiated a process to engage residents, property owners, business leaders, and local officials in siting the transmission line. Through 2009 and early 2010, PATs representing five geographic areas were convened for the purpose of identifying, developing, and recommending proposed and alternative routes for the project. This process was called the CAP. Figure 2.6-1 shows the process graphically and Figure 2.6-2 shows how the study area was broken down into the five geographic areas.

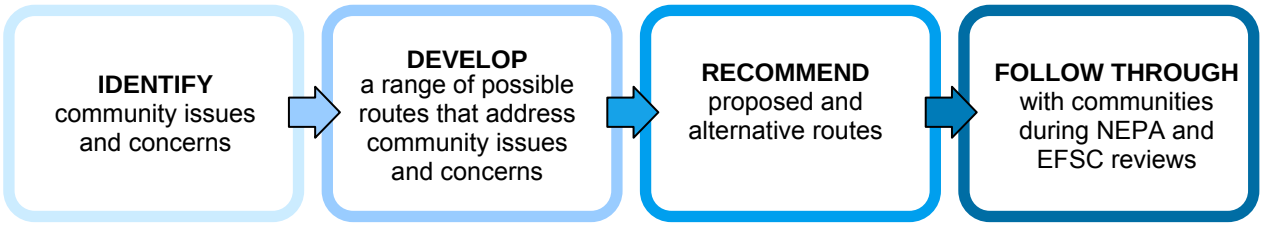


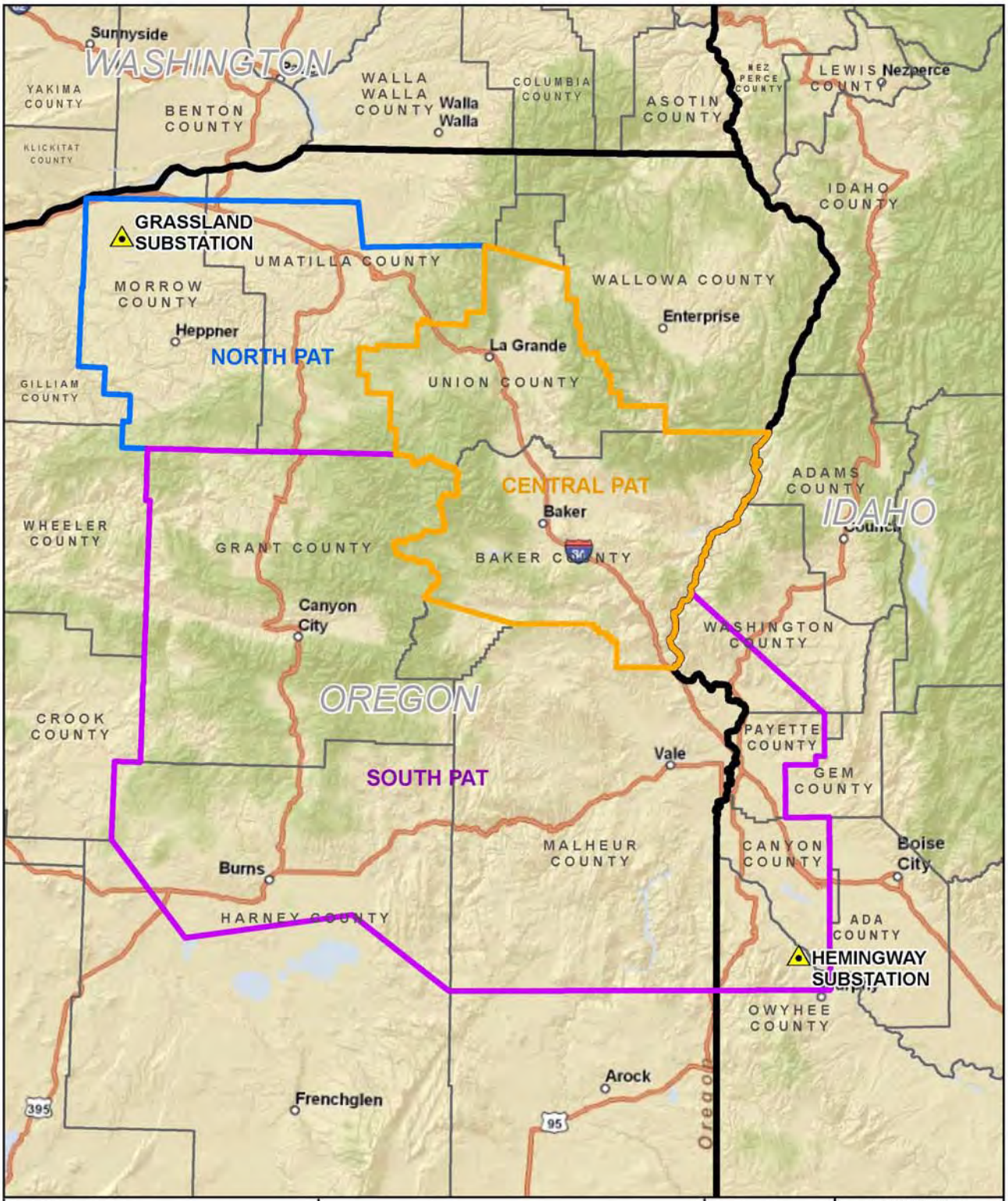
Figure 2.6-1. Community Advisory Process Steps

The process consists of the following four steps:

1. **Identify** community issues and concerns and develop criteria for evaluating possible routes. Integrate community's criteria with regulatory requirements.
2. **Develop** a range of possible routes that address community issues and concerns through public mapping sessions and eliminate routes that do not meet the criteria.
3. **Recommend** proposed and alternative routes. The proposed and alternative routes will be carried through the siting process.
4. **Follow through** with communities during BLM and Oregon Department of Energy (ODOE), EFSC reviews. Idaho Power will resubmit applications to the BLM and the USFS, which will proceed with a review under NEPA. There will be a concurrent detailed review by the ODOE, EFSC.

The public was involved in every step of the process, through PATs and public meetings.

- **PATs** met in the north, central, and south areas and Grant and Harney Counties to identify issues and concerns and to identity and recommend routes.
- **Public meetings** occurred in August of 2009 and July of 2010. The public was asked to review and comment on the PATs' work. The teams considered and incorporated public input.
- **A project coordinating team**, made of representatives from the PATs, brought together the work of each team.


Sunnyside
WASHINGTON
YAKIMA COUNTY
BENTON COUNTY
KLICKITAT COUNTY
WALLA WALLA COUNTY
Walla Walla
COLUMBIA COUNTY
ASOTIN COUNTY
NEZ PERCE COUNTY
LEWIS COUNTY
Nezperce
IDAHO COUNTY
GRASSLAND SUBSTATION
UMATILLA COUNTY
MORROW COUNTY
Heppner
NORTH PAT
WALLOWA COUNTY
Enterprise
La Grande
UNION COUNTY
GILLIAM COUNTY
CENTRAL PAT
ADAMS COUNTY
IDAHO
WHEELER COUNTY
GRANT COUNTY
Baker
BAKER COUNTY
Canyon City
WASHINGTON COUNTY
OREGON
CROOK COUNTY
PAYETTE COUNTY
Vale
SOUTH PAT
GEM COUNTY
MALHEUR COUNTY
CANYON COUNTY
Boise City
Burns
HARNEY COUNTY
ADA COUNTY
HEMINGWAY SUBSTATION
OWYHEE COUNTY
Arock
Frenchglen
395
95
Oregon
FIGURE 2.6-2
CAP PROJECT ADVISORY TEAMS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
North PAT
Central PAT
South PAT
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

From the beginning of the PAT process in May 2009 to the conclusion of routing in March 2010 there were 27 PAT meetings held in the study area. These meetings each had specific objectives as follows:

- Meeting #1 – The first meeting in each CAP Area explained Project work to date, Project status, and the CAP; discussed the purpose and need for the Project; and identified community concerns and suggestions about siting the proposed transmission line.
- Meeting #2 – The second set of meetings were used to review the federal and state permitting processes for the Project, and to present the regulatory, engineering and community criteria to be used in route selection.
- Meeting #3 – In the third set of PAT meetings the PAT members and other local citizens reviewed the criteria, the routing process and the results of public meetings and the next day participated in routing sessions producing 49 initial routes and route segments .
- Meeting #4 – At these meetings held in December 2009, the approach to analyzing the almost 3,000 miles of routes was discussed as well as the status of the analysis. At these meetings the refinements of the initial routes were presented for PAT review.
- Meeting #5 – In early March 2010, the results of the route selection process were presented at five meetings and final input was requested from all the attendees. As a result of this process, the Eastern, Central, and Western Routes were recommended to the PATs.
- Meeting #6 – In late April and early May 2010, Idaho Power reviewed all comments received concerning the three alternative routes shown to the PATs in March and presented the Company's choice for the proposed route.

For additional information on the CAP, please see the Boardman to Hemingway website at www.boardmantohemingway.com or the Preliminary POD (Idaho Power 2010).

3 SITING

3.1 Initial Route Selection

Route selection began at CAP Meeting 3, which consisted of an evening session followed by a full day of routing, at Baker City, Boardman, and Ontario, Oregon. At the evening sessions Idaho Power educated the participants on the siting process; on the next day, individuals and groups of local citizens returned to identify route segments or entire routes between Boardman and Hemingway.

Members of the CAP and other local residents and organizations brought their knowledge of local resources, conditions, and priorities and worked with Idaho Power, GIS analysts, and routing experts to identify potential routes. To facilitate the siting effort, the GIS database was categorized into exclusion, high avoidance, moderate avoidance, low avoidance, or opportunity areas (see Table 3.1-1 for definitions). This database included PAT input on transmission line siting collected during the CAP Meetings 1 and 2.

Table 3.1-1. Resource Opportunity, Avoidance, and Exclusion Categorization

	Avoidance Categories These areas should be avoided unless there is no reasonable alternative. Mitigation[1/] would be required for federally-managed lands and to meet Oregon Department of Energy Energy Facility Siting Council standards. Also a potential that federal resource plans would need to be amended to allow the project.			
Placement Opportunity	**Avoidance: Low**	**Avoidance: Moderate**	**Avoidance: High**	**Exclusion**
Areas that should be considered for transmission line routes because land uses were identified by the Project Advisory Team as a high priority for placement, and/ or routes are compatible with the construction, maintenance, and operation of overhead transmission lines.	Very low to low impact. Mitigation, if necessary, would be very easy to implement	Moderate impact that could likely result in significant adverse impact that could require mitigation. Mitigation, if necessary, would range from fairly easy to implement to being costly or require longer time frames.	High to very high impact (duration, magnitude). Very difficult or infeasible to mitigate (due to technology, sensitivity of resource, time frame, or cost of mitigation).	Areas where a transmission line is precluded by statute or regulation (federal, state, local) or as identified by the Project Advisory Team.

Note:
1/ Mitigation is a way to reduce the effect of an action. Mitigation is a process that includes avoiding the impact, minimizing the impact, and/or compensating for remaining unavoidable impacts.

The GIS analysts, using topographic maps, available aerial photography, and the GIS database of constraints and opportunities, worked with each participant to identify routes that avoided exclusion areas and as much as possible minimized crossings of high avoidance constraints and, where practical, moderate and low avoidance areas. In all instances, the routing teams were looking for opportunities like existing transmission lines and the West-wide Energy Corridors to parallel or use.

Once routes were identified for study in Grant and Harney Counties, the community interest within these two counties intensified and PAT routing sessions were soon held in Mt. Vernon and Hines. Each route selected during the five routing sessions was documented in a GIS database and filed with a form explaining the basis for each route or segment. For unique identification, as each route was selected it was named using the first letter of the PAT meeting ("C" for Central, "N" for North, "S" for South, "G" for Grant, "H" for Harney) followed by a number to allow for unique identification and easy reference. Approximately 49 routes and route segments totaling over 3,000 miles were developed during the workshops (Figure 3.1-1).

3.2 Route Refinement

Following the CAP routing sessions, the Idaho Power team reviewed each of the routes to identify potential issues that may have been missed during initial route selection that could significantly impact the ability to permit or construct the suggested segment or route. Each alignment was reviewed using aerial photography, topographic maps, and the GIS database of constraints and opportunities. Using the aerial photography, irrigation pivots, houses, barns, private runways, other structures (i.e., wind turbines), and land use features could be avoided where practical. The routes were adjusted using topographic maps to avoid or minimize distance across very steep slopes and other physical features less desirable for transmission line construction and operation. Finally, the routes were again checked against the constraint and opportunity GIS database to avoid, where possible, exclusion areas and areas of high permitting difficulty like ODFW Category 1 habitats. While adjustments to CAP routes were made, the Idaho Power team strove to maintain the original intent of the route or route segment.

Also at this time a number of CAP routes were no longer considered because they did not meet the purpose and need of the Project; this reduced the miles of routes for further consideration to about 2,000 miles. Figure 3.2-1 shows the revised CAP routes.

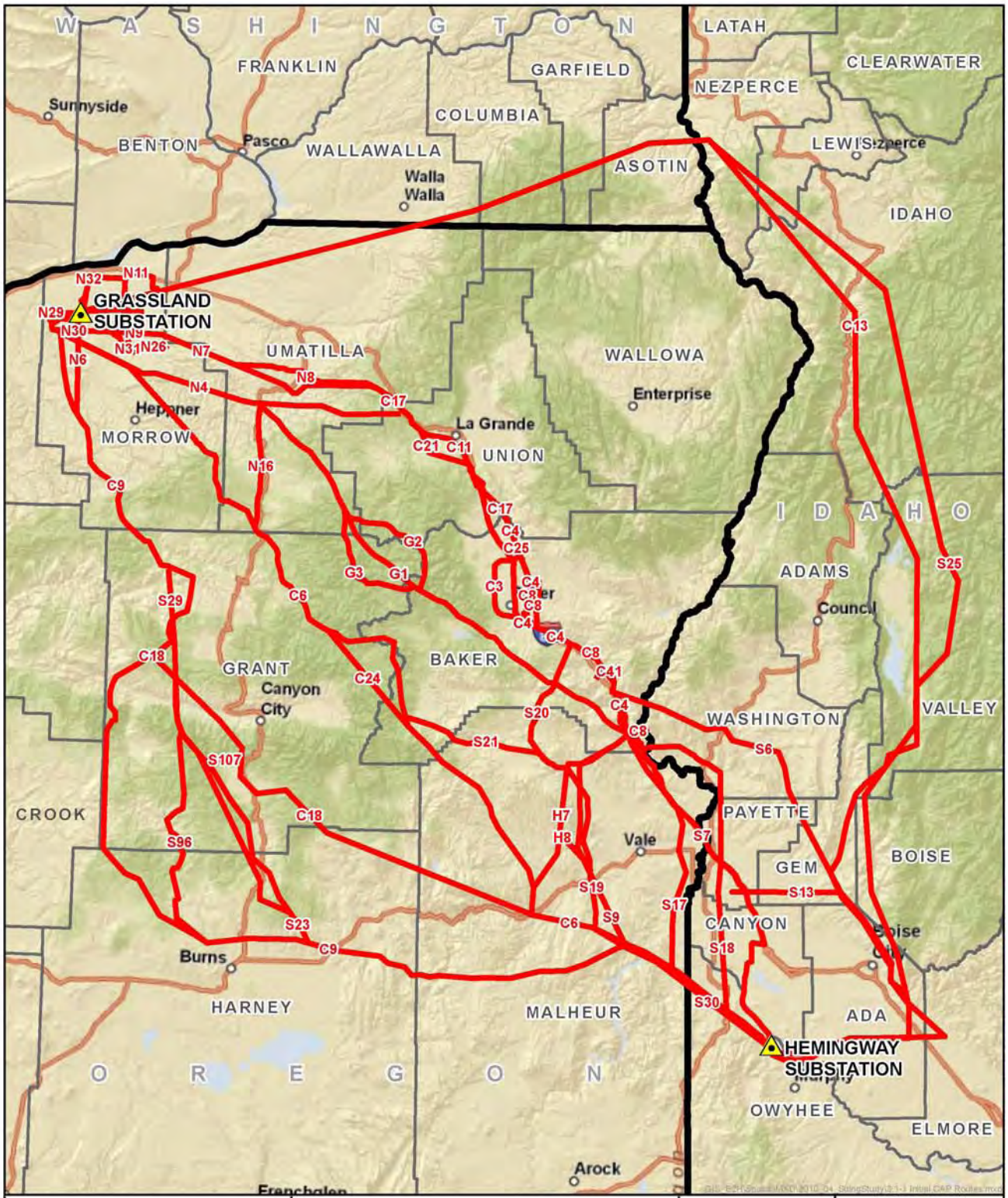
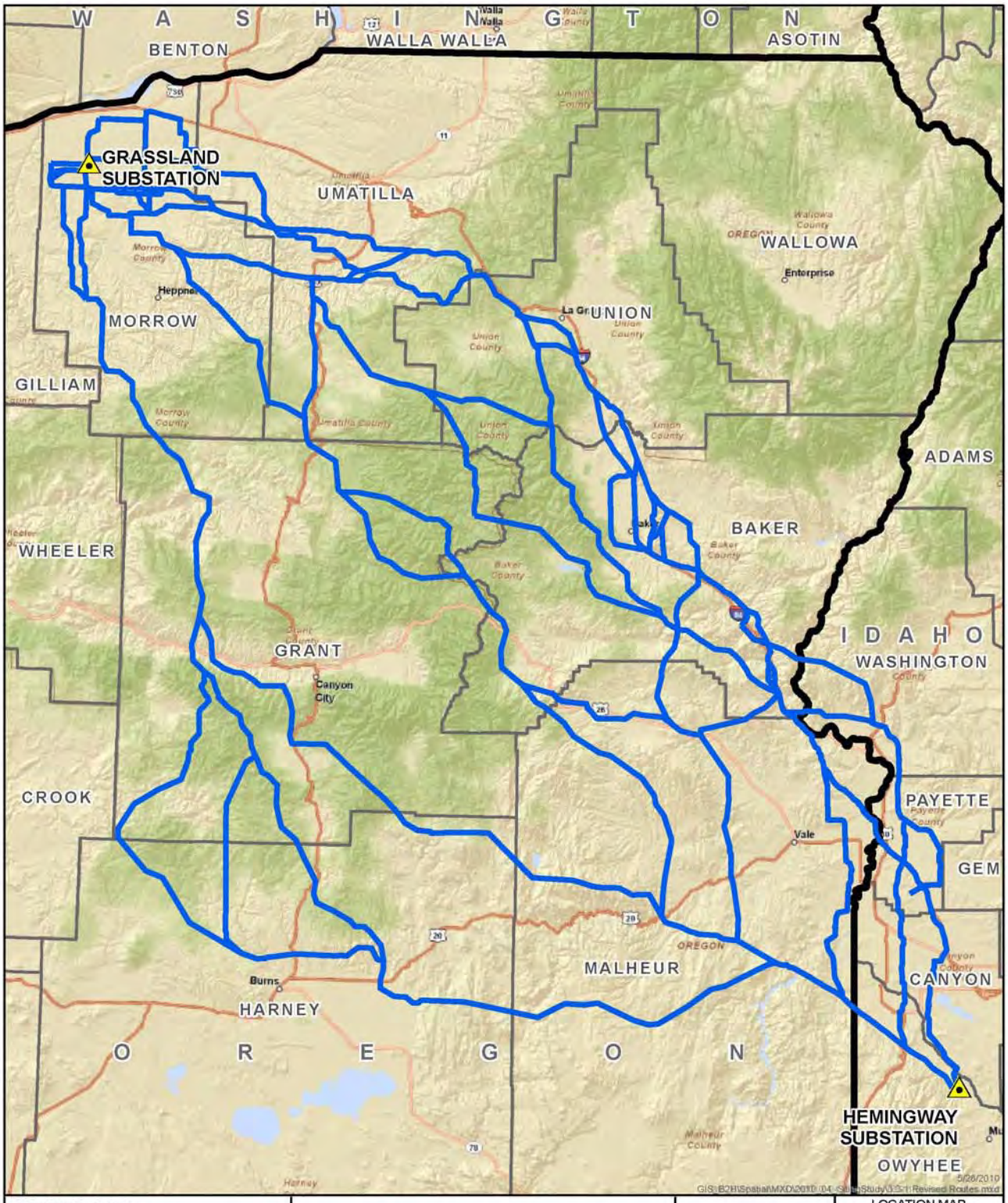


FIGURE 3.1-1
INITIAL CAP ROUTES
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010


WASHINGTON
BENTON
WALLA WALLA
ASOTIN
GRASSLAND SUBSTATION
UMATILLA
WALLOWA
Enterprise
MORROW
Heppner
UNION
GILLIAM
ADAMS
BAKER
WHEELER
GRANT
Canyon City
IDAHO
WASHINGTON
CROOK
PAYETTE
Vale
GEM
OREGON
MALHEUR
Burns
CANYON
HARNEY
OREGON
HEMINGWAY SUBSTATION
OWYHEE
5/26/2010
FIGURE 3.2-1
REVISED CAP ROUTES
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Revised CAP Route
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

3.3 Regional Analyses

After completing the refinement of the initial CAP routes, almost 2,000 miles of alternatives remained. These remaining routes, where appropriate, were grouped into 14 regions for analysis as shown on Figure 3.3-1. Regions were established where two or more routes extended from one common point to a second common point. For example, in the southwest part of the study area, four routes were identified and grouped together between points GR3 and MA6 to create the Southwest Region (see Figure 3.3-2). Each route within the 14 regions was then analyzed for permitting difficulty, construction difficulty, and mitigation cost.

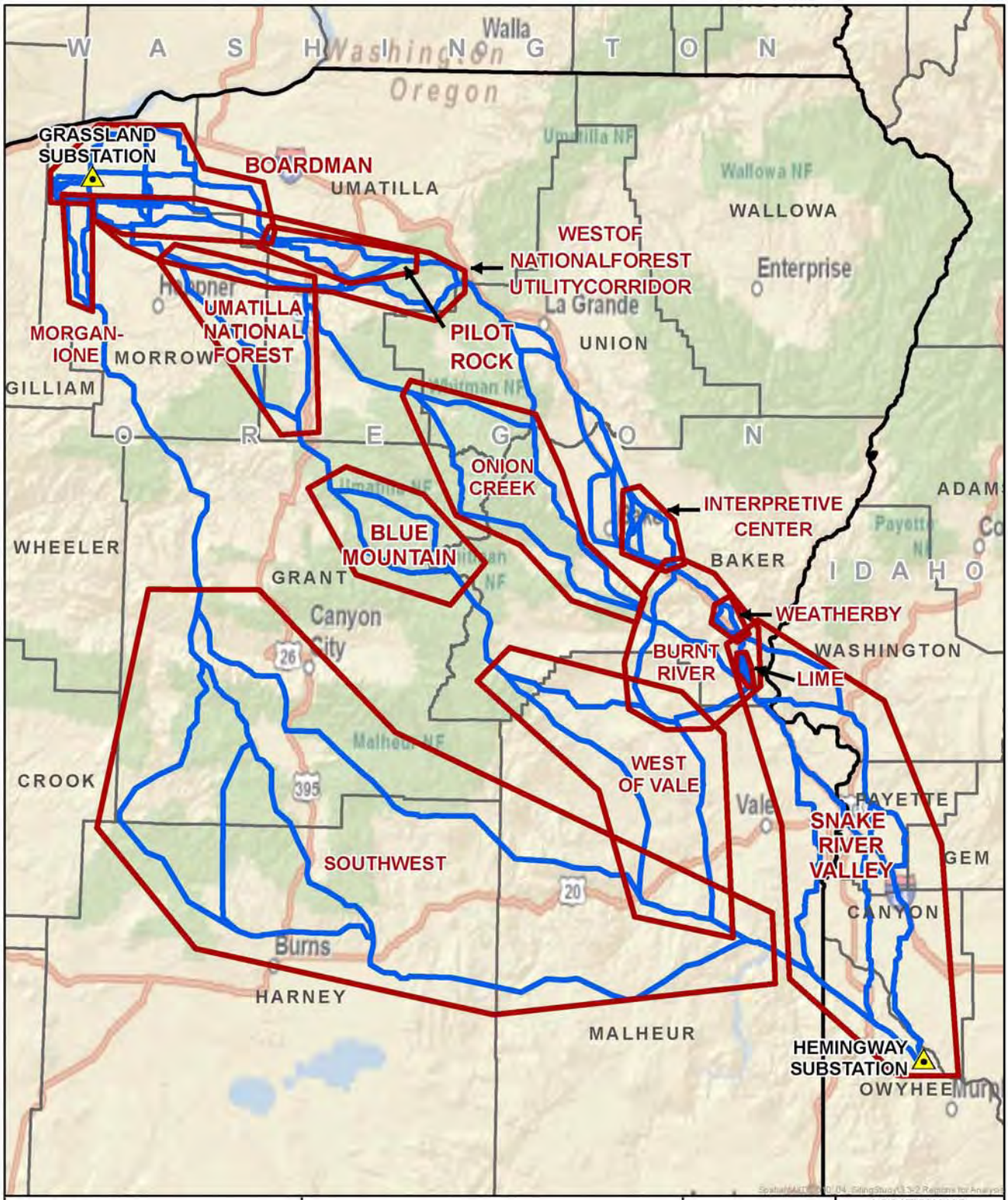
Permitting Analysis—The first part of the permitting analysis involved creating constraint/opportunity data tables detailing miles crossed of each constraint. This analysis was performed for each route within each region and resulted in a table detailing the total miles of each constraint/opportunity crossed by each route segment. A final attribute table was produced for the alternative routes in each region, allowing for direct comparison of constraints crossed.

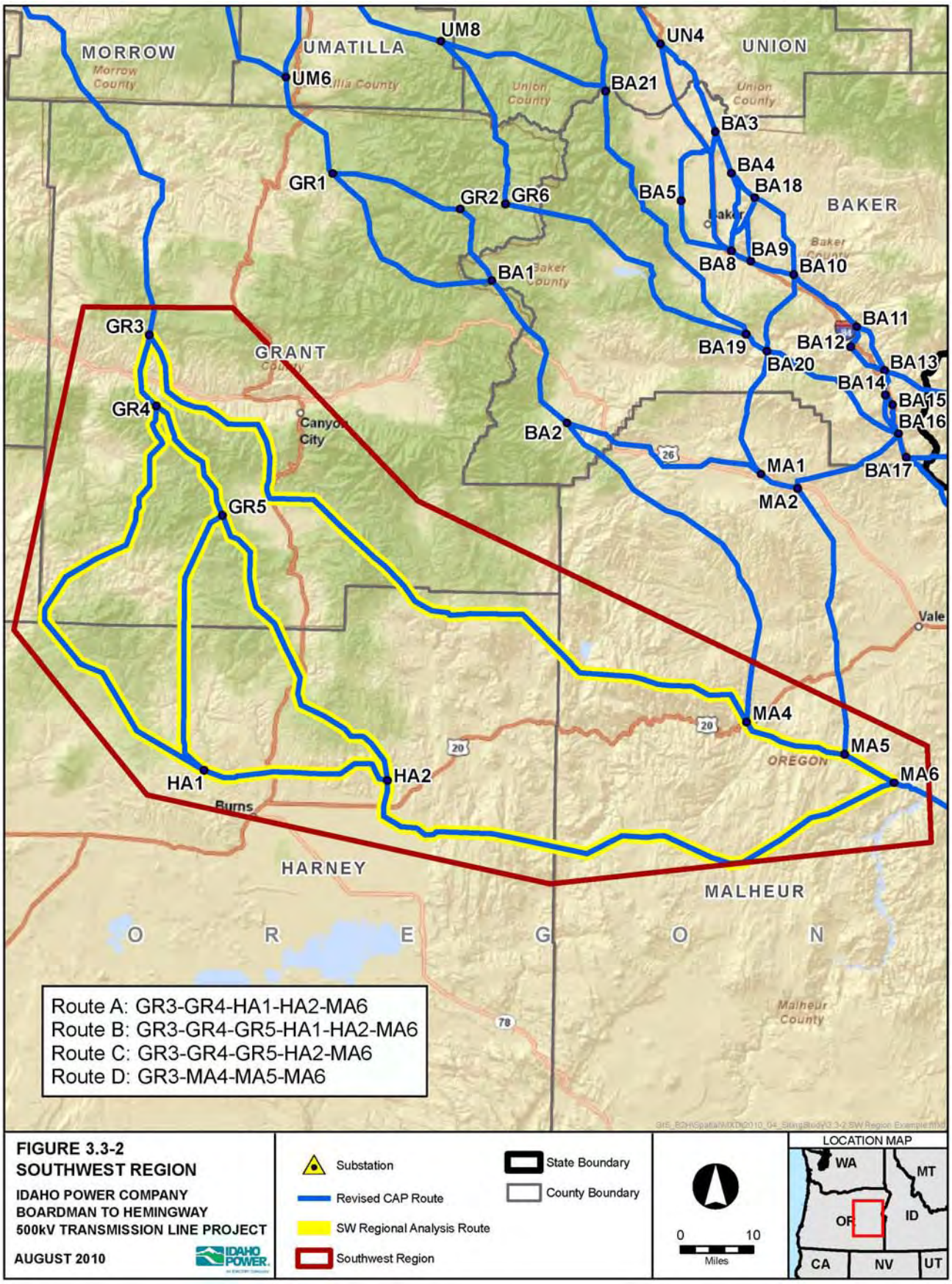
For the second part of the permitting analysis, the GIS database was sorted into low, moderate, and/or high permitting difficulty datasets, exclusion datasets, and opportunity datasets as shown in Appendix C. The datasets were compiled into grids based on permitting difficulty categories and then overlaid with the revised routes. Next, the miles crossed of each permitting difficulty category were measured and totaled by individual route segment within each of the 14 regions. Regional permitting difficulty tables were then compiled, allowing for comparison of total miles of low, moderate, high, and exclusion permitting difficulty areas crossed by the routes.

Using results from the preceding analyses, route segments were analyzed in pairs. Specific resource constraints crossed and significant differences were noted and finally the more reasonable route to permit from each region was determined for each region.

Construction Analysis—In evaluating construction difficulty, accessibility, topography, road construction, equipment movement, and many other factors were used to categorize the routes into low, moderate, and high construction difficulty areas. Again, these ratings were applied to segments along the routes, were measured in miles, summed, and used to compare the routes within regions. Factors considered included the following:

- *Length of Route*—Longer routes requiring more structures, more wire and more access roads are more expensive projects with longer construction durations.
- *Slope of Terrain*—Tree clearing, access road construction, foundation installation, and tower erection are all more difficult in steep sloped terrain, especially in severe weather. In areas of severe slopes, significant grading work may be necessary to perform construction work or, in some instances, helicopters may be required.
- *Number of Angle Structures*—Angle structures are heavier and require larger foundations than tangent structures.
- *Proximity to Major Roads*—The closer the transmission line is to major roads, the more accessible it is.
- *Tree Clearing*—Areas requiring significant tree clearing represent higher costs and can extend overall line construction duration.


GRASSLAND SUBSTATION
BOARDMAN
UMATILLA
WESTOF NATIONALFOREST UTILITYCORRIDOR
WALLOWA
Enterprise
La Grande
UNION
MORGAN-IONE
MORROW
UMATILLA NATIONAL FOREST
PILOT ROCK
GILLIAM
ONION CREEK
INTERPRETIVE CENTER
BLUE MOUNTAIN
WHEELER
GRANT
BAKER
IDAHO
WEATHERBY
Canyon City
BURNT RIVER
WASHINGTON
LIME
WEST OF VALE
CROOK
PAYETTE
SNAKE RIVER VALLEY
SOUTHWEST
GEM
CANYON
Burns
HARNEY
MALHEUR
HEMINGWAY SUBSTATION
OWYHEE
FIGURE 3.3-1
REGIONS FOR ANALYSIS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Analysis Region
Revised CAP Route
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT


MORROW
Morrow County
UMATILLA
UNION
Union County
BAKER
Baker County
GRANT
Canyon City
HARNEY
MALHEUR
Malheur County
Vale
Burns
OREGON
UM8
UM6
UN4
BA21
BA3
BA4
BA18
BA5
BA9
BA8
BA10
BA1
BA11
BA12
BA19
BA20
BA13
BA14
BA15
BA16
BA17
BA2
MA1
MA2
MA4
MA5
MA6
GR1
GR2
GR6
GR3
GR4
GR5
HA1
HA2
26
20
78
Route A: GR3-GR4-HA1-HA2-MA6
Route B: GR3-GR4-GR5-HA1-HA2-MA6
Route C: GR3-GR4-GR5-HA2-MA6
Route D: GR3-MA4-MA5-MA6
FIGURE 3.3-2
SOUTHWEST REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Substation
Revised CAP Route
SW Regional Analysis Route
Southwest Region
State Boundary
County Boundary
0
10
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

- *Access Roads*—Access roads are generally necessary along the transmission ROW both during construction and for future maintenance. In general, as the degree of slopes increases the length of access roads also increases. Routes along highly sloped areas are therefore more expensive due to the additional cost of more access roads.
- *Stream Crossings*—Transmission lines with many stream crossings are more difficult and expensive to construct because temporary bridges must be built to cross the streams or the use of much longer access roads avoiding new stream crossings may be required.

These parameters were considered simultaneously to arrive at an overall construction difficulty ranking of high, moderate, or low.

Mitigation Cost Analysis—To evaluate mitigation costs for potential impact to biological resources, the habitat value of the landscapes traversed was measured and considered in conjunction with ODFW value assumptions to arrive at potential high, moderate, and low mitigation cost estimates. ODFW has created a Habitat Mitigation Policy that attributes habitat values to the landscape based on ecological importance. These habitat values are considered by EFSC during the permitting process to understand and evaluate impacts to the environment. Each segment along each route was measured in miles of high, moderate, and low cost and totaled for each route within a region.

Habitat with high mitigation costs include sage-grouse 2-mile buffers, ODFW Wildlife Management Areas, bald eagle 1-mile buffers, and ODFW Category 1 habitat; moderate mitigation costs are associated with big game winter range, potential sage-grouse habitat, wetlands, and ODFW Category 2 and 3 habitat; lower mitigation costs are associated with ODFW Category 3 to 6 habitat.

3.3.1 Boardman Region

As shown on Figure 3.3.1-1 the Boardman region extends from just east of the Morrow/Gilliam County line approximately 41 miles east and includes portions of northern Morrow County and northwestern Umatilla County. The region extends south from the city of Boardman and I-84 and at its widest point is about 19 miles.

This region is situated at the north end of the study area and includes a large number of alternatives associated with accessing the proposed Grassland Substation. The Boardman Bombing Range and the Boardman Grasslands Conservation Area are two of the largest constraints to approaching the proposed substation and push potential routes to the north, south, or west. Other significant constraints include irrigated agriculture, the city of Boardman, and wind farms.

Early on a number of alternatives were adjusted or removed from further consideration because of high level constraints, existing land use conditions, and permitting exclusion areas as follows:

CAP Route	Reason(s) for being adjusted or removed from further consideration
C6	Portion along north boundary of the Boardman Grasslands Conservation Area was shifted north to avoid Washington ground squirrel (Oregon state endangered species) Category 1 habitat.
C13	Alternative removed from further consideration because it added over 100 miles of additional 500 kV transmission line substantially adding to the area disturbed, potential impact, and cost. Also added a third state, Washington, which would substantially add to the complexity of permitting.
N4	Portion along north boundary of the Boardman Grasslands Conservation Area was shifted north to avoid Washington ground squirrel Category 1 habitat.
N6	Portion removed from further consideration as it crosses about 2.3 miles of the Boardman Grasslands Conservation Area.
N7	Portion along the southern boundary of the Boardman Bombing Range was adjusted to avoid Washington ground squirrel Category 1 habitat. Segments adjacent to north and south boundaries of Boardman Grasslands Conservation Area were shifted north and south respectively away from Washington ground squirrel Category 1 habitat.
N10	Alternative removed from further consideration as it crosses the center of the Boardman Bombing Range and an approximately 1.0 mile segment of the Boardman Grasslands Conservation Area.
N24	Portion north of the proposed Grassland Substation was shifted west to avoid the Boardman Grasslands Conservation Area and parallel existing 230-kV line.
N26	Portion of this alternative shifted because portion along eastern boundary of Boardman Bombing Range (about 12.0 miles) crosses about 1.3 miles of the Boardman Grasslands Conservation Area and traverses Washington ground squirrel Category 1 habitat.
N28	Portion along southern boundary of the Boardman Bombing Range was shifted as it crosses Washington ground squirrel Category 1 habitat.

N29 Alternative removed from further consideration even though it is located within an existing PGE easement. Even if this ROW were available, it would place the existing Boardman-Slatt single-circuit 500-kV line, the proposed Cascade Crossing double-circuit 500-kV line, and the proposed Boardman-Hemingway single-circuit 500-kV line all in one ROW that would not meet WECC reliability criteria.

N30 Portion along the southern boundary of the Boardman Bombing Range crosses Washington ground squirrel Category 1 habitat: segments adjacent to north and south boundaries of Boardman-Grassland Conservation Area were shifted north and south respectively away from Washington ground squirrel Category 1 habitat.

N31 Alternative adjusted to avoid the Boardman-Grassland Conservation Area and Washington ground squirrel Category 1 habitat.

N32 Portion north of proposed Grassland Substation shifted west to avoid the Boardman Grasslands Conservation Area and parallel existing 230-kV line.

After making the route revisions described above, three routes were left for more detailed comparison:

- the Northern Route (MO1-MO2-MO5-MO4-MO7-UM1);
- the Central Route (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO17-MO18-MO21-MO23-UM1); and
- the Southern Route (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO26-MO22-MO23-UM1).

As shown on Figure 3.3.1-1, the Southern Route (CAP routes C6, C9, N4, N7, N26, N30) exits the location for the proposed Grassland Substation to the south and then turns due west across a series of center pivots and grassland to the Willow Creek Valley. It follows the west side of the valley to the south for about 2.4 miles before angling east between the Boardman Grasslands Conservation Area and the community of Cecil. The Route then continues east, turns south near the town of Ella, and angles southeasterly across Ella Butte toward Juniper Canyon. The Southern Route then angles northeast for the next approximate 7.0 miles to Sand Hollow before heading due east, passing to the north of Pine City. The route continues southeasterly for the next approximately 14.0 miles to its common point with the Central and Northern Routes in the Boardman Region, UM1. The Southern Route crosses dry agricultural lands for most of its 54.6 miles.

The Central Route (CAP routes C6, C9, N4, N7, N8, N9, N28, N30) exits the proposed Grassland Substation following the same path as the Southern Route to point MO16, a location about 7.0 miles east of Cecil. While the Southern Route angles south at this point, the Central Route continues heading east along the south side of the Boardman Grasslands Conservation Area and the Boardman Bombing Range. The Central Route continues east, crossing Sand Hollow and passing to the south of Butter Creek Junction before angling southeast to rejoin the path of the Southern Route at point MO23, approximately 2.5 miles east of Pine City. The Central Route follows the same path as the Southern Route for the next approximately 11.0 miles to point UM1.

The Southern Route and the Central Route are similar in many aspects; however, as shown in Appendix D, Table D-1, the Central Route is 1.9 miles shorter, crosses 1.9 miles less EFU, and crosses 2.2 fewer miles of moderate and high erosion hazard soils. The Southern Route crosses 0.5 fewer mile of irrigated cropland and 1.8 miles less landslide hazard area, and parallels 2.9 miles of existing transmission line. As shown on Table 3.3.1-1, the two routes are very similar in total moderate and high permitting difficulty:

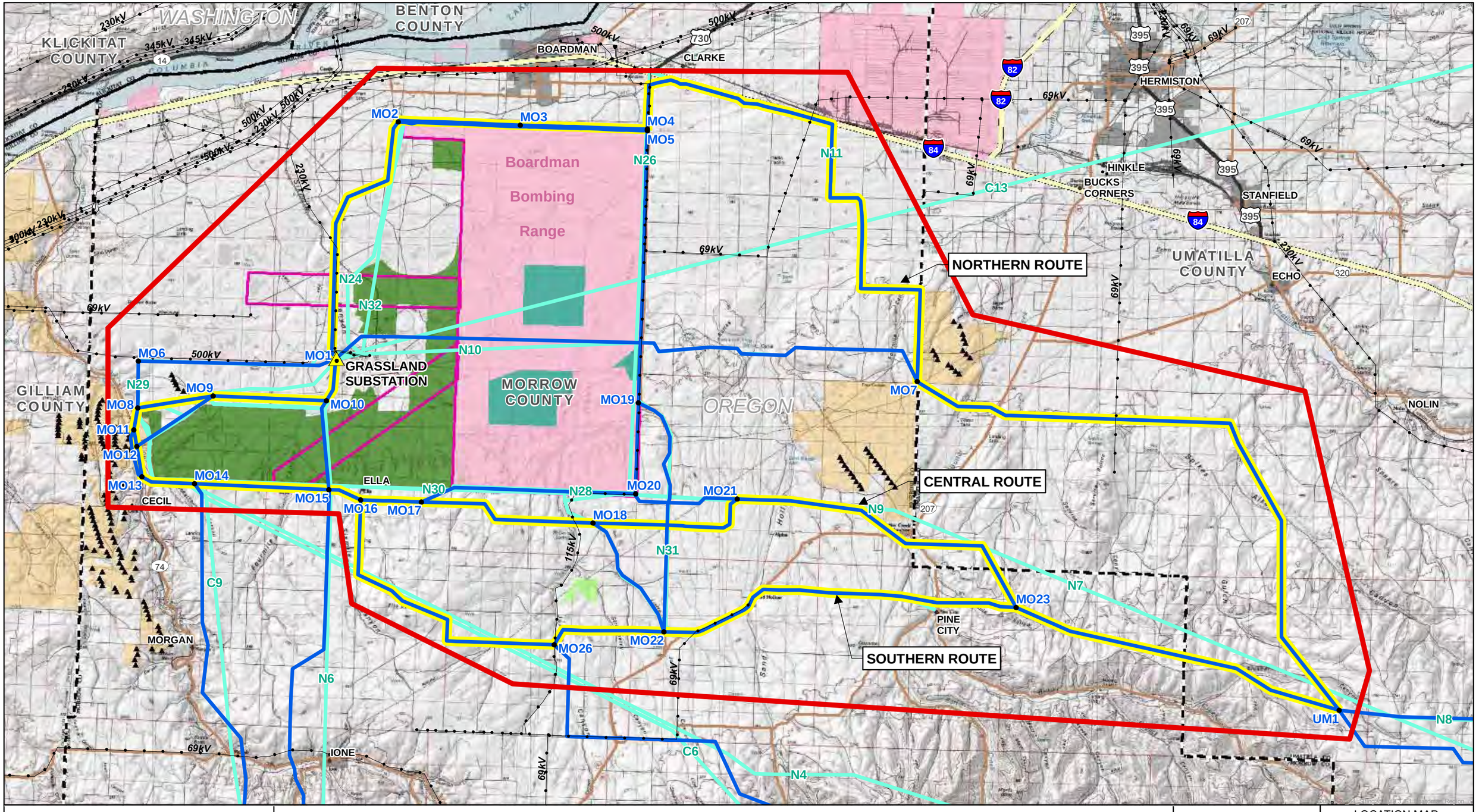


FIGURE 3.3.1-1
BOARDMAN REGION

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

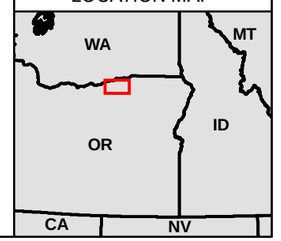
- Substation
- Analysis Region
- Existing Transmission Line
- Revised CAP Route
- Initial CAP Route

The Nature Conservancy
- Boardman Grasslands Conservation Area
- Boardman Research Natural Area
- Lindsay Prairie

- Naval Weapons System Training Facility
- Military Land
- Wind Turbine
- Wind Farm Boundary
- State Boundary
- County Boundary
- Urban Area

0 1 2 3
Miles

LOCATION MAP



the Central Route has a total of 50.8 miles and the Southern Route 52.8 miles. These two routes are similar in moderate and high construction difficulty with the Central Route having a total of 30.8 miles and the Southern Route 27.1 miles. Based on the facts presented above, the Central Route was determined to be more reasonable than the Southern Route.

Table 3.3.1-1. Boardman Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	Northern Route (MO1-MO2-MO5-MO4-MO7-UM1)	**Central Route** (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO17-MO18-MO21-MO23-UM1)	**Southern Route** (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO26-MO22-MO23-UM1)
	Length in Miles		
Permitting Difficulty			
Low	1.3	1.9	1.8
Moderate	42.5	42.1	44.4
High	13.5	8.7	8.4
Exclusion	0.0	0.0	0.0
Construction Difficulty			
Low	29.1	21.9	27.5
Moderate	22.2	19.0	19.8
High	6.0	11.8	7.3
Mitigation Cost			
Low	48.7	51.6	3.9
Moderate	8.6	1.1	49.6
High	0.0	0.0	1.1

The Northern Route (CAP routes N11, 24, 26, and N32) exits the proposed Grassland Substation site to the north passing through a large area of pivot irrigation. This route then turns east, enters the Boardman Bombing Range, and passes along its northern boundary for the next 8.1 miles. The route angles north to follow Bombing Range Road before turning southeast and following along the south side of I-84 for the next approximately 5.5 miles. The Northern Route then angles south and east passing through agricultural lands, a poplar tree farm, and between wind farms before crossing into Umatilla County. Continuing due east, the route passes north of Service Buttes and angles southeasterly across Alkali Canyon, Spikes Gulch, and Slusher Canyon to point UM1, the eastern common point for the three remaining routes in the Boardman Region.

The comparison of the Northern Route with the Central Route is complicated by the fact that the PGE Cascade Crossing Project shares about 18 miles with the B2H Project's Northern Route. In terms of total transmission development in this area, the Central Route would result in 70.7 miles of 500-kV line (52.7 miles for the B2H Project's Central Route and 18 miles for the Cascade Crossing Project) as compared to 57.3 miles for the Northern Route (Cascade Crossing Project included). Therefore, developing the Northern Route would require 13.4 fewer miles of transmission line and about 400 fewer acres of ROW considering the additional miles for the Cascade Crossing Project.

Table 3.3.1-1 compares the Central Route and the Southern Route to the Northern Route. Figure 3.3.1-2 displays the results of the permitting difficulty, construction difficulty, and potential mitigation cost analyses on each route. Because of significantly less total required transmission line development for the Northern Route, it was recommended as the more reasonable route.

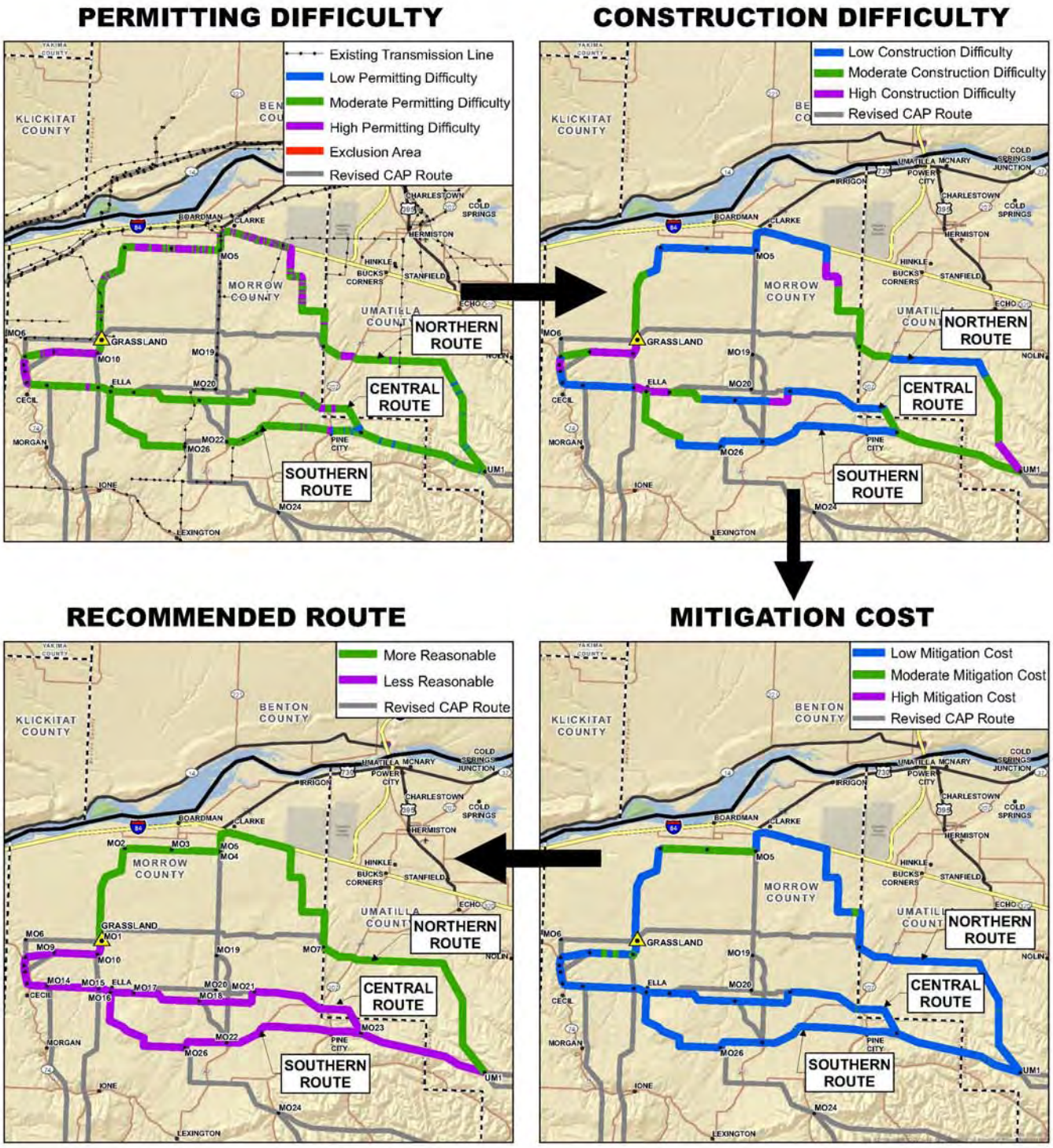


FIGURE 3.3.1-2
BOARDMAN REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

3.3.2 Morgan-Ione Region

The Morgan-Ione region is located in western Morrow County and extends about 21 miles to the south from the southern boundary of the Boardman Grassland Conservation Area. Much of the area is dry agricultural lands and the topography is generally rolling but steeper north and south of State Route 74 and along Willow Creek and other drainages. The major road through the area is State Route 74; Ione, the largest community in the area, is located on the east side of the middle portion of the region.

In this region two CAP routes, C9 and N6, as shown on Figure 3.3.2-1 were identified at the Central and North PAT routing sessions held in early December 2009. The West Route, designated MO14-MO25, was a revision of a portion of CAP route C9. Beginning at MO14, the route proceeds south, crossing the Oregon National Historic Trail and Schoolhouse Canyon before passing east of the community of Morgan. Continuing south, the route then passes east of the community of McNab, across State Route 74 and Willow Creek, and proceeds across Jordan Canyon. The route passes to the east of Utts Butte, then angles to the southeast, staying to the north of Eightmile Canyon, proceeding toward the southern terminus of the Morgan-Ione Region, MO25.

The East Route was a revision of portions of CAP routes N6, N7, and N30 and was designated MO14-MO15-MO25. Beginning at MO14, the East Route proceeds due east for approximately 4.4 miles along the south side of the Boardman Grasslands Conservation Area to MO15. At MO15, west of Sixmile Canyon and the community of Ella, the East Route turns and proceeds south. Approximately 9.0 miles later, the East Route crosses State Route 74 and Willow Creek, about 1 mile west of the community of Ione. The route continues south, about 2 miles east of the path of the West Route, passing along the west side of Jordan Butte and crossing Brenner Canyon twice before meeting the West Route at MO25 at the southern end of the region.

Figure 3.3.2-2 and Table 3.3.2-1 display the results by category of the permitting difficulty, construction difficulty, and mitigation cost analyses for the Morgan-Ione Region. The East Route crosses 3.1 more miles of moderate and high permitting difficulty and 2.1 more miles of moderate and high construction difficulty areas than the West Route. More specifically, the East Route crosses more deer winter range, more high erosion hazard soils, more EFU-zoned lands, more prime farmland soils, and more historic trail buffers (see Appendix D). The West Route crosses less deer winter range, less high erosion hazard soils, less EFU-zoned lands, less prime farmland soils, and fewer historic trail buffers (see Appendix D, Table D-2). For the reasons stated above, the West Route was determined to be more reasonable.

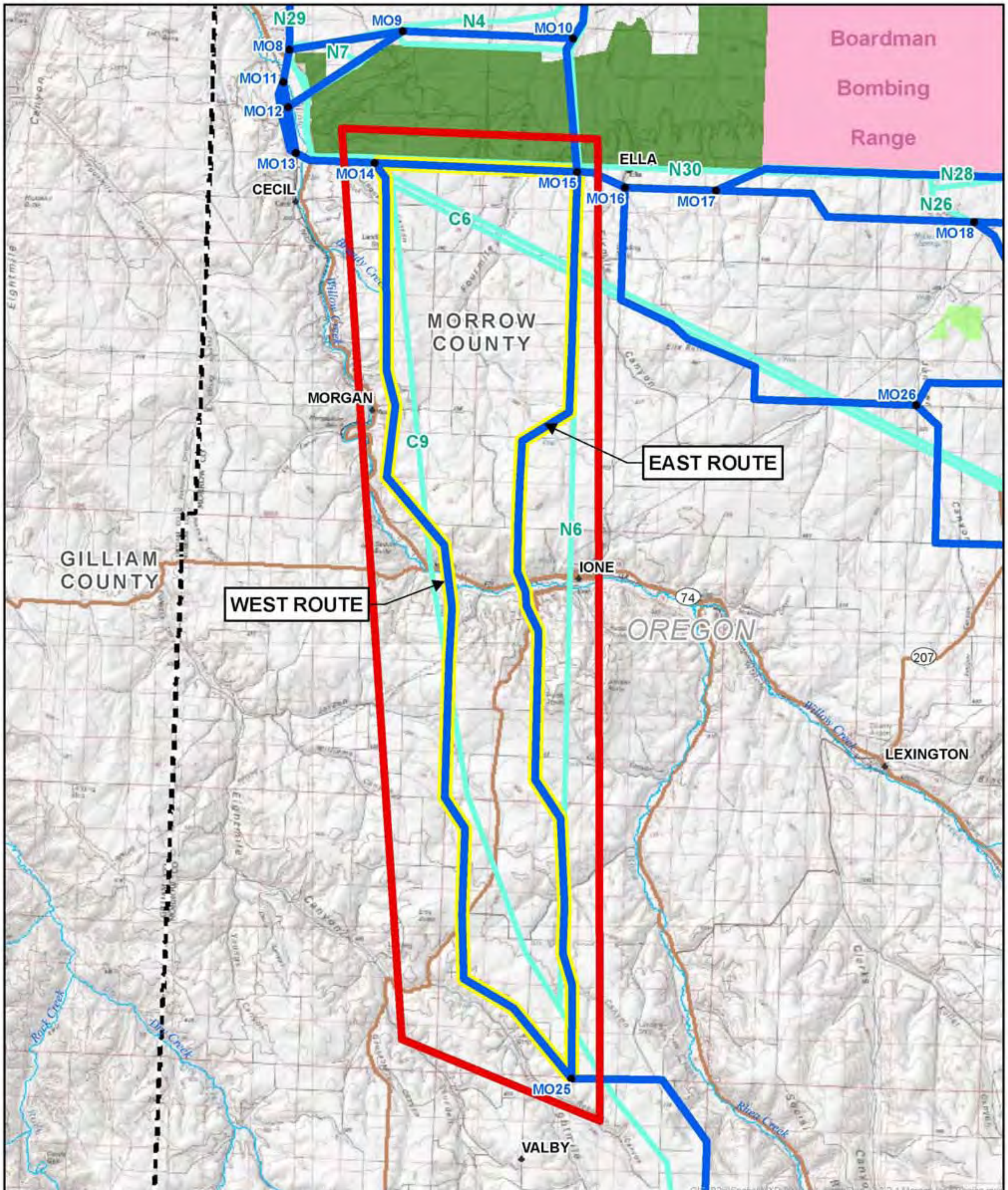


FIGURE 3.3.2-1
MORGAN-IONE REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010

Substation
Analysis Region
Revised CAP Route
Initial CAP Route
Military Land

The Nature Conservancy
Boardman-Grassland Conservation Area
Lindsay Prairie
County Boundary

0 1 2
Miles

LOCATION MAP
WA MT OR ID CA NV UT

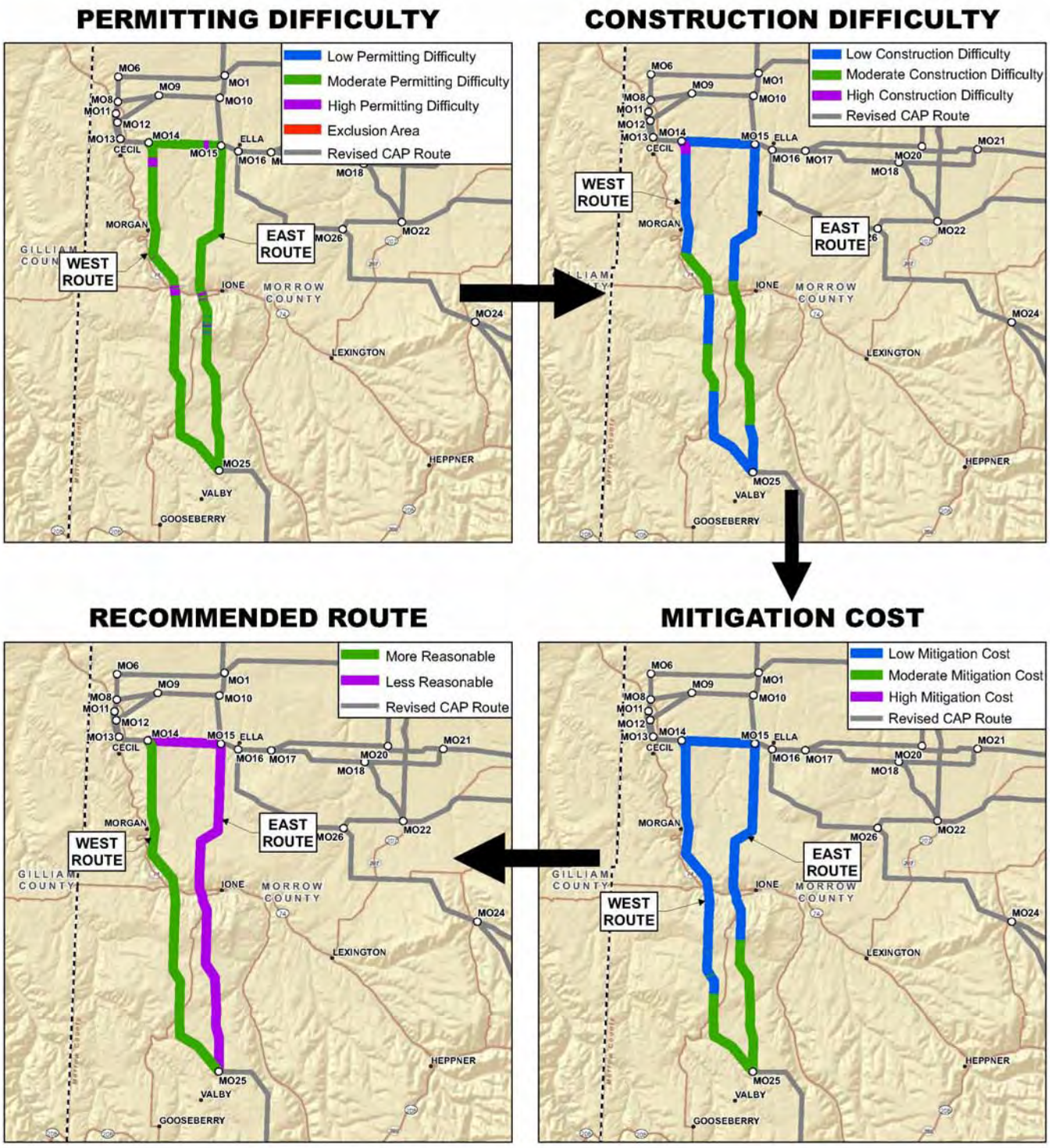


FIGURE 3.3.2-2
MORGAN - IONE REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

0 5 10
Miles

Table 3.3.2-1. Morgan-Ione Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (MO14-MO25)	**East Route** (MO14-MO15-MO25)
	Length in Miles	
Permitting Difficulty		
Low	0.0	0.2
Moderate	20.7	24.1
High	1.2	0.9
Exclusion	0.0	0.0
Construction Difficulty		
Low	15.0	16.2
Moderate	6.0	9.0
High	0.9	0.0
Mitigation Cost		
Low	16.0	17.0
Moderate	5.9	8.2
High	0.0	0.0

3.3.3 Umatilla National Forest Region

This region straddles the southern portion of the Morrow/Umatilla County line, spanning from approximately 7 miles north of Heppner, Oregon, southeast to approximately 2 miles north of Dale, Oregon. It is also just north of the North Fork of the John Day River and in the southeast includes portions of the Ukiah-Dale Forest State Scenic Corridor and the Bridge Creek Wildlife Management Area as shown on Figure 3.3.3-1. Bounding the region along the eastern side is U.S. Highway 395, while the Blue Mountain Scenic Byway crosses through the southern portion of the region before heading northwest along the region's southeastern boundary. Due to the severe topography throughout the region, agricultural areas are minimal, mainly confined to the narrow valleys as well as along State Route 74, which crosses the northern part of the region. The southern portion of the region is forested and includes the northernmost part of the Umatilla National Forest. Numerous drainage areas and rivers can be found throughout the region. Figure 3.3.3-1 shows the Umatilla National Forest region and the original and revised CAP routes.

The routes through this region were originally generated during the Central and North PAT routing sessions. The section of CAP route C6 within this region was refined and designated the West Route (MO24-UM6), which is approximately 41 miles long. Beginning at the northern end of the region, the West Route heads south from MO24 located to the east of Sandhollow Road then angles southeast across State Highway 207. The route continues southeast crossing the southwest side of Freezeout Ridge and other steep terrain, before turning south and entering the Umatilla National Forest north of Matlock Hill. The route continues south for the next 8.5 miles, crossing the Blue Mountain Scenic Byway. Angling east across the Umatilla County/Morrow County line, the route exits the national forest and follows Deerhorn Ridge to UM6, its eastern common point with the East Route.

The East Route (MO24-UM5-UM7-UM6) was a refinement of CAP route N4 and part of CAP route N16. Beginning in the northern part of the region, the route heads east passing south of Gleason Butte and approximately 4 miles north of the community of Lena, Oregon. The route crosses State Highway 74 just west of the Umatilla County/Morrow County line and continues east for approximately 7 miles to Whittaker Flats where it turns due south just west of U.S. Highway 395.

The route continues south along the west side of U.S. Highway 395 for approximately 3 miles before crossing this highway. Approximately 1 mile west of the Battle Mountain Forest Wayside, the route crosses back to the west side of this highway and continues south for the next 11.4 miles until it crosses the Blue Mountain Scenic Byway. Angling southwest to avoid the Ukiah-Dale Forest State Park and Bridge Creek Wildlife Management Area, the route crosses a deep ravine to join the West Route at UM6.

Figure 3.3.3-2 and Table 3.3.3-1 display the results of the permitting difficulty, construction difficulty, and potential mitigation cost analyses for each route. The results of the analysis show that the West Route is 9.4 miles shorter than the East Route and crosses 14.3 fewer miles of deer winter range, 14.2 fewer miles of EFU-zoned land, 20.3 fewer miles of private land, and has fewer miles of both high erosion hazard soils and slopes greater than 35 percent. For additional detail on constraints crossed by each route, see Table D-3 in Appendix D. The West Route also crosses approximately 8.7 fewer miles of moderate and high permitting difficulty areas. For the reasons explained above, the West Route, MO24-UM6, was recommended as more reasonable than the East Route, MO24-UM5-UM7-UM6.

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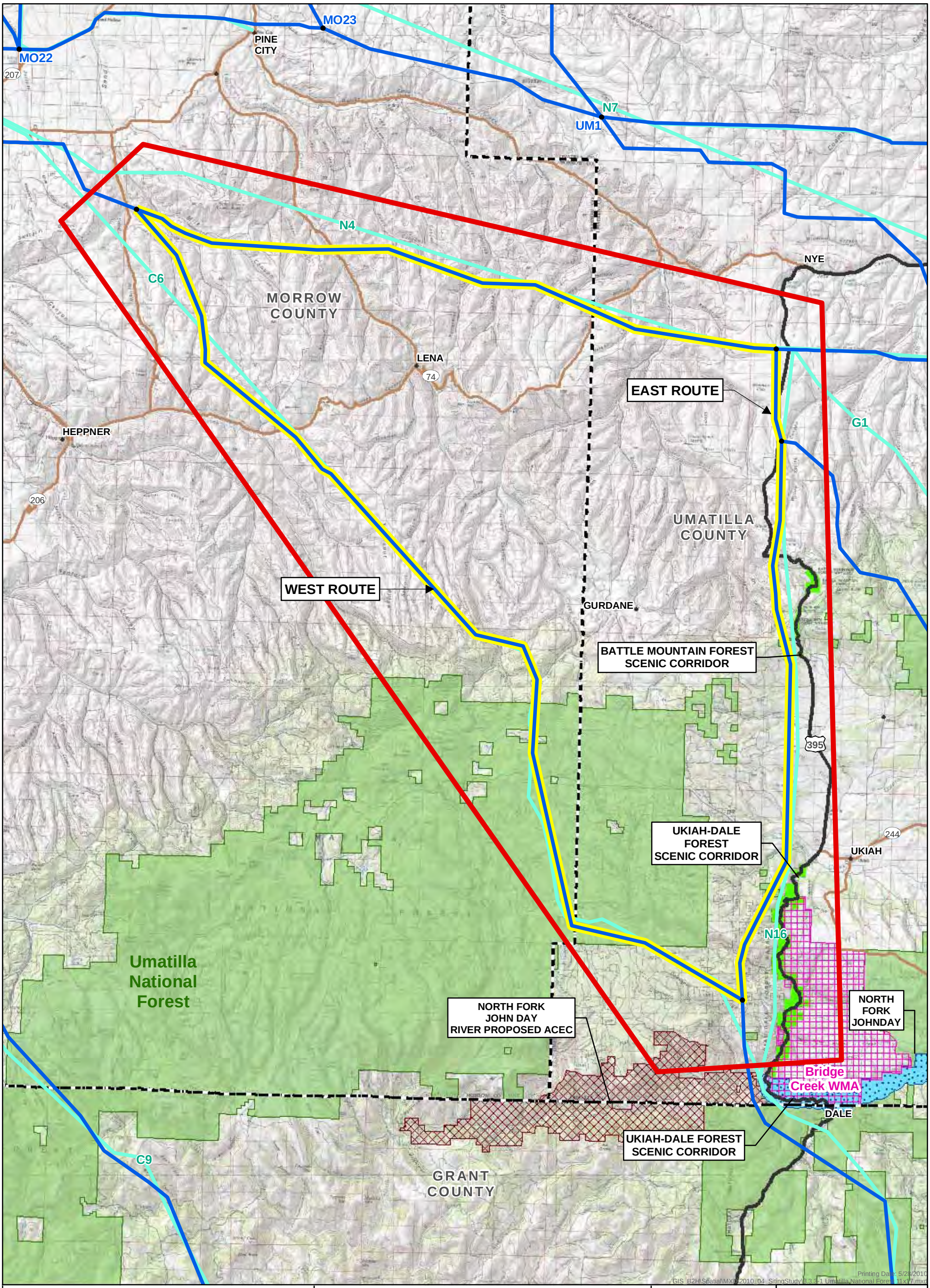


FIGURE 3.3.3-1
UMATILLA NATIONAL FOREST REGION

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Analysis Region
- Revised CAP Route
- Initial CAP Route
- County Boundary
- Wildlife Management Area
- Wild and Scenic River
- State Park
- Proposed Area of Critical Environmental Concern
- National Forest

0 1 2 3
Miles

LOCATION MAP

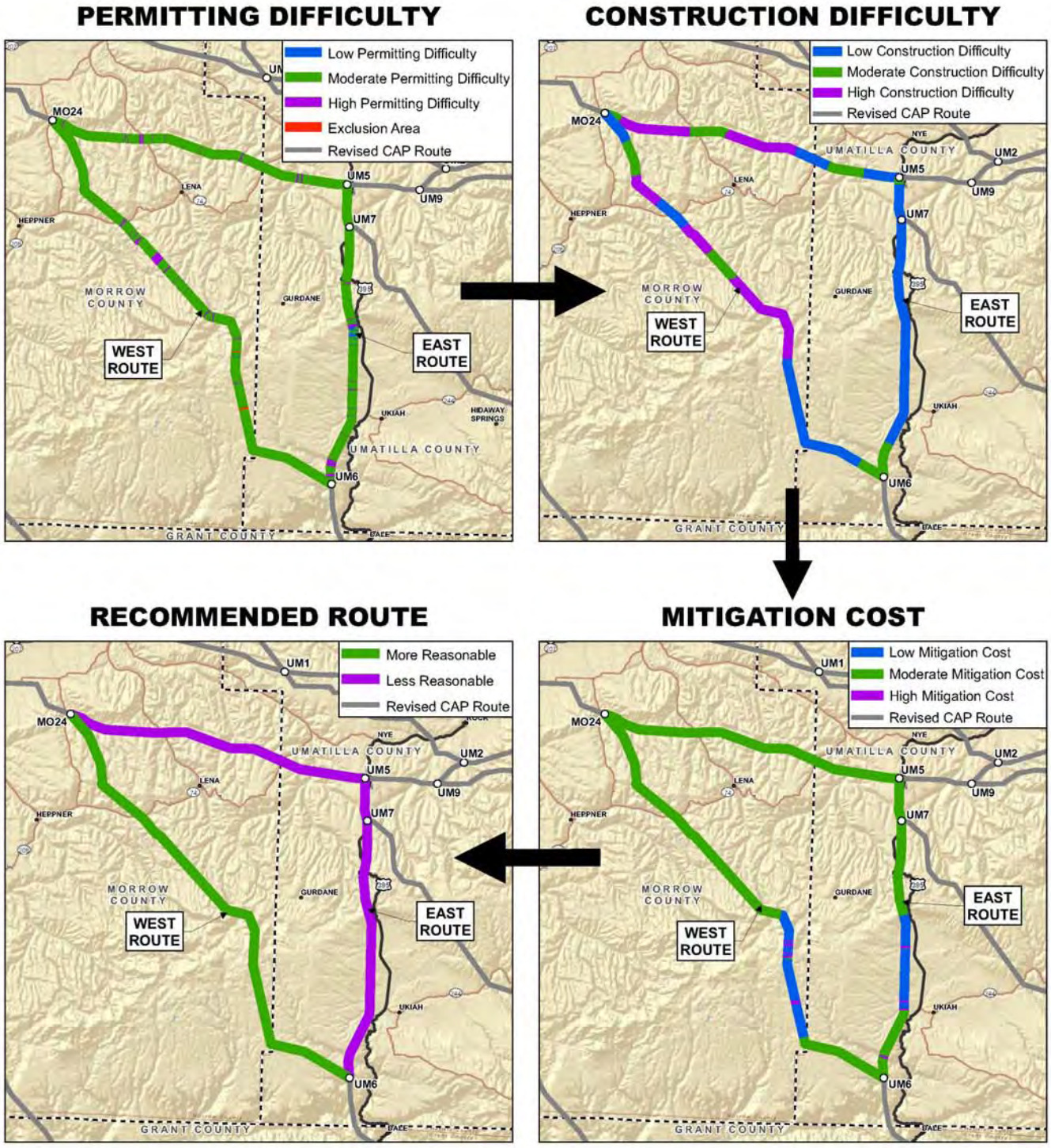


FIGURE 3.3.3-2
UMATILLA NATIONAL FOREST REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.3-1. Umatilla National Forest Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (MO24-UM6)	**East Route** (MO24-UM5-UM7-UM6)
	Length in Miles	
Permitting Difficulty		
Low	0.1	0.8
Moderate	37.9	46.1
High	2.9	3.8
Exclusion	0.4[1/]	0.0
Construction Difficulty		
Low	18.0	27.8
Moderate	8.3	10.9
High	15.0	12.0
Mitigation Cost		
Low	9.8	7.5
Moderate	30.8	42.7
High	0.7	0.5

Note:
1/ Old Growth Forest Areas will be avoided during micro-siting.

3.3.4 Pilot Rock Region

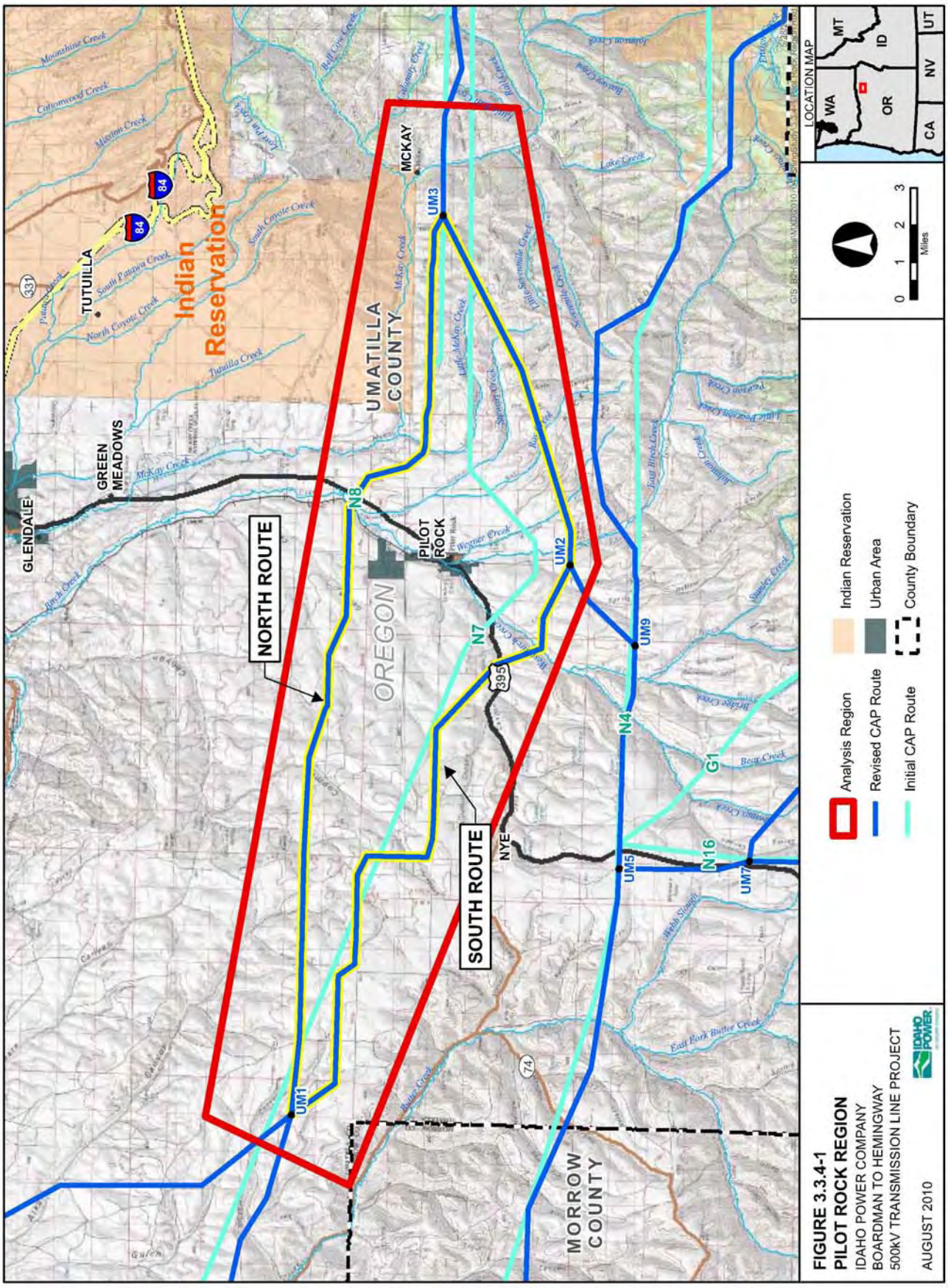
As shown in Figure 3.3.4-1, beginning approximately 1.8 miles southeast of the community of McKay, Oregon, this region spans west mostly to the south of the Confederated Tribes of the Umatilla Indian Reservation, past Pilot Rock and U.S. Highway 395 to the Morrow County/Umatilla County boundary in the vicinity of Slusher Canyon. While the eastern portion of the region consists of steep terrain and drainages within irrigated agricultural areas along the valleys and around Pilot Rock, dry agricultural lands and pasture occupy much of the lands in the western portion of the region.

Two routes were identified in this region, one to the north and one to the south of the town of Pilot Rock, Oregon, located along U.S. Highway 395. The North PAT routing session resulted in CAP route N8 crossing U.S. Highway 395 to the north of Pilot Rock and CAP route N7 crossing U.S. Highway 395 to the south of Pilot Rock. Information gathered during development of CAP route N8 indicated approximately 33 miles of lands along the northern route were owned by citizens ready to cooperate with the B2H Project. For this reason, CAP route N8 was minimally revised, and later designated the North Route (UM1-UM3) in the Pilot Rock regional analysis. CAP route N7 was revised using landowner input and designated the South Route (UM1-UM2-UM3) in the region.

The North and South Routes were analyzed for permitting difficulty, construction difficulty, and mitigation cost. The results of these analyses are shown on Figure 3.3.4-2. Table D-4 in Appendix D shows that the North Route is 3.5 miles shorter, crosses 7.4 fewer miles of deer winter range, and crosses fewer miles of EFU-zoned land than the South Route. Appendix D contains additional details on the miles of each constraint crossed by both the North and the South Routes. Table 3.3.4-1 summarizes the analyses by category and shows the North Route having fewer permitting and construction difficulties and lower mitigation costs than the South Route. Additionally, there are cooperative landowners along a 33-mile segment of the North Route and as a result it was recommended as the more reasonable route in this region.

Table 3.3.4-1. Pilot Rock Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	South Route (UM1-UM2-UM3)	**North Route** (UM1-UM3)
	Length in Miles	
Permitting Difficulty		
Low	0.6	0.4
Moderate	25.9	22.8
High	2.8	2.6
Exclusion	0.0	0.0
Construction Difficulty		
Low	13.8	15.0
Moderate	6.5	6.0
High	9.0	4.8
Mitigation Cost		
Low	16.4	20.2
Moderate	12.6	5.5
High	0.3	0.1


NORTH ROUTE
SOUTH ROUTE
OREGON
UMATILLA COUNTY
MORROW COUNTY
Indian Reservation
TUTUILLA
GREEN MEADOWS
GLENDALE
PILOT ROCK
MCKAY
NYE
UM1
UM2
UM3
UM5
UM7
UM9
N4
N7
N8
N16
G1
LOCATION MAP
WA
OR
CA
ID
NV
MT
UT
0 1 2 3 Miles
Analysis Region
Revised CAP Route
Initial CAP Route
Indian Reservation
Urban Area
County Boundary
FIGURE 3.3.4-1
PILOT ROCK REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010

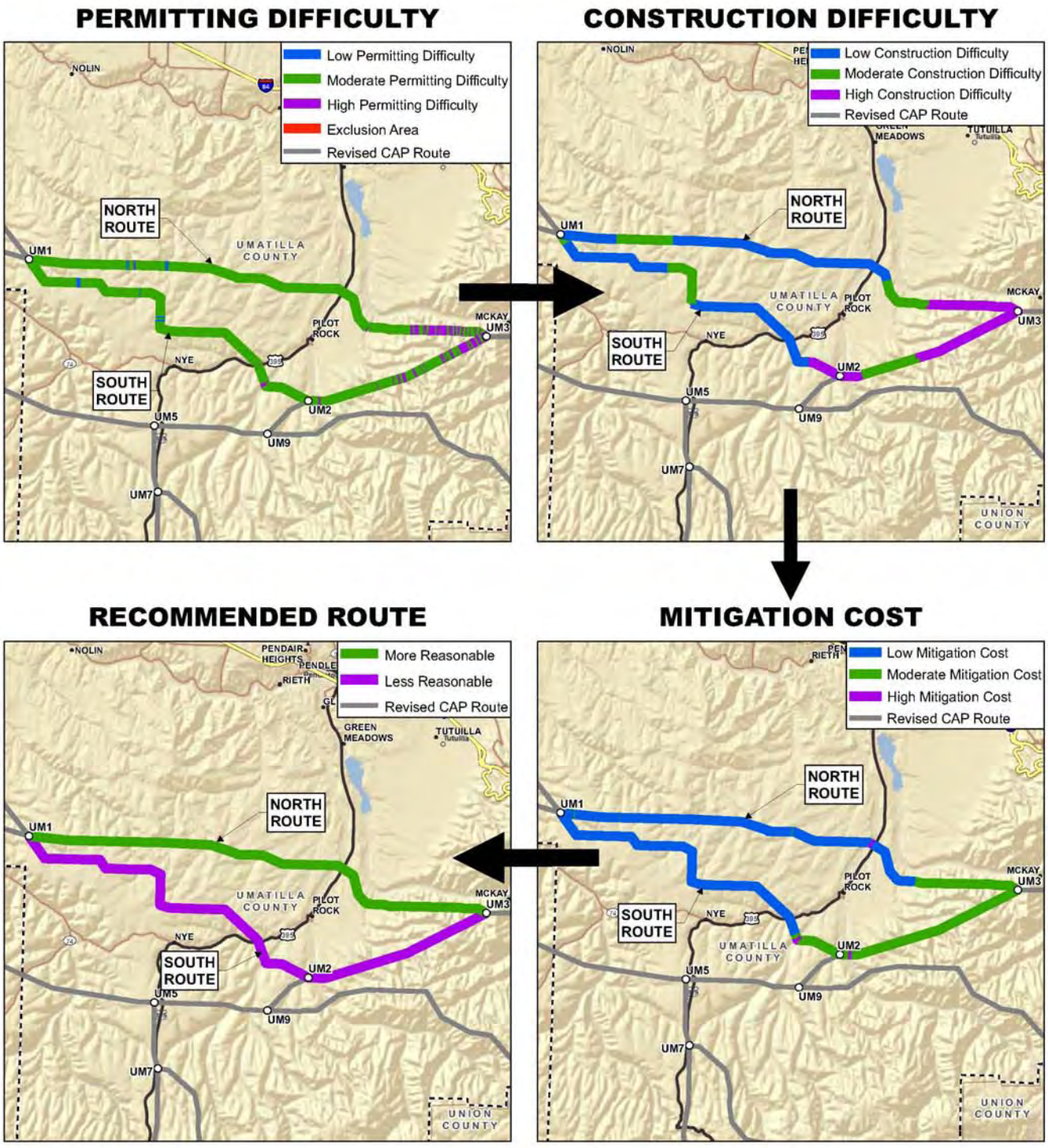


FIGURE 3.3.4-2
PILOT ROCK REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

3.3.5 West of National Forest Utility Corridor Region

This region, shown on Figure 3.3.5-1, begins just west of the Wallowa-Whitman National Forest Utility Corridor near the Union County/Umatilla County line. It spans west across Umatilla County into Morrow County ending of the community of Ella, Oregon, along the southern boundary of the Boardman Conservation Area. This region spans just over 70 miles and includes two routes for analysis, the North Route (MO16-MO17-MO18-MO21-MO23-UM1-UM3-UM4) and the South Route (MO16-MO26-MO24-UM5-UM9-UM4). The region is located mostly to the south of the Confederated Tribes of the Umatilla Indian Reservation and to the west and north of Wallowa-Whitman and Umatilla National Forests. Much of the region covers severe topography, U.S. Highway 395 and State Highway 74 cross through the central part of the region, and Pilot Rock is the largest town in the area. The western portion of the region, crossed by State Highway 207, comprises dry agricultural lands and rolling topography.

The North Route (MO16-MO17-MO18-MO21-MO23-UM1-UM3-UM4) is a revision of several CAP routes, including N8, N9, and parts of N28, N7, and N30. Beginning at MO16, located south of the Boardman Grasslands Conservation Area and southwest of the Boardman Bombing Range in Morrow County, the North Route heads east passing south of the Echo Wind Farm and north of Butter Creek Junction. Just west of the Morrow County/Umatilla County line, the route crosses State Highway 207 and continues south and east for the next 20 miles to meet with CAP route N8. The route then follows CAP route N8 closely for the next 33 miles along potentially cooperative landowner parcels, crossing U.S. Highway 395 approximately 2.5 miles north of Pilot Rock, Oregon and passing to the south of the Confederated Tribes of the Umatilla Indian Reservation. The North Route then angles southeast crossing between outlying land parcels belonging to the Confederated Tribes of the Umatilla Indian Reservation to UM4, just west of the Wallowa-Whitman National Forest Utility Corridor.

CAP route N4, originally generated during the North PAT routing session, was revised and analyzed as the South Route (MO16-MO26-MO24-UM5-UM9-UM4) within the West of National Forest Utility Corridor Region. Proceeding southeast from MO16, the South Route traverses dry agricultural lands before crossing State Highway 207, passing south of Gleason Butter and crossing State Highway 74 at the Morrow County/Umatilla County line. The route crosses U.S. Highway 395 about 3.5 miles south of Nye and the junction of State Highway 74 and U.S. Highway 395, before passing approximately 5.3 miles south of Pilot Rock. Continuing east, the terrain in the area becomes quite steep and the route crosses the foothills of Porter Hill before angling south to follow Rocky Ridge for approximately 5 miles. The South Route then threads its way east through outlying land parcels owned by the Confederated Tribes of the Umatilla Indian Reservation while staying to the north and west of the Wallowa-Whitman National Forest. The route joins with the North Route at UM4, just west of the designated utility corridor.

Figure 3.3.5-2 graphically details the results of the permitting difficulty, construction difficulty, and mitigation cost analyses performed on the North and South Routes. Mileage summaries by difficulty/cost categories can be found in Table 3.3.5-1. As the table shows, the North Route crosses 6.6 fewer miles of moderate and high permitting difficulty and about 15 fewer miles of moderate and high construction difficulty than the South Route.

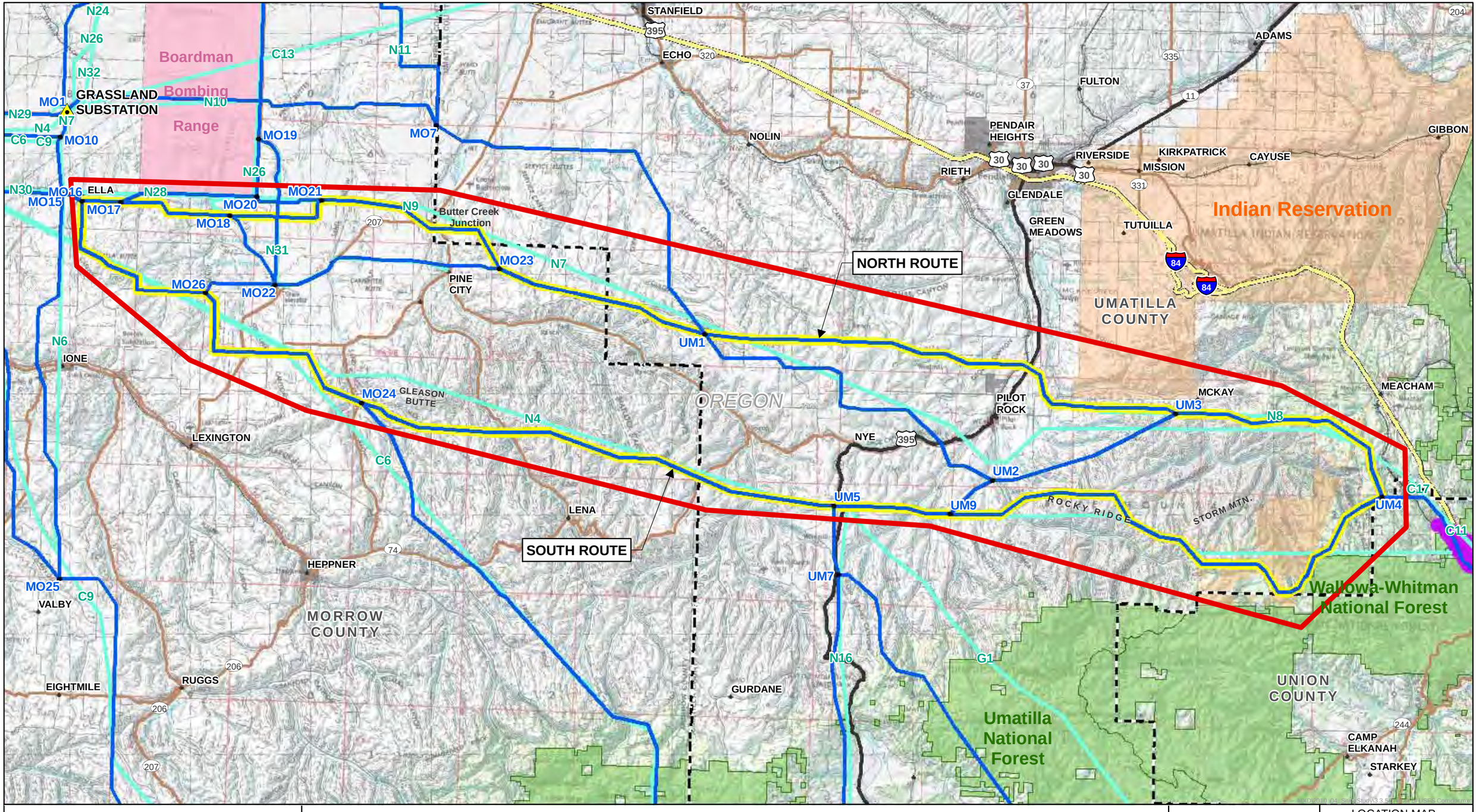


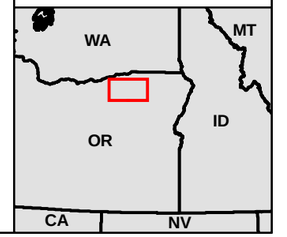
FIGURE 3.3.5-1
WEST OF NATIONAL FOREST UTILITY CORRIDOR REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Substation
- Analysis Region
- Revised CAP Route
- Initial CAP Route
- National Forest Utility Corridor
- Urban Area
- Indian Reservation
- National Forest
- Military Land
- County Boundary

0 2 4 6
Miles

LOCATION MAP



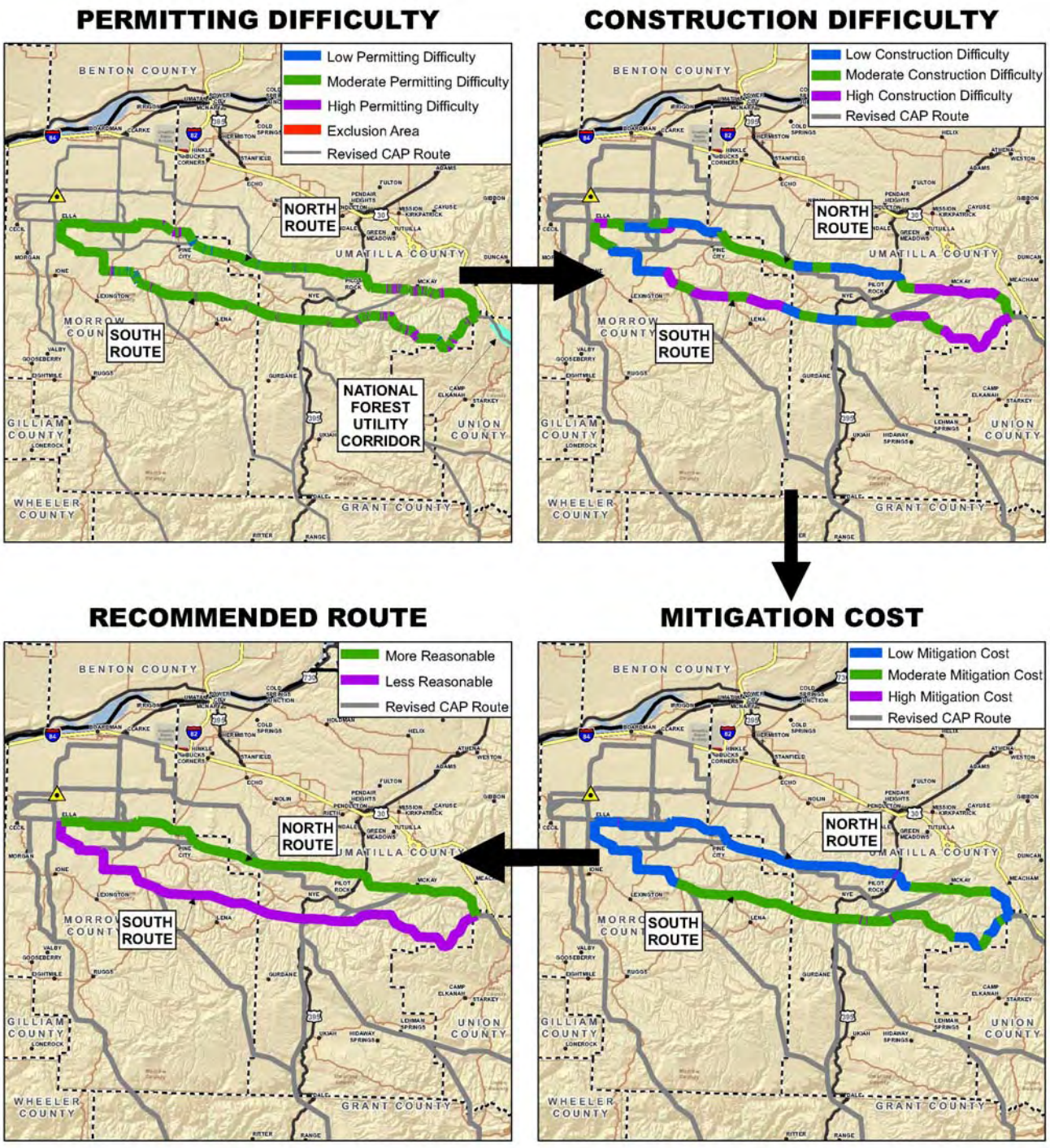


FIGURE 3.3.5-2
WEST OF NATIONAL FOREST UTILITY CORRIDOR
REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.5-1. West of National Forest Utility Corridor Summary of Permitting and Construction Difficulty and Mitigation Cost

	North Route (MO16-MO17-MO18-MO21-MO23-UM1-UM3-UM4)	**South Route** (MO16-MO26-MO24-UM5-UM9-UM4)
	Length in Miles	
Permitting Difficulty		
Low	2.3	2.3
Moderate	65.7	69.3
High	6.3	9.3
Exclusion	0.0	0.0
Construction Difficulty		
Low	29.9	21.4
Moderate	26.2	23.5
High	18.2	36.0
Mitigation Cost		
Low	61.0	30.2
Moderate	13.2	50.4
High	0.1	0.3

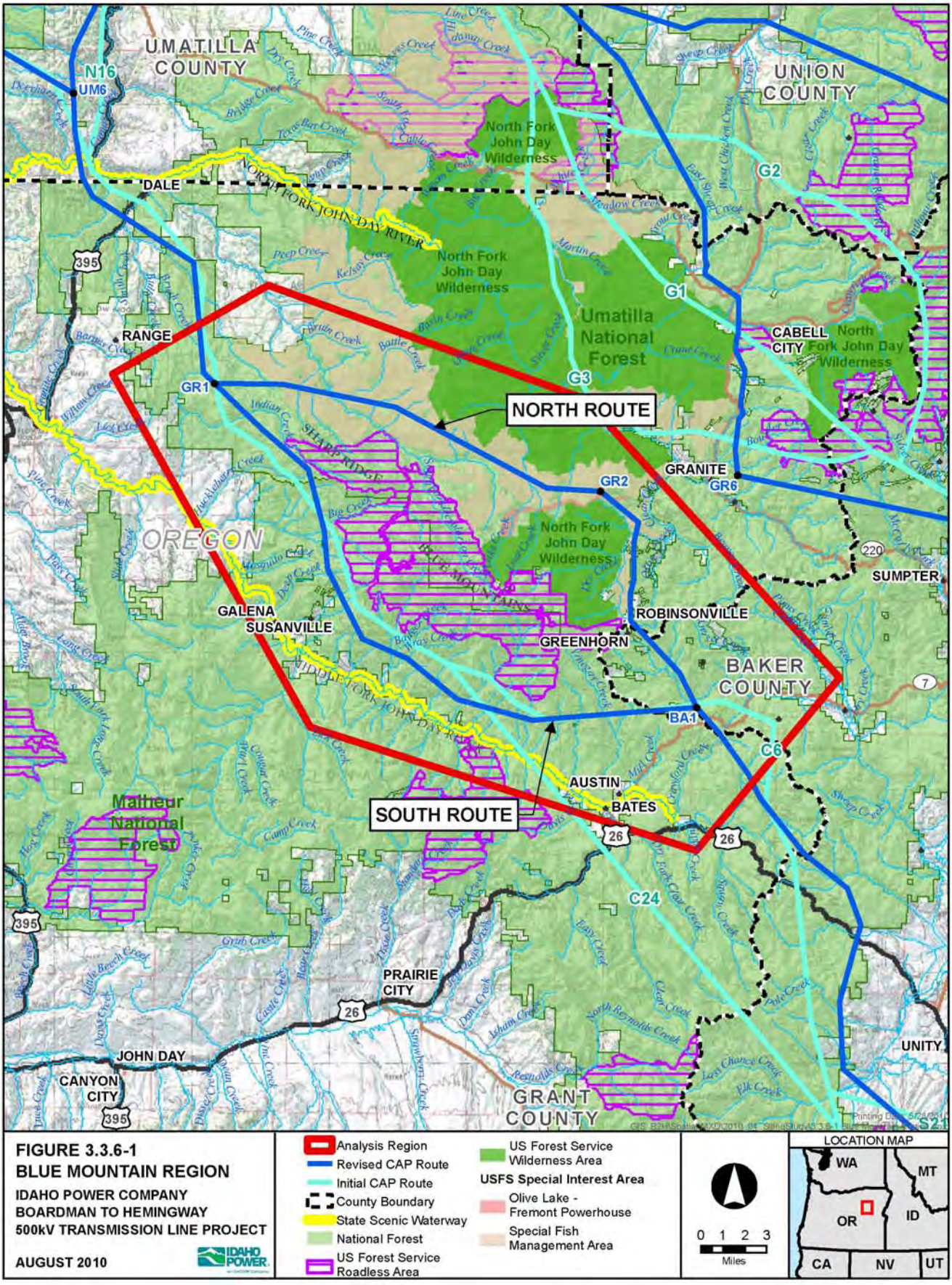
Table D-5 in Appendix D lists the constraints crossed by each route. This table shows that the North Route is 6.7 miles shorter than the South Route, crossing 39.9 fewer miles of deer winter range, 6.5 fewer miles of private land, and 1.8 fewer miles of slopes greater than 35 percent. Additionally, the North Route has approximately 33 miles of potential landowner support. For the reasons detailed above, the North Route was determined to be more reasonable than the South Route.

3.3.6 Blue Mountain Region

The Blue Mountain Region is located in the central part of the study area on the western edge of Baker County and northeastern Grant County, spanning across the Blue Mountains to Sharp Ridge as shown on Figure 3.3.6-1. Situated at the convergence of the Malheur, Umatilla, and Wallowa-Whitman National Forests, just north of the Middle Fork of the John Day River, the region covers severe terrain and pristine forests, with numerous special status fish streams and habitat restoration areas. State Highway 7, the Journey Through Time Scenic Byway, is located at the southeastern end of the region, while U.S. Highway 395 runs north-south approximately 7 miles west of the northwestern end of the region. The sparsely populated towns of Galena and Susanville lie in the southwestern part of the region, while the communities of Greenhorn and Robinsonville are located in the southeastern part of this region.

The Central PAT routing session resulted in CAP route C6 passing through the Blue Mountains and south of Sharp Ridge in this region. CAP route C6 was slightly revised and designated GR1-BA1, the South Route in the Blue Mountain Region. The North Route, GR1-GR2-BA1, which attempted to minimize crossings of special status streams and fish restoration areas, is located through the Blue Mountains and north of Sharp Ridge, and can be seen as another revision of CAP route C6.

These routes were analyzed for permitting difficulty, construction difficulty and potential mitigation costs. Figure 3.3.6-2 graphically displays the results of these analyses. The permitting difficulty and mitigation cost analyses show the routes to be similar; however, the North Route crosses about 2 more miles of high permitting difficulty than the South Route. The construction difficulty analysis was more informative, indicating that although these two routes are similar in total miles of moderate and high permitting difficulty there are an additional 11.9 miles of high construction difficulty along the North Route. See Table 3.3.6-1 for mileage summaries of the analyses. Table D-6 in Appendix D details the constraints crossed along each route. Of note is the fact that the South Route completely avoids USFS Partial Retention lands as well as the USFS Special Interest Area for Fish Management, while the North Route crosses 3.5 and 17.0 miles respectively of each area. For the reasons explained above, the South Route (CAP route C6) was recommended as more reasonable than the North Route (CAP route C6) in the Blue Mountain Region.


UMATILLA COUNTY
UNION COUNTY
BAKER COUNTY
GRANT COUNTY
OREGON
N16
UM6
DALE
RANGE
GR1
GR2
GR6
GRANITE
CABELL CITY
G1
G2
G3
North Fork John Day Wilderness
Umatilla National Forest
NORTH FORK JOHN DAY RIVER
NORTH ROUTE
SOUTH ROUTE
SHARP RIDGE
BLUE MOUNTAINS
GALENA
SUSANVILLE
ROBINSONVILLE
GREENHORN
SUMPTER
AUSTIN
BATES
BA1
C6
C24
Malheur National Forest
PRAIRIE CITY
JOHN DAY
CANYON CITY
UNITY
395
26
220
7
FIGURE 3.3.6-1
BLUE MOUNTAIN REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Analysis Region
Revised CAP Route
Initial CAP Route
County Boundary
State Scenic Waterway
National Forest
US Forest Service Roadless Area
US Forest Service Wilderness Area
USFS Special Interest Area
Olive Lake - Fremont Powerhouse
Special Fish Management Area
0 1 2 3
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

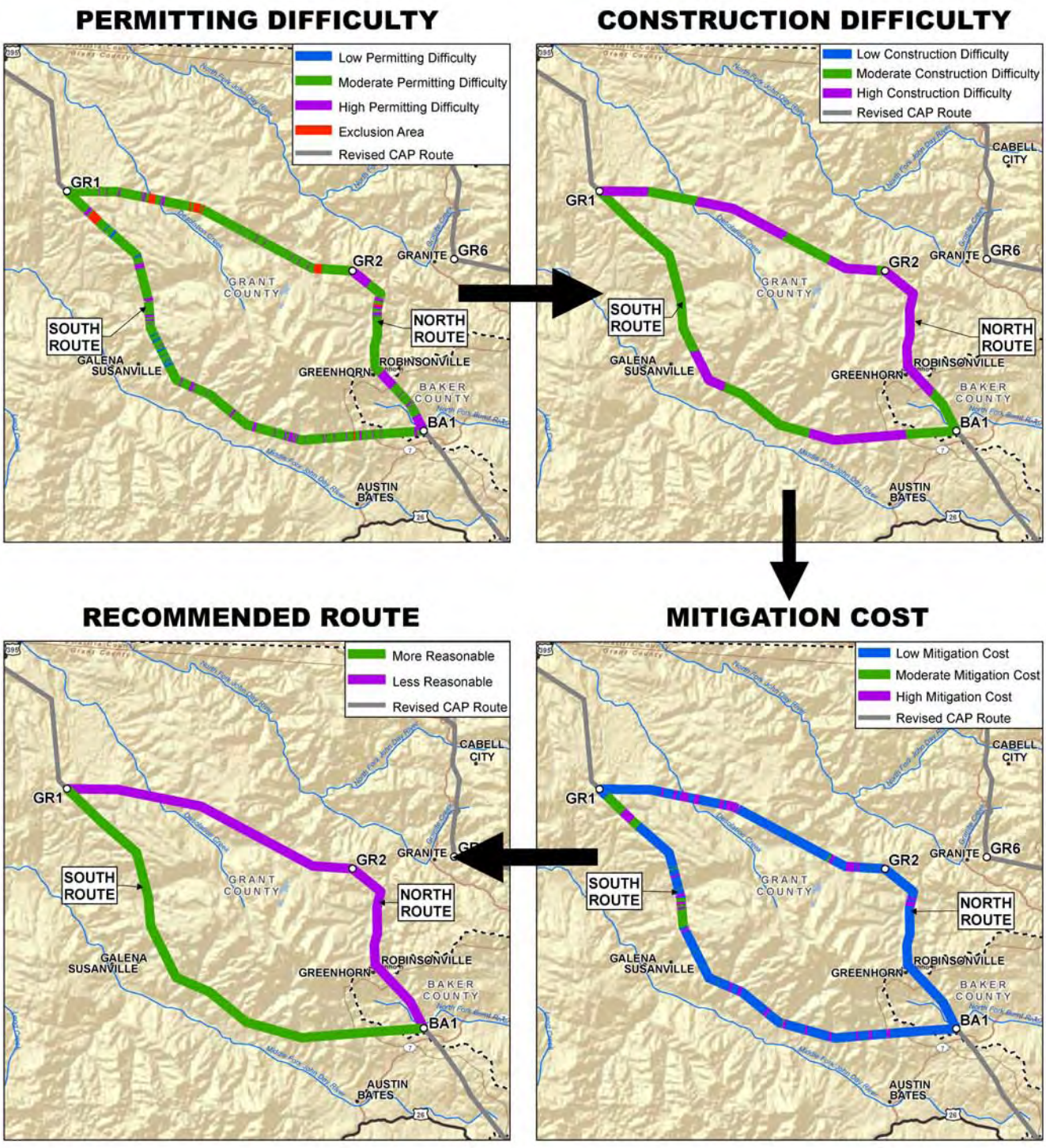


FIGURE 3.3.6-2
BLUE MOUNTAIN REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.6-1. Blue Mountain Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	North Route (GR1-GR2-BA1)	**South Route** (GR1-BA1)
	Length in Miles	
Permitting Difficulty		
Low	0.1	1.2
Moderate	23.0	24.6
High	5.4	3.5
Exclusion	1.8[1/]	0.8[1/]
Construction Difficulty		
Low	0.0	0.0
Moderate	9.2	21.0
High	21.0	9.1
Mitigation Cost		
Low	26.8	23.7
Moderate	0.1	3.7
High	3.3	2.7

Note:
1/ Old Growth Forest Areas will be avoided during micro-siting.

3.3.7 Onion Creek Region

The Onion Creek Region shown on Figure 3.3.7-1, extending nearly 60 miles, begins in the north in Umatilla County approximately 2.5 miles east of the community of Lehman Springs and spans east and south through portions of Umatilla, Union, Grant, and Baker Counties to approximately 3 miles north of Bridgeport, Oregon. This region, heavily forested with significant topography and steep slopes, is mostly located within the Wallowa-Whitman National Forest, west of Baker Valley.

Within the Onion Creek region three CAP routes G1, G2, and G3 were identified. These routes were reviewed and revised, forming a west and an east route through the region. The West Route, designated UM8-GR6-BA19, was a revision of CAP routes G1 and G3, while the East Route, designated UM8-BA21-BA19, was a revision of CAP routes G1 and G2.

The East Route, beginning at UM8 in Umatilla County, heads east into Union County, passing south of Fly Valley before crossing an area of severe terrain, the Grande Ronde River Road and the Grande Ronde River. At the eastern boundary of the Wallowa-Whitman National Forest, the route turns south, heads into Baker County passing west of the Elkhorn State Wildlife Management Area. Continuing south, the route crosses the Elkhorn Scenic Byway, enters the foothills of Twin Mountain, and angles southeast traversing the east side of Hunt Mountain and Elkhorn Ridge, as it travels along the west side of Baker Valley. South of Bowen Valley, the East Route crosses State Highway 7, a scenic byway, angles south toward Dooley Mountain and then east, passing north of Beaver Mountain proceeding to BA19 at the southern end of the region.

The West Route heads southeast from UM8, passing into Union County, and turns south across steep terrain before entering Grant County. The route then enters into a highly constrained area (see Figure 3.3.7-2), passing through USFS Retention Lands while paralleling and crossing the Blue Mountain Scenic Byway two times and the Elkhorn Scenic Byway three times. Due to the USFS North Fork John Day Wilderness Area located along the western side of the highway and the USFS Twin Mountain Inventoried Roadless Area located long the eastern side, the route is confined to a narrow corridor in close proximity to the Scenic Byway. Continuing south, offset to the east of the Blue Mountain Scenic Byway, the route proceeds across special status fish streams, fish restoration habitat, and severe terrain before turning east approximately 1 mile east of the community of Granite and north of the community of Porterville. The route then crosses into Baker County and continues east, passing south of Pole Creek Ridge angling to the southeast while staying to the north of Sumpter Valley. The route angles around the north and eastern sides of Phillips Lake and passes north of Bald Mountain and across the Snake River-Mormon Basin Back County Byway to BA19 where it joins with the East Route at the southern end of the region.

With the revision of the West Route unable to avoid the USFS Retention Lands, a permitting exclusion area, and the route's close proximity to the Blue Mountain and Elkhorn Scenic Byways for about 5 miles, the East Route was determined to be more reasonable than the West Route. While the permitting difficulty analysis confirmed this, the construction difficulty analysis indicated that both routes cross similar distances of moderate and high construction difficulty. Figure 3.3.7-3 displays the results of the three analyses and Table 3.3.7-1 summarizes the miles crossed of each difficulty level within each analysis.

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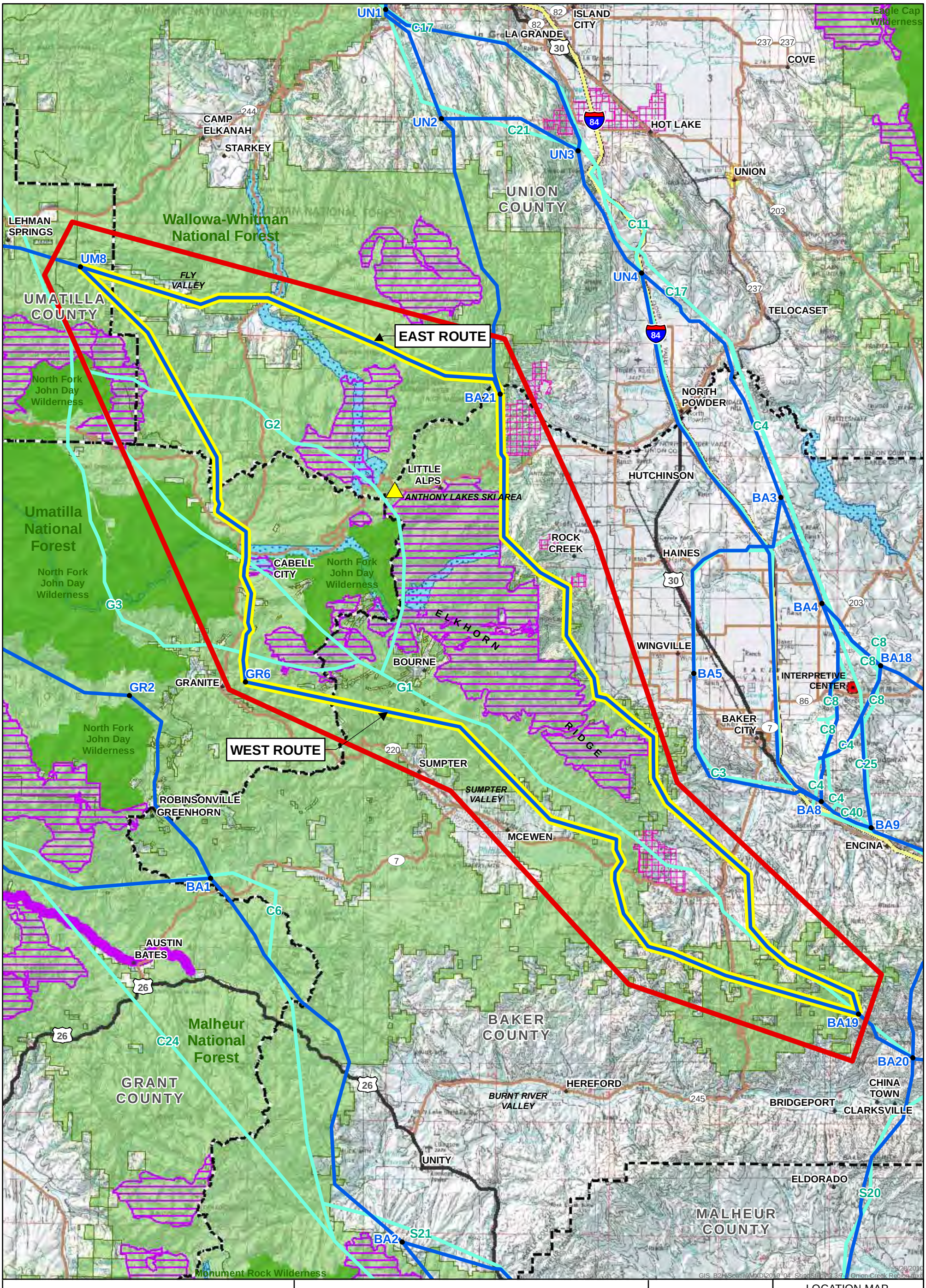


FIGURE 3.3.7-1
ONION CREEK REGION

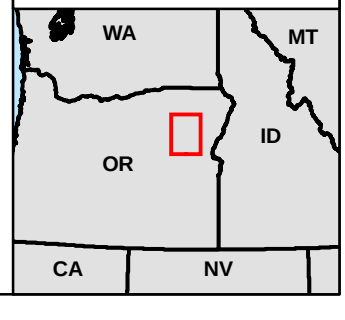
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

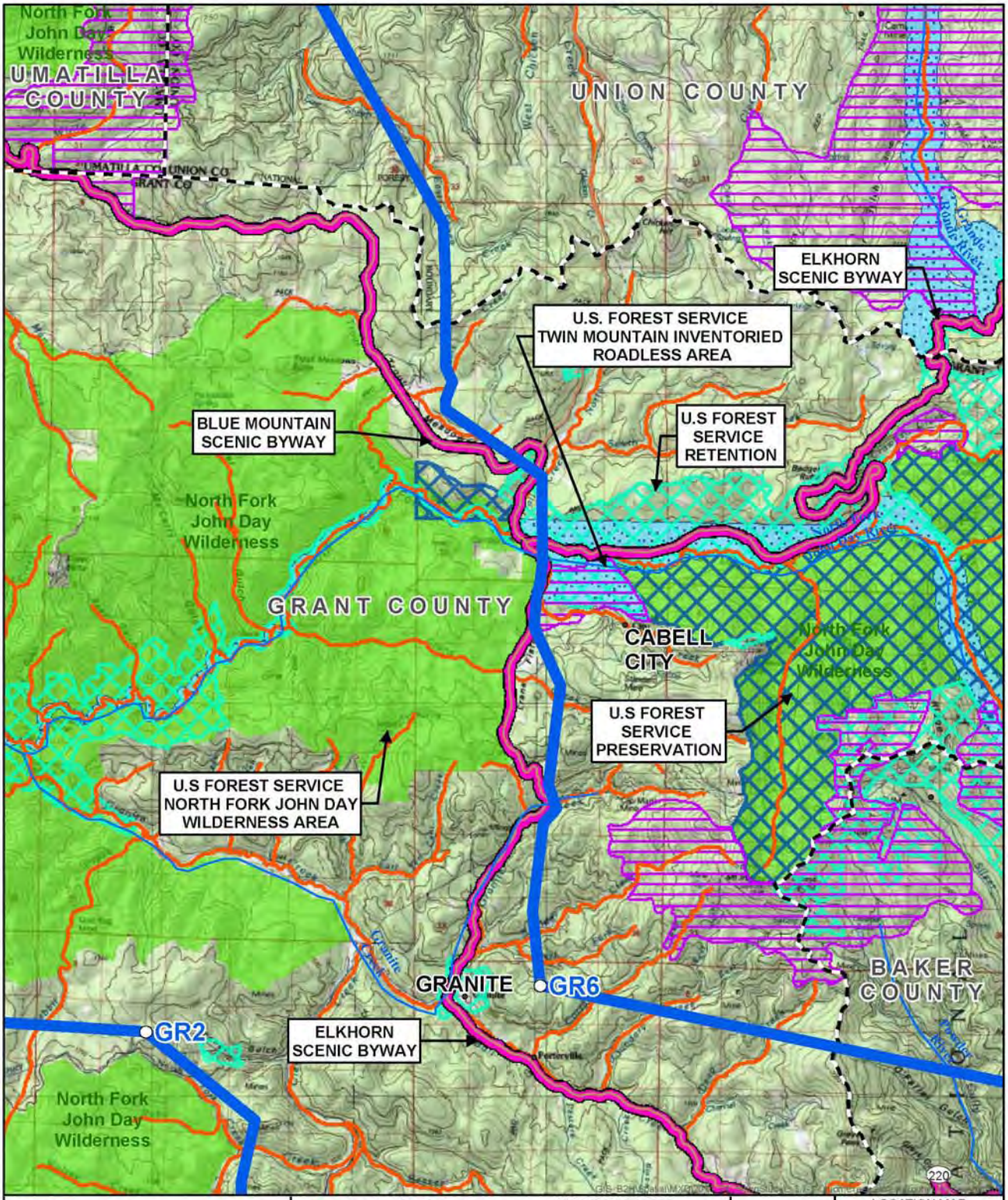
AUGUST 2010

- Analysis Region
- Revised CAP Route
- Initial CAP Route
- County Boundary
- Wildlife Management Area
- State Scenic Waterway
- US Forest Service Roadless Area
- US Forest Service Wilderness Area
- National Forest
- Wild/Scenic River

0 5 Miles

LOCATION MAP




North Fork John Day Wilderness
UMATILLA COUNTY
UNION COUNTY
ELKHORN SCENIC BYWAY
U.S. FOREST SERVICE TWIN MOUNTAIN INVENTORIED ROADLESS AREA
BLUE MOUNTAIN SCENIC BYWAY
U.S FOREST SERVICE RETENTION
North Fork John Day Wilderness
GRANT COUNTY
CABELL CITY
North Fork John Day Wilderness
U.S FOREST SERVICE PRESERVATION
U.S FOREST SERVICE NORTH FORK JOHN DAY WILDERNESS AREA
GRANITE
GR6
GR2
BAKER COUNTY
ELKHORN SCENIC BYWAY
North Fork John Day Wilderness
220
FIGURE 3.3.7-2
WEST ROUTE CONSTRAINTS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Revised CAP Route
Scenic Byway
Special Status Stream
US Forest Service Roadless Area
Wildlife Management Area
Wild/Scenic River
US Forest Service VQO Area: Retention
US Forest Service VQO Area: Preservation
US Forest Service Wilderness Area
0 1
Miles
LOCATION MAP
OR
ID

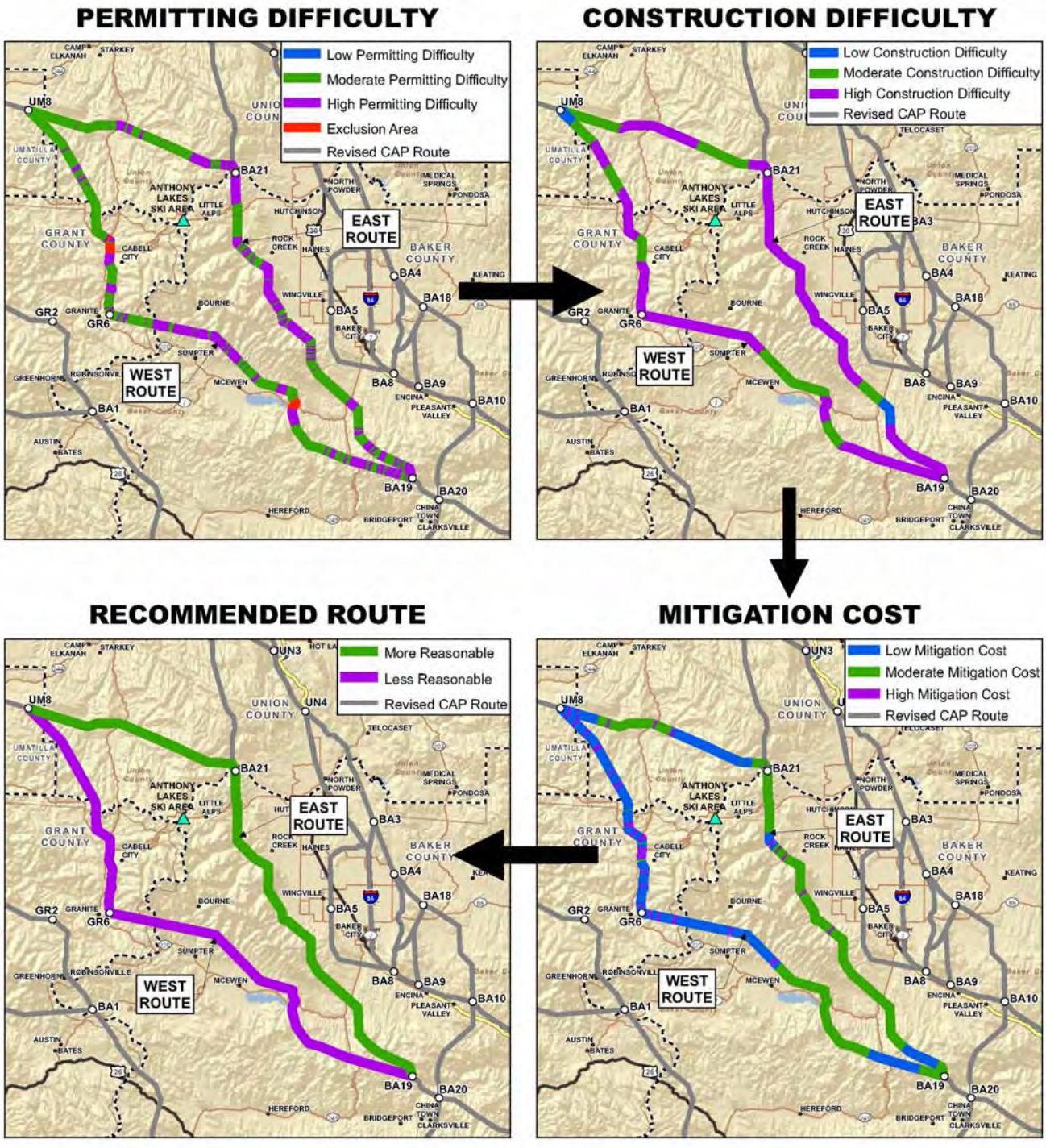


FIGURE 3.3.7-3
ONION CREEK REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.7-1. Onion Creek Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	East Route (UM8-BA21-BA19)	**West Route** (UM8-GR6-BA19)
	Length in Miles	
Permitting Difficulty		
Low	0.1	0.0
Moderate	36.3	38.1
High	30.2	25.9
Exclusion	0.0	2.6
Construction Difficulty		
Low	3.6	1.8
Moderate	15.0	21.0
High	48.0	43.7
Mitigation Cost		
Low	19.3	44.0
Moderate	45.7	18.7
High	1.6	3.9

Table D-7 in Appendix D shows the more reasonable East Route crossing 1.2 miles of a BLM-designated Wild and Scenic River, the Grande Ronde River. While not a permitting exclusion area due to its designation for recreation, it is highly preferable to avoid crossing this river along the East Route. This river crossing combined with a strong preference to use the designated utility corridor resulted in a new route extending due north from BA21 to meet with another revised CAP route at UN2 (see Figure 3.3.7-4). This new segment, UN2-BA21, makes it possible to avoid crossing the Grande Ronde River and use the Wallowa-Whitman designated utility corridor. This modified East Route was recommended as the most reasonable route in the Onion Creek Region.

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UMATILLA COUNTY
UM4
U.S. NATIONAL FOREST UTILITY CORRIDOR
UN1
Wallowa-Whitman National Forest
Grande Ronde River
UNION COUNTY
UN2
UN3
ONION CREEK CONNECTOR
WILD AND SCENIC RIVER
UM8
UN4
PERMITTING BARRIER
U.S FOREST SERVICE RETENTION
U.S FOREST SERVICE WILDERNESS AREA
U.S FOREST SERVICE PRESERVATION
U.S. FOREST SERVICE ROADLESS AREA
GRANT COUNTY
Umatilla National Forest
GR2
GR6
BA21
BA1
BA3
BA4
BA5
BA8
BA9
BA18
BA19
BA20
BAKER COUNTY
Malheur National Forest
North Fork John Day Wilderness
Eagle Cap Wilderness
IMBLER
ALICEL
HILGARD
PERRY
ISLAND CITY
GRANDE
COVE
CAMP ELKANAH
STARKEY
HOT LAKE
UNION
TELOCASET
NORTH POWDER
MEDICAL SPRINGS
PONDOSA
LITTLE ALPS
HUTCHINSON
ROCK CREEK
HAINES
CABELL CITY
BOURNE
WINGVILLE
INTERPRETIVE CENTER
BAKER CITY
GRANITE
ROBINSONVILLE
GREENHORN
SUMPTER
MCEWEN
ENCINA
PLEASANT VALLEY
AUSTIN
BATES
HEREFORD
CHINA TOWN
BRIDGEPORT
CLARKSVILLE
Indian Creek
Clark Creek
Catherine Creek
Camas Creek
Beaver Creek
Granite Creek
Camp Creek
North Fork Burnt River
Middle Fork John Day River
Burnt River
Powder River
82
30
237
244
220
203
7
26
86
245
84

FIGURE 3.3.7-4
ONION CREEK CONNECTOR

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Analysis Region
- Revised CAP Route
- County Boundary
- National Forest Utility Corridor
- US Forest Service Roadless Area
- US Forest Service Wilderness Area
- National Forest
- US Forest Service VQO Area: Retention
- US Forest Service VQO Area: Preservation
- Wildlife Management Area
- Wild and Scenic River

0 5
Miles

LOCATION MAP
WA
OR
ID

5/28/2010
GIS_B2H\Spatial\MXD\2010_04_SitingStudy\3.3.7-4 Onion Creek - Connector.mxd

3.3.8 Interpretive Center Region

As shown on Figure 3.3.8-1 the Interpretive Center Region is generally bounded on the west and south by I-84. It extends from State Route 203 in the north to the vicinity of Pleasant Valley in the south and from Baker City in the west to Virtue Flat in the east. In this region, two routes—the West Route and the Central Route—were identified at the PAT meetings in Baker County. The West Route was developed from CAP routes C4, C8, and C40 and the Central Route evolved from CAP routes C4, C8, and C25.

The East Route (BA4-BA18-BA10) was identified in December 2009 using sage-grouse lek buffer data that showed an open path between the occupied sage-grouse lek buffers in the Virtue Flat area. Because the route was now located several miles east of the National Historic Oregon Trail Interpretive Center, the visual impact concerns for the Oregon National Historic Trail seemed to be resolved. However, in early 2010 the sage-grouse lek buffer data were updated and showed the East Route crossing an occupied sage-grouse lek 2-mile buffer and now impacting ODFW Category 1 habitat. This route cannot be considered preferred, but was kept should the sage-grouse lek buffer data subsequently change again.

The West Route (BA4-BA8-BA9-BA10, + 230-kV reroute), which places the proposed 500-kV line within the ROW for the existing 230-kV line and relocates the existing 230-kV line to the east side of the National Historic Oregon Trail Interpretive Center, was suggested as a means of minimizing visual impact to the National Historic Oregon Trail Interpretive Center. The West Route leaves point BA4 and proceeds southeast for about 2.2 miles before following the path of the existing 230-kV (which would be relocated). The route continues south following the 230-kV path for the next approximately 3.0 miles, turning southwest across State Route 86. Approximately 3.6 miles south of this highway, the West Route crosses the proposed location for the 230-kV line reroute and then parallels the existing 230-kV line south to the vicinity of I-84 offset 1,500 feet to the east. The West Route then turns eastward while remaining on the north side of I-84 for about 9.3 miles generally in corridor with the existing 69-kV and 138-kV lines to point BA10, northeast of Pleasant Valley.

The West Route would require approximately 9.0 miles of the existing 230-kV line to be relocated to allow for the 500-kV line placement west of the National Historic Oregon Trail Interpretive Center. The proposed 230-kV line reroute begins southeast of BA4 and proceeds southeasterly toward BA18 where it angles south and west, east of the National Historic Oregon Trail Interpretive Center. The 230-kV line reroute crosses State Route 86 and continues southwesterly for the next 4.7 miles, passing north of Lone Pine Mountain and meeting with the existing 230-kV line approximately 1.0 mile northwest of the Lone Pine Waterhole.

The Central Route (BA4-BA18-BA9-BA10) follows the same path as the 230-kV reroute (West Route) from point BA4 to BA18, to a location approximately 1.3 miles south of State Route 86 where instead of heading west the Central Route proceeds nearly due south passing east of Lone Pine Mountain. This route joins the north side of I-84 and the existing 69-kV and 138-kV transmission corridor, and follows the same path as the West Route to point BA10.

Figure 3.3.8-2 graphically details the results of the permitting difficulty, construction difficulty, and mitigation cost analyses performed on the routes in this region. As shown in Table 3.3.8-1 and in Appendix D Table D-8, compared to the West Route the Central Route would result in 11.0 fewer miles of construction, cross 5.9 miles less sage-grouse Core Area 1 Habitat, cross 11 fewer miles of EFU, cross 7.5 fewer miles of prime farmland soils, and cross 3.5 fewer miles of deer winter range. Overall, the Central Route appears less difficult to permit and less difficult to construct than the West Route. For the reasons stated above, the Central Route was recommended as the most reasonable alternative route in this region.

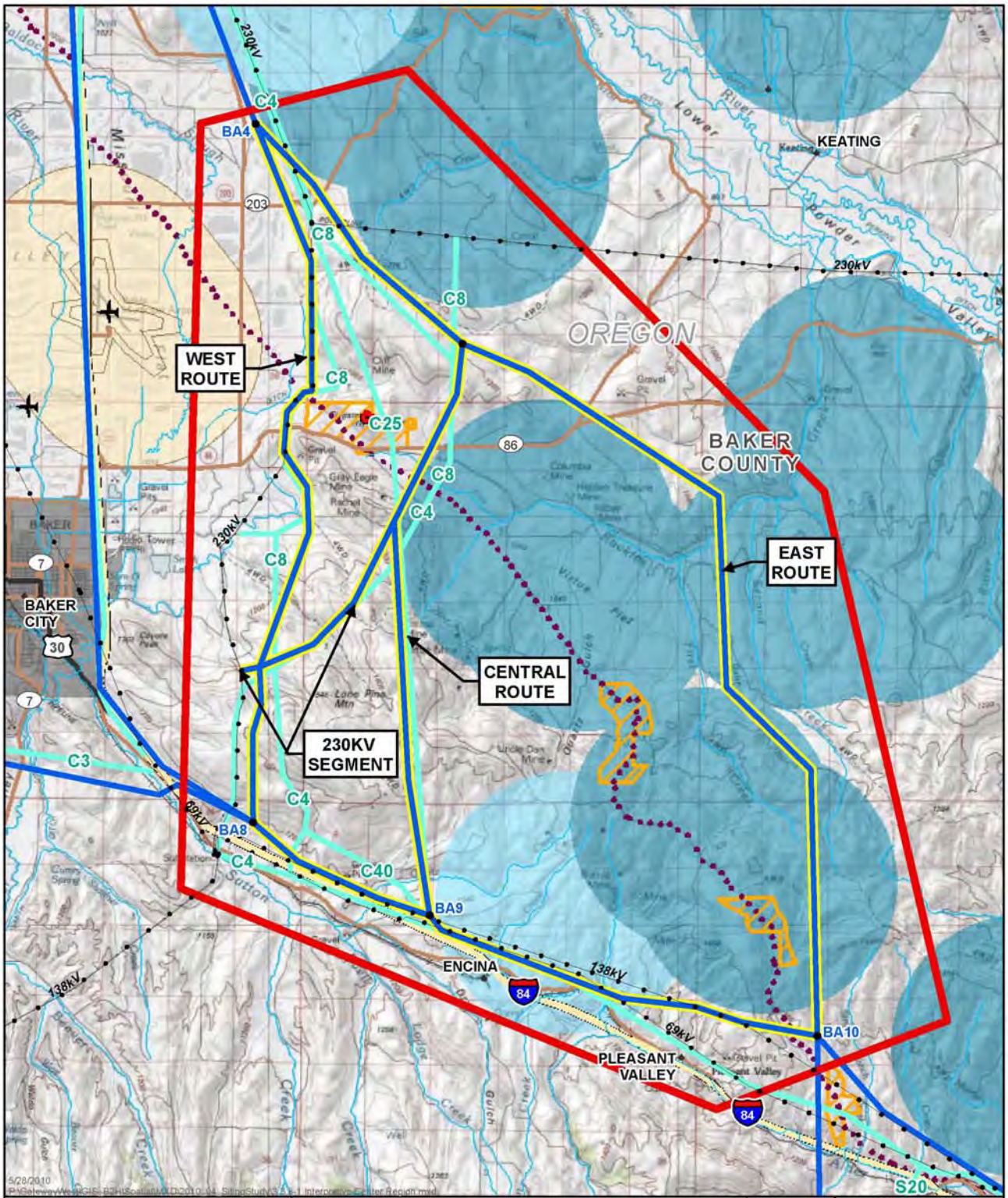


FIGURE 3.3.8-1
INTERPETIVE CENTER REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010

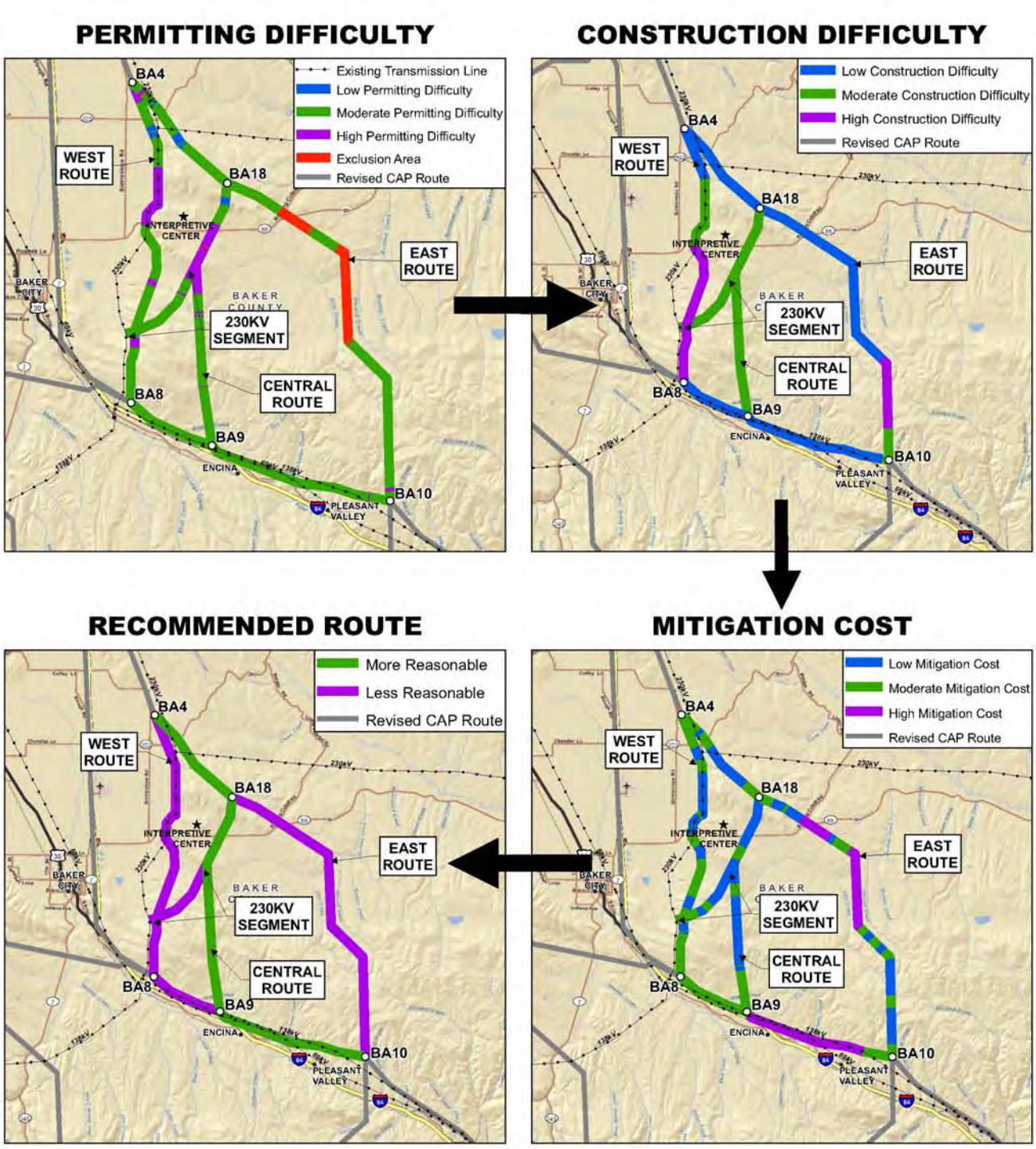


FIGURE 3.3.8-2
INTERPRETIVE CENTER REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.8-1. Interpretive Center Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (BA4-BA8-BA9-BA10 + 230 kV ReRoute)	**Central Route** (BA4-BA18-BA9-BA10)	**East Route** (BA4-BA18-BA10)
	Length in Miles		
Permitting Difficulty			
Low	1.2	0.8	0.6
Moderate	24.2	16.1	12.5
High	5.4	2.9	0.2
Exclusion	0.0	0.0	4.6
Construction Difficulty			
Low	17.4	10.6	13.6
Moderate	7.4	9.2	1.3
High	6.0	0.0	3.0
Mitigation Cost			
Low	11.6	8.4	7.4
Moderate	14.3	6.5	5.9
High	4.9	4.9	4.6

3.3.9 Southwest Region

The Southwest Region includes portions of northwest Malheur County, northern Harney County, and southern Grant County as shown on Figure 3.3.9-1. In the western half of this region, the Malheur and Ochoco National Forests cover much of the higher elevations and the eastern half is mostly sage brush and high desert. U.S. Route 26 (Journey Through Time Scenic Byway) is the major east-west highway in the northern part of the region, passing through communities such as John Day and Mount Vernon. To the south, U.S. Route 20 extends across the southern part of this region and passes through communities like Burns and Hines. Outside these major transportation corridors there is sparse and scattered development.

Within the region, four routes evolved from the CAP as shown on Figure 3.3.9-1 including Route A (GR3-GR4-HA1-HA2-MA6), Route B (GR3-GR4-GR5-HA1-HA2-MA6), Route C (GR3-GR4-GR5-HA2-MA6), and Route D (GR3-MA4-MA5-MA6). The initial routes from which these refined routes were developed were identified at the Central and South routing sessions.

Route A, developed from CAP route C9, proceeds from common point GR3 southwest for 6.2 miles before crossing U.S. Route 26 about 7 miles east of Dayville. It then turns southeast and then generally south across the Aldrich Mountains, the Malheur National Forest, and the South Fork of the John Day River. It then angles to the southwest and continues to the southwest corner of Grant County where it turns southeast through the common points HA1 and HA2 where it generally parallels U.S. Route 20. About 3.5 miles northwest of Buchanan, it turns south and crosses this highway. Route A turns and continues easterly passing south of Lawton Point, crossing Stinkingwater Mountains, south of Warm Springs Reservoir and Riverside, and then angling northeast along the Summer Lake-Midpoint 500-kV line to common point MA6.

Route B, developed from CAP routes C9 and S96, is similar to Route A except where it crosses the Aldrich Mountains. From common point GR4 this route angles southeast. At common point GR 5, Route B turns southwest and then due south to rejoin Route A at common point HA1. This route follows the western side of Bear Valley and is largely located in the Malheur National Forest and crosses the Grant/Harvey County line on the west side of Cougar Mountain. From common point HA1 this alternative shares the same alignment as Route A.

Route C, developed from CAP routes C9 and S23, is similar to Route B except for a 47-mile segment where it leaves common point GR5 and proceeds southeast to point HA2. This route also passes to the west of Bear Valley and is located mostly in the Malheur National Forest. This alternative follows the alignment for Route A from common point HA2 to the end at point MA6.

Route D, developed from CAP routes C6 and C18, proceeds from point GR3 in a southeasterly direction and crosses U.S. Route 26 just west of Moores Crossing. This route then follows the north side of the Aldrich Mountains for about 14 miles before turning south to cross these mountains. On the south side of these mountains, the route angles generally southeast, continues through Harney County and into Malheur County, joining Routes A, B, and C at common point MA6 just west of the Owyhee Reservoir.

As shown on Table D-9 in Appendix D, Route A is the longest alternative in this region at 186.6 miles, requiring about 360 to 1,630 additional acres of new ROW. It crosses more miles of deer and elk winter range, more EFU, more private land, and more land slide area than Routes B, C, and D. It also crosses the South Fork of the John Day River, a designated Wild and Scenic River, and crosses a BLM recreation area for 2.9 miles.

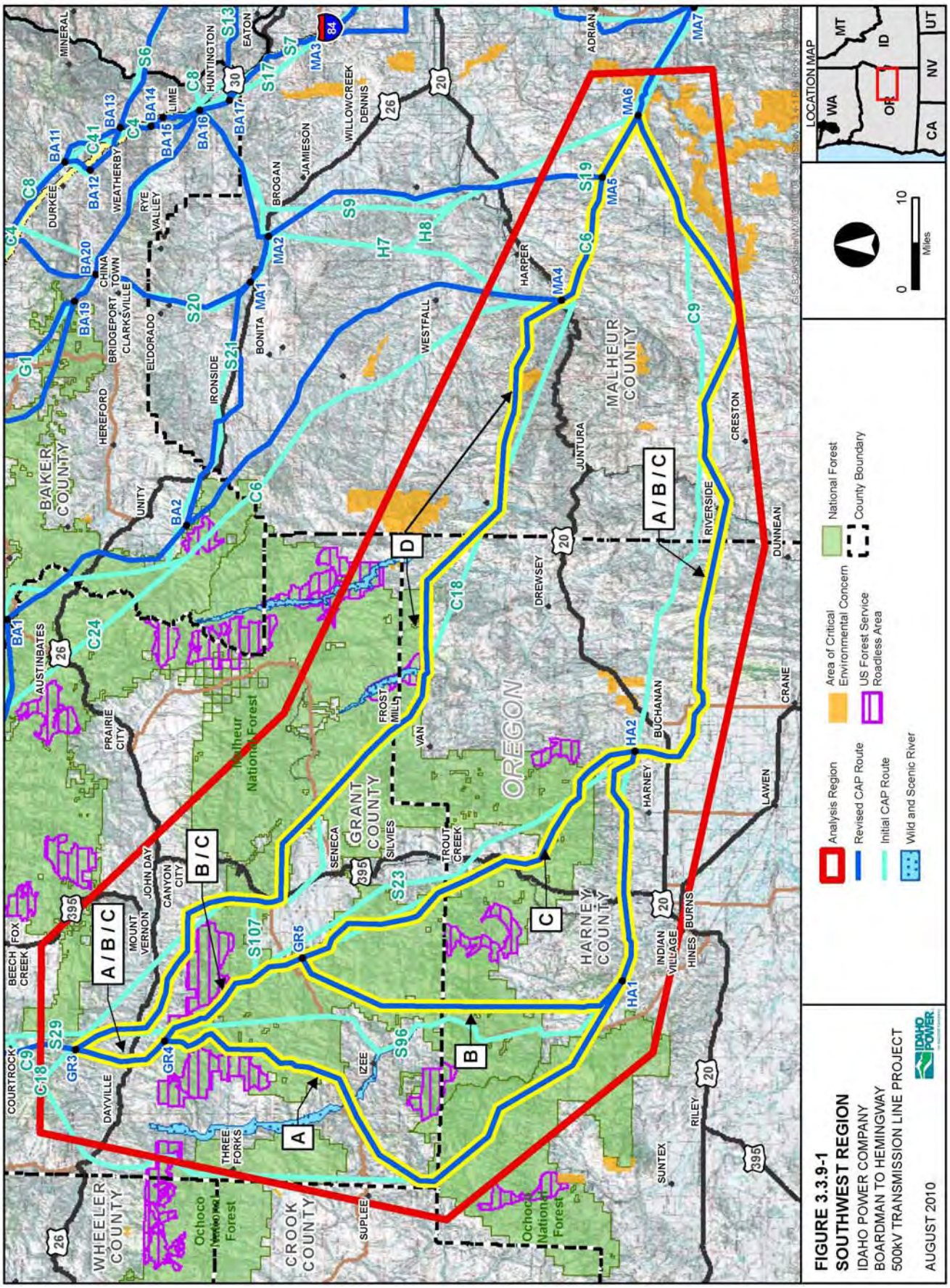


FIGURE 3.3.9-1
SOUTHWEST REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
LOCATION MAP
WA
OR
CA
ID
NV
MT
UT
0
10
Miles
Analysis Region
Revised CAP Route
Initial CAP Route
Wild and Scenic River
National Forest
County Boundary
Area of Critical Environmental Concern
US Forest Service Roadless Area
BAKER COUNTY
MALHEUR COUNTY
GRANT COUNTY
HARNEY COUNTY
WHEELER COUNTY
CROOK COUNTY
OREGON
Malheur National Forest
Ochoco National Forest
A
B
C
D
A / B / C
B / C
MINERAL
DURKEE
EATON
HUNTINGTON
LIME
WEATHERBY
RYE VALLEY
BROGAN
JAMIESON
WILLOWCREEK
DENNIS
ADRIAN
CHINA TOWN
BRIDGEPORT
CLARKSVILLE
ELDORADO
IRONSIDE
BONITA
WESTFALL
HARPER
HEREFORD
UNITY
AUSTINBATES
PRAIRIE CITY
JUNTURA
CRESTON
RIVERSIDE
DUNNEAN
DREWSEY
FROST MILL
VAN
SENECA
SILVIES
TROUT CREEK
BUCHANAN
HARNEY
LAWEN
CRANE
BEECH CREEK
FOX
MOUNT VERNON
JOHN DAY
CANYON CITY
INDIAN VILLAGE
HINES
BURNS
COURTROCK
DAYVILLE
THREE FORKS
IZEE
SUPLEE
RILEY
SUNTEX

Figure 3.3.9-2 and Table 3.3.9-1 detail the results of the permitting difficulty, construction difficulty, and mitigation cost analyses performed on the routes in this region. In total, this route has the highest permitting difficulty and is one of the two most difficult to construct. As a result of the factors described above, Route A was not recommended for further consideration.

Table 3.3.9-1. Southwest Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
	Length in Miles			
Permitting Difficulty				
Low	5.6	6.1	4.8	3.3
Moderate	151.9	137.9	119.9	104.3
High	28.0	26.9	27.9	22.2
Exclusion	1.1[1/]	3.8[1/]	3.6[1/]	3.0[1/]
Construction Difficulty				
Low	27.0	21.0	21.0	15.0
Moderate	71.4	62.4	56.4	48.4
High	88.2	91.3	78.8	69.4
Mitigation Cost				
Low	48.0	53.4	63.8	25.0
Moderate	123.5	103.3	78.4	103.7
High	15.1	18.0	14.0	4.1

Note:
1/ Old Growth Forest Areas will be avoided during micro-siting.

Of the three remaining routes, Route B is longer than Routes C and D by 18.4 to 41.7 miles, respectively, and would require about 560 to about 1,260 additional acres of ROW. This route crosses a BLM recreation area for 3.1 miles as compared to 0.0 mile for Routes C and D. Route B also crosses significantly more deer wintering area, sage-grouse Core Area 1, prime farmland soils, and slopes over 25 percent (see Table D-9 in Appendix D). On the positive side, this alternative parallels significantly more existing ROW, but requires about 8.0 to 12.5 miles more of new ROW. In terms of permitting difficulty, it appears that Route B is very similar to Route C but greater than Route D; Route B also appears significantly more difficult to construct. Based on these factors, Route B was not recommended for further consideration.

As shown in Appendix D Table D-9, compared to Route D, Route C is 23.3 miles longer requiring just over 700 acres of additional ROW. Route D avoids the Divine Scenic Corridor and Area of Critical Environmental Concern, and crosses about 20.4 fewer miles of sage-grouse Core Area 1, 13.6 fewer miles (approximately 410 fewer acres) of forest land, 4.6 fewer miles of high erosion hazard areas, and 27.7 fewer miles of prime farmland soils. In comparison, Route C crosses significantly less deer and elk wintering area, avoids lands having wilderness characteristics as defined by the BLM, and parallels about 13 more miles of existing transmission line. Route C seems slightly more difficult to permit and significantly more difficult to construct. As a result of this analysis, Route C was not recommended for further study and Route D was recommended as the more reasonable route in the Southwest Region.

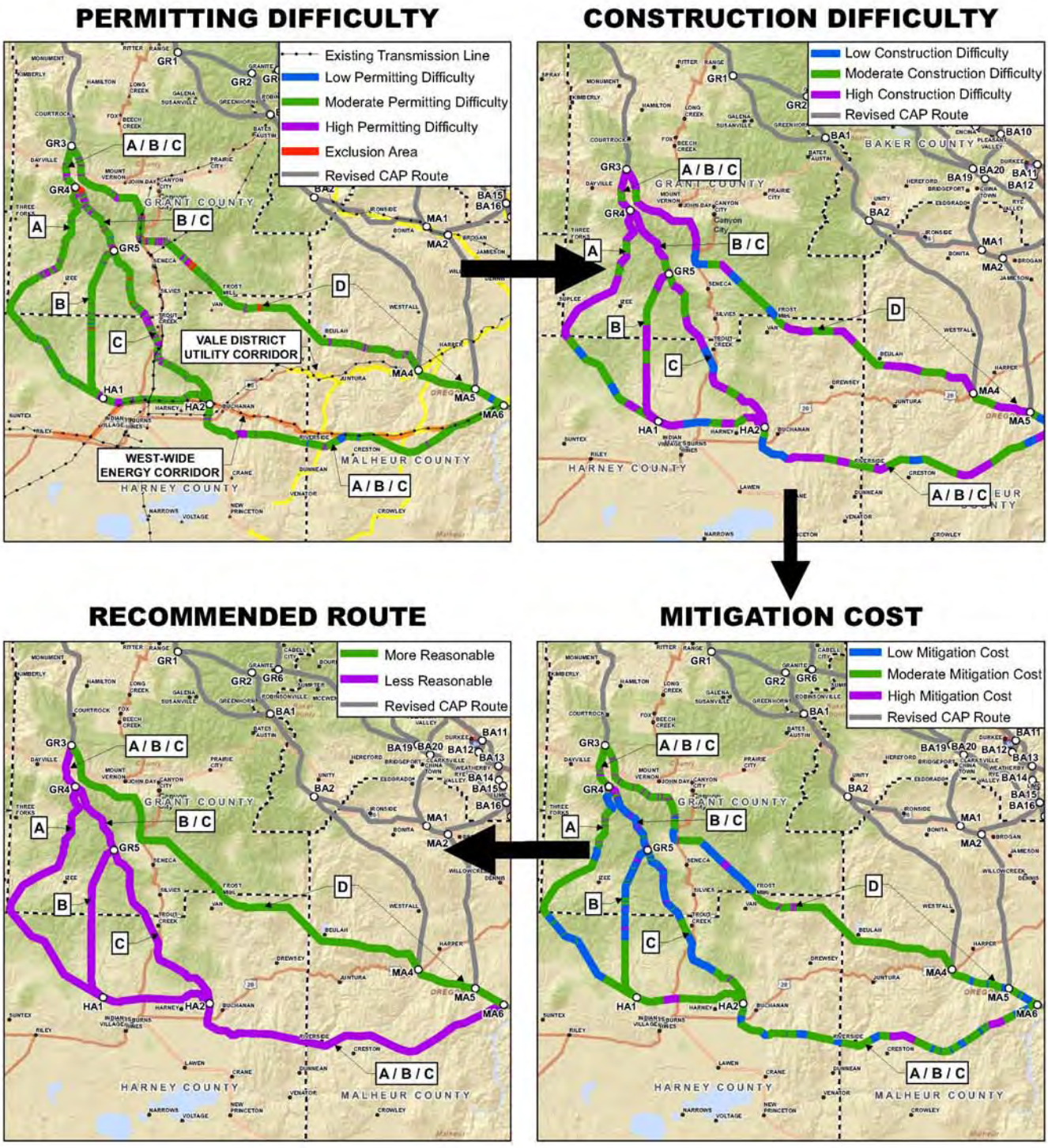


FIGURE 3.3.9-2
SOUTHWEST REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

0 10 20 30
Miles

3.3.10 Burnt River Region

As shown in Figure 3.3.10-1, the Burnt River Region, located just west of the Idaho/Oregon state boundary, spans south from Pleasant Valley, Oregon, across the Baker County/Malheur County line to the town of Brogan, located along U.S. Highway 26. Severe topography covers the region and includes the Burnt River Canyon, Pedro Mountain, California Mountain, and the Weatherby Mountains. Deer and elk winter range habitat is found throughout the region, while sage-grouse habitat grounds cover the southern portion. There is little agriculture and the few small towns in the area can be found along I-84 at the eastern edge of the region and along the Snake River-Mormon Basin Back Country Byway that runs east-west across the central part of the region. In this region two routes identified in the central PAT meeting have been carried forward, revised, and are described below.

The eastern route in the Burnt River Region is a revision of several CAP route segments, including C4, C8, C41, S9, and S19. Initially, revisions of these routes resulted in an East Route designated BA10-BA11-BA13-MA2. Spring 2010 field surveys identified an active sage-grouse lek site west of the I-84 corridor along the proposed route segment BA13-MA2. State regulations prohibit the siting of a transmission line within 2-miles of an active sage-grouse lek and therefore the route was shifted south to avoid the lek and buffer as shown on Figure 3.3.10-2.

The revised East Route begins at BA10 and heads south following an existing 138-kV line along the north side of I-84. North of the Durkee Valley, the route turns east away from the existing 138-kV transmission line, passes approximately 1.2 miles east of the community of Durkee, Oregon, angles south and east around Gold Hill, and heads south past the communities of Weatherby and Dixie. The route then crosses to the west side of I-84 at the southern end of the Weatherby Mountains where it again meets with and parallels the west side of the 138-kV transmission line heading south. West of I-84 and a mile north of the town of Huntington, Oregon, the route angles south and west, past Limestone Butte, avoiding the sage-grouse lek and buffer and continuing across the Baker/Malheur County line into Malheur County where it ends at MA2 approximately 2.5 miles west of the town of Brogan .

The West Route in the Burnt River Region is a revision of CAP route S20 and a small portion of CAP route S21. These routes were revised to form the West Route in the region, designated BA10-BA20-MA1-MA2.

Heading south from BA-10, the West Route crosses I-84 approximately 2 miles southeast of Pleasant Valley and heads southwest across severe slopes to the east of the Wallowa-Whitman National Forest. Continuing south, the West Route proceeds across the Burnt River Canyon, crosses the Snake River-Mormon Basin Back County Byway 4 miles east of the town of Bridgeport, Oregon, and passes to the west side of Shasta Butte and the Malheur Reservoir. After passing between Reservoir Butte and Cow Valley Butte, the West Route intersects and parallels an existing 69-kV transmission line and, after crossing U.S. Highway 26 three times, the route ends at MA2 located west of Brogan, Oregon.

The permitting difficulty, construction difficulty, and mitigation cost analyses were performed on the West Route and the original East Route (BA10-BA11-BA13-MA2), as the analyses took place prior to identification of a new sage-grouse lek site (during the spring 2010 field survey) and the development of the revised East Route. The results of these analyses, shown on Figure 3.3.10-3 and in Table 3.3.10-1, along with Table D-10, Appendix D, show the two routes to be similar in permitting difficulty and the East Route slightly more difficult to construct. However, a helicopter flyover of potentially difficult engineering/construction areas, including the Burnt River Region, was performed by Idaho Power after desktop analysis of the revised CAP routes and subsequent regional analyses. This aerial review indicated that construction and maintenance of a 500-kV line along the West Route, especially in the areas north and south of the Burnt River Canyon, would be exceptionally difficult and costly, mainly due to poor existing access and the extremely severe terrain. Based on this information, the original East Route was

determined more reasonable than the West Route. Shifting the southern segment of the East Route south of the sage-grouse lek and buffer (BA13-MA2 revised to BA13-BA14-BA16-MA2) resulted in the lek being screened by existing topography but did not change the route's construction and engineering difficulty. As a result, the (revised) East Route, BA10-BA11-BA13-BA14-BA16-MA2 (comprising CAP routes C4, C8, C41, S9, and S19) was recommended as more reasonable than the West Route, BA10-BA20-MA1-MA2 (CAP routes S20 and S21).

Table 3.3.10-1. Burnt River Mileage Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (BA10-BA20-MA1-MA2)	**East Route** (BA10-BA11-BA13-MA2)
	Length in Miles	
Permitting Difficulty		
Low	0.0	0.1
Moderate	26.6	35.6
High	9.5	6.2
Exclusion	0.0	0.1
Construction Difficulty		
Low	5.6	9.0
Moderate	15.0	16.2
High	15.5	16.7
Mitigation Cost		
Low	0.0	1.9
Moderate	36.1	39.8
High	0.0	0.2

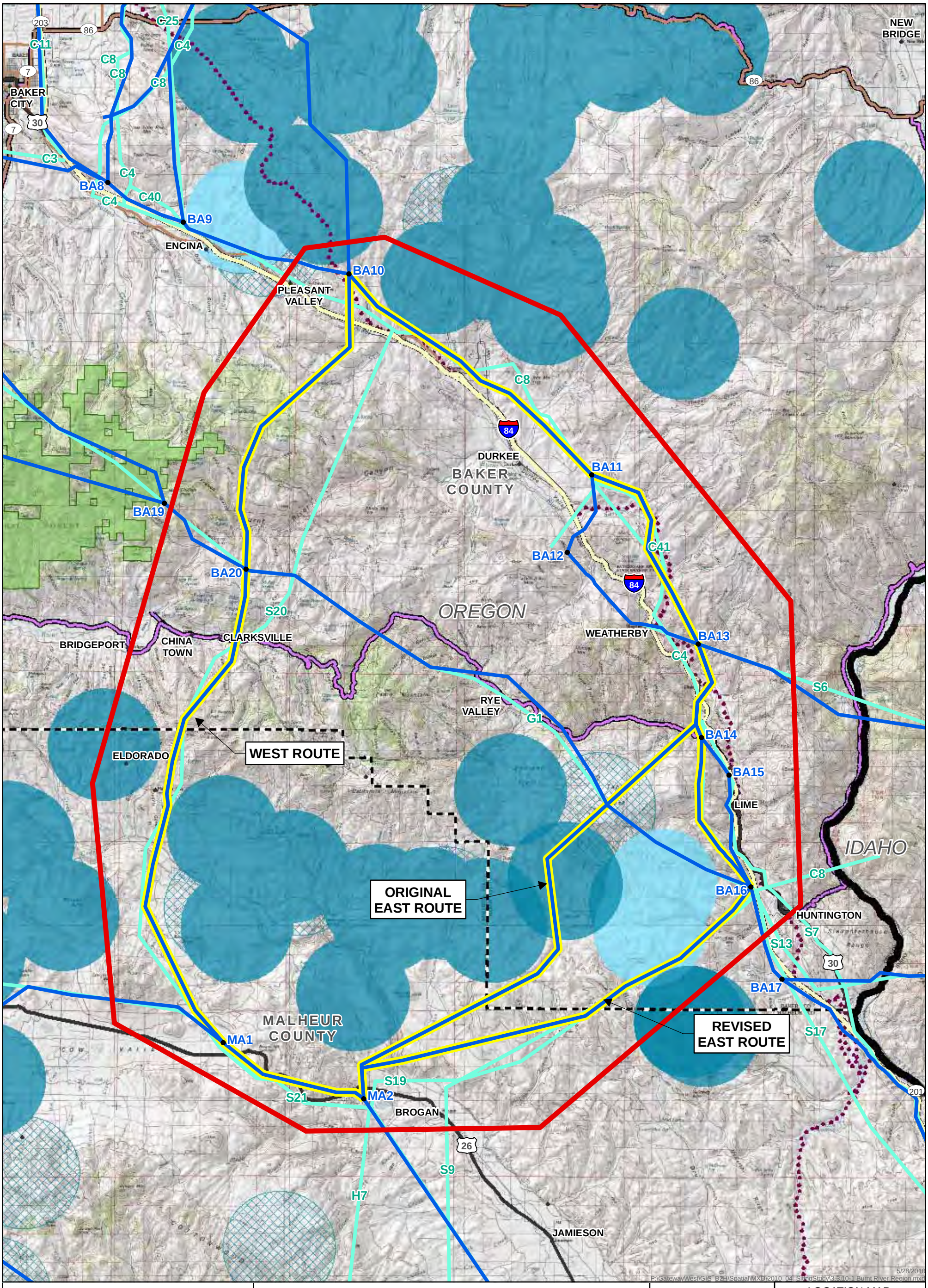


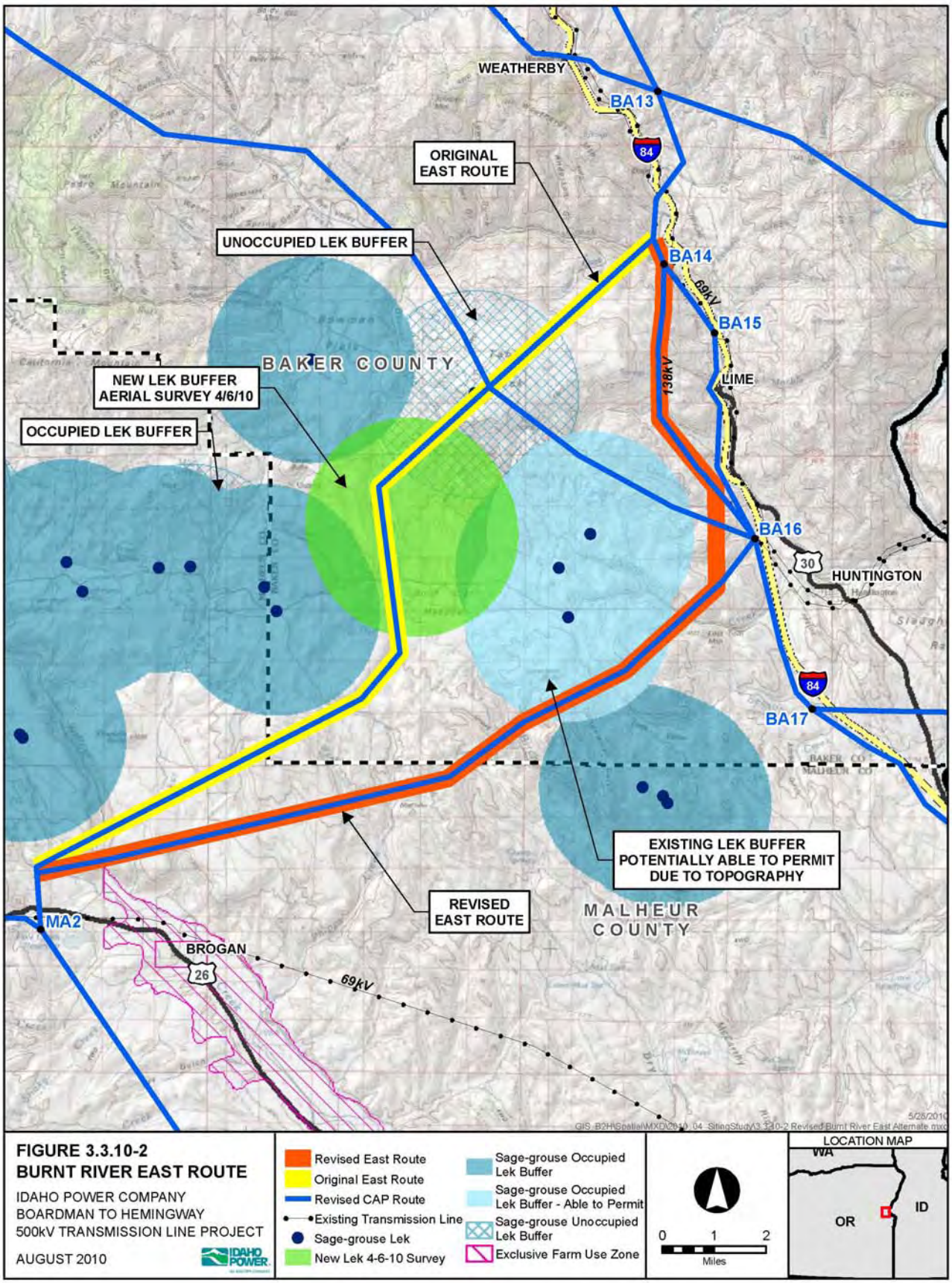
FIGURE 3.3.10-1
BURNT RIVER REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Analysis Region
- Revised CAP Route
- Initial CAP Route
- State Boundary
- County Boundary
- National Forest
- Oregon Trail
- Scenic Byway Route
- Sage-grouse Occupied Lek Buffer
- Sage-grouse Occupied Lek Buffer - Able to Permit
- Sage-grouse Unoccupied Lek Buffer

0 1 2 3
Miles

LOCATION MAP
WA
MT
ID
OR
CA
NV


WEATHERBY
BA13
84
ORIGINAL EAST ROUTE
UNOCCUPIED LEK BUFFER
BA14
69kV
BA15
BAKER COUNTY
NEW LEK BUFFER AERIAL SURVEY 4/6/10
OCCUPIED LEK BUFFER
138kV
LIME
BA16
30
HUNTINGTON
84
BA17
EXISTING LEK BUFFER POTENTIALLY ABLE TO PERMIT DUE TO TOPOGRAPHY
REVISED EAST ROUTE
MALHEUR COUNTY
MA2
BROGAN
26
69kV
5/25/2010
GIS_B2HSpatial\MXD\2010_04_SitingStudy\3_3\10-2 Revised Burnt River East Alternate.mxd
FIGURE 3.3.10-2
BURNT RIVER EAST ROUTE
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Revised East Route
Original East Route
Revised CAP Route
Existing Transmission Line
Sage-grouse Lek
New Lek 4-6-10 Survey
Sage-grouse Occupied Lek Buffer
Sage-grouse Occupied Lek Buffer - Able to Permit
Sage-grouse Unoccupied Lek Buffer
Exclusive Farm Use Zone
0 1 2
Miles
LOCATION MAP
WA
OR
ID

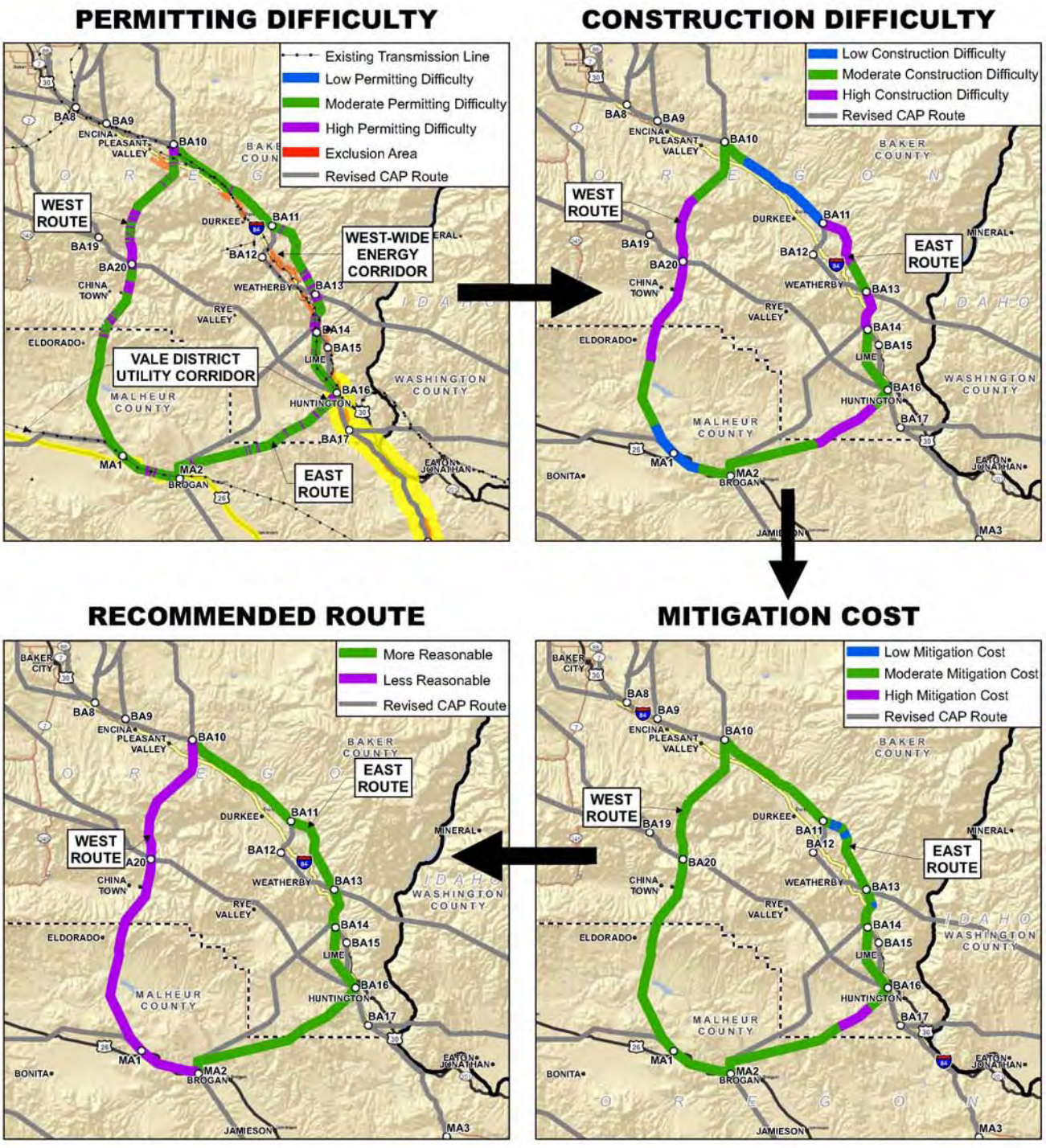


FIGURE 3.3.10-3
BURNT RIVER REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

3.3.11 West of Vale Region

Beginning in the southwestern corner of Baker County and spanning into northern Malheur County, the West of Vale Region as shown on Figure 3.3.11-1 covers nearly 70 miles. While much of the region is dry, barren land, forested lands can be found in the northern part of the region, which crosses the southeastern edge of the Wallowa-Whitman National Forest, and irrigated agriculture can be found at the southern end of the region, mainly along U.S. Highway 20 near the town of Harper. Elk winter range, sage-grouse habitat, and sage-grouse lekking grounds cover much of the region, most of which is BLM-managed lands. The town of Vale, Oregon, is located east of the southern part of the region, and U.S. Highway 26 runs along the northern part of the region.

CAP route C6 was revised, shifted east to avoid sage-grouse lek buffers, and designated the West Route, BA2-MA4-MA5 within the West of Vale Region. The East Route, BA2-MA1-MA2-MA5, is a revision of several CAP routes, including S19, S9, H7, H8, S19, and S21.

The West Route begins in Baker County at BA2, approximately 4 miles south of the community of Unity, Oregon, west of U.S. Highway 26 and northeast of Bullrun Mountain. Proceeding southeast, the route crosses through severe terrains within the Wallowa-Whitman National Forest before crossing into Malheur County and passing to the north and east of Ironside Mountain. West of Cottonwood Mountain, the route angles south passing east of the community of Westfall and, crossing U.S. Highway 20 approximately 7 miles southwest of Harper, the route angles east across Harper Basin to MA5 located at the southern end of the region.

Heading east from BA2, the East Route crosses U.S. Highway 26 before meeting and paralleling an existing 69-kV transmission line across the Baker/Malheur County line into Malheur County. Just north of Eldorado Pass, the route leaves the existing 69-kV line, proceeds east across North Willow Creek, and turns south to cross the existing 69-kV line and U.S. Highway 26 approximately 2 miles west of the community of Ironside. The East Route proceeds southeast across South Willow Creek and turns due east for approximately 5 miles before angling northeast across U.S. Highway 26, just east of Rye Flat. The East Route then meets with and parallels the existing 69-kV transmission line for the next 12 miles, passing along the northern edge of Cow Valley and crossing U.S. Highway 26 three times. Approximately 2.5 miles west of the town of Brogan, the East Route leaves the existing transmission corridor and angles south, staying west of irrigated agriculture lands and east of Cottonwood Mountain. The East Route continues south passing between Hope Butte and Sugarloaf Butte, crossing the Vale Oregon Canal and the Malheur Canyon before coming to U.S. Highway 20 just west of Vines Hill. The route proceeds across the highway and over Sand Hollow to reach MA5.

Figure 3.3.11-2 graphically displays the results of the permitting difficulty, construction difficulty, and mitigation cost analysis. While the mileage summary table, Table 3.3.11-1, indicates the overall permitting difficulty would be similar for both the East Route and the West Route, the construction difficulty analysis shows the East Route to have 30 fewer miles of high construction difficulty than the West Route. Table D-11 in Appendix D indicates the West Route is 5.6 miles shorter than the East Route, crosses 12.4 fewer miles of sage-grouse Core Area 1 habitat, and crosses 22 fewer miles of private land, but does cross 2.9 miles of the visually sensitive National Forest Partial Retention lands. The East Route, which crosses 5.6 more miles of EFU-zoned lands than the West Route, does not cross National Forest visually sensitive lands and is located in the Vale District Utility Corridor for 5.3 miles and generally parallels existing transmission lines for approximately 16 miles.

As a result, the East Route, BA2-MA1-MA-2-MA5 (CAP routes S19, S9, H7, H8, S19, and S21), was recommended as more reasonable than the West Route, BA2-MA4-MA5 (CAP route C6).

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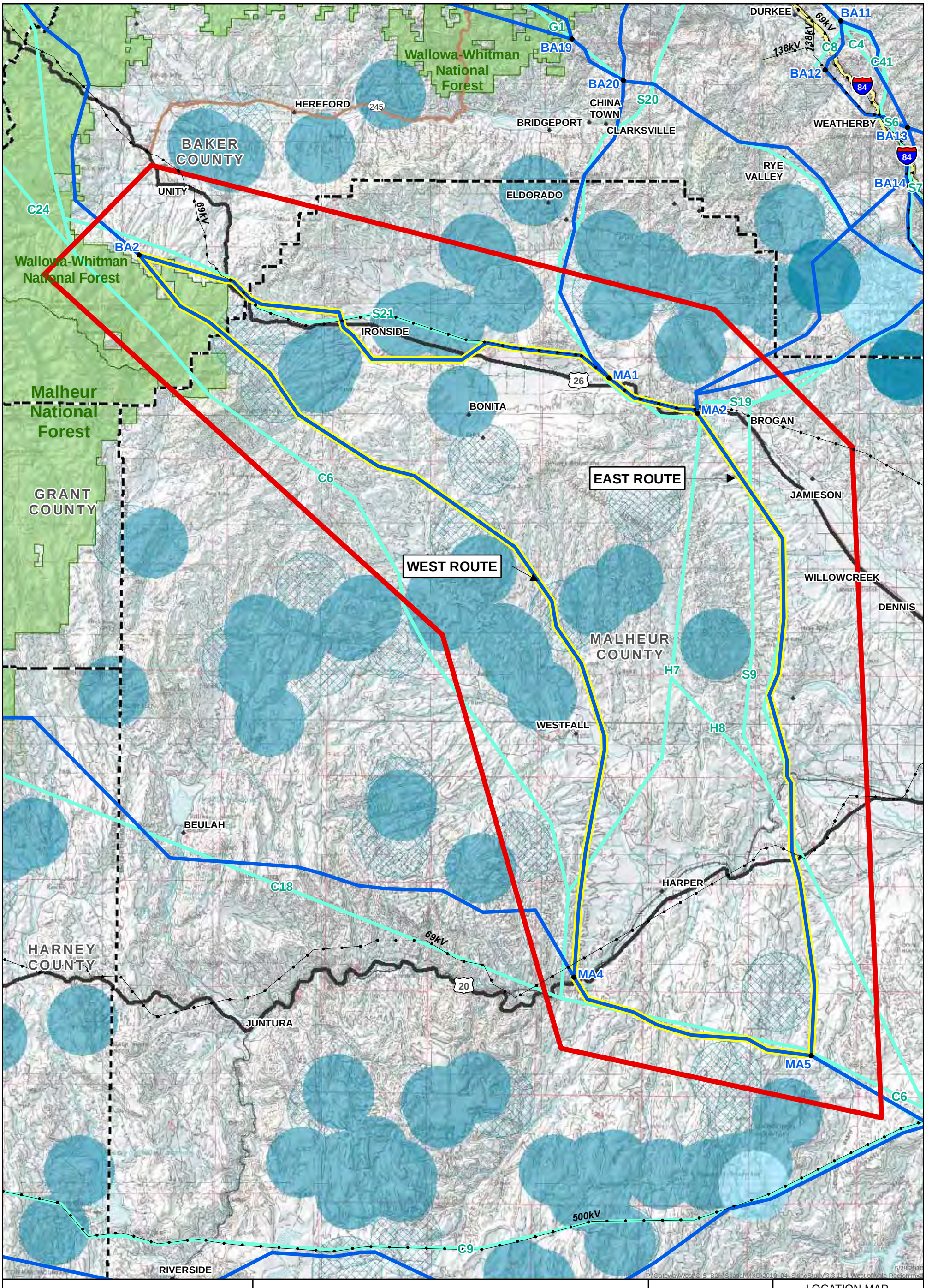


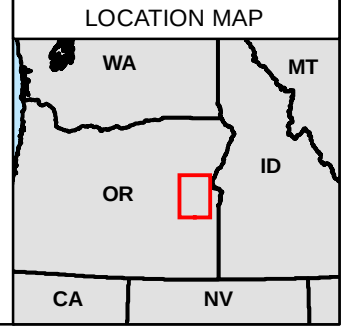
FIGURE 3.3.11-1
WEST OF VALE REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Analysis Region
- Revised CAP Route
- Initial CAP Route
- Existing Transmission Line
- County Boundary
- National Forest
- Sage-grouse Occupied Lek Buffer
- Sage-grouse Occupied Lek Buffer - Able to Permit
- Sage-grouse Unoccupied Lek Buffer

0 5
Miles

LOCATION MAP



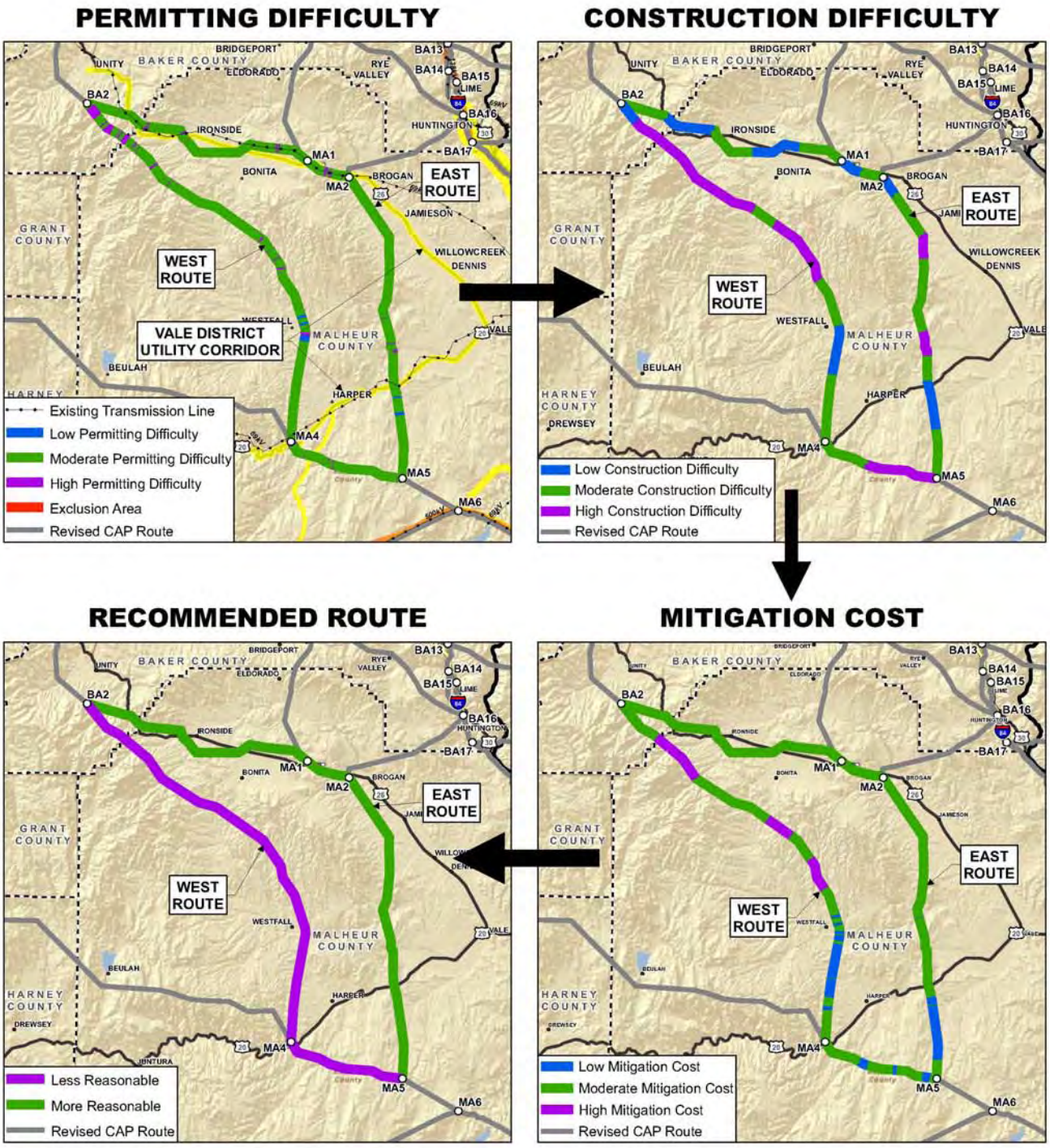


FIGURE 3.3.11-2
WEST OF VALE REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.11-1 West of Vale Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (BA2-MA4-MA5)	**East Route** (BA2-MA1-MA2-MA5)
	Length in Miles	
Permitting Difficulty		
Low	1.6	0.8
Moderate	57.4	69.6
High	8.8	3.0
Exclusion	0.0	0.0
Construction Difficulty		
Low	9.0	22.8
Moderate	22.8	44.6
High	36.0	6.0
Mitigation Cost		
Low	11.8	8.0
Moderate	41.8	65.4
High	14.2	0.0

3.3.12 Weatherby Region

The Weatherby Region extends for about 8 miles between Durkee, Oregon, and Weatherby, Oregon, along I-84 in Baker County (Figure 3.3.12-1). The topography of the region is severe, with Gold Hill located in the central part of the region. The Burnt River runs through the valley along the west side of I-84 with the Union Pacific Railway.

CAP route C4, identified during the Central PAT routing session, is located on the east side of Gold Hill and I-84 within this region. The route was drawn with the intent to avoid the leafy spurge area to the west side of I-84, just north Durkee. CAP route C41 was a minor revision of C4, and was intended to maximize the distance of the line from existing residences in the area. These CAP routes were revised to avoid the intact segments of the Oregon National Historic Trail and was designated BA11-BA13, the East Route in the Weatherby Region.

The West Route within the Weatherby Region was developed from CAP routes C8 and S6. Beginning in the north, the route crosses the National Historic Oregon Trail north of Gold Hill, crosses to the west side of I-84 just north of the Ash Grove Cement plant, and then parallels the existing 138-kV transmission line south to Weatherby, where it crosses I-84 and the Oregon National Historic Trail once again before meeting the East Route at BA13.

Permitting difficulty, construction difficulty, and mitigation cost analyses were performed on the East and West Routes as shown on Figure 3.3.12-2. Table 3.3.12-1, while not indicating one route to be clearly superior, does indicate the East Route may have slightly less permitting and construction difficulties. Table D-12 in Appendix D shows the East Route is 1.4 miles shorter than the West Route and crosses 0.8 fewer miles of 1,200-foot Historic Trail Buffer Zone and 0.6 fewer mile of intact Oregon National Historic Trail segments.

For the reasons described above, it was recommended that the East Route, BA11-BA13 (CAP route C4 and C41), is more reasonable than the West Route (BA11-BA12-BA13).

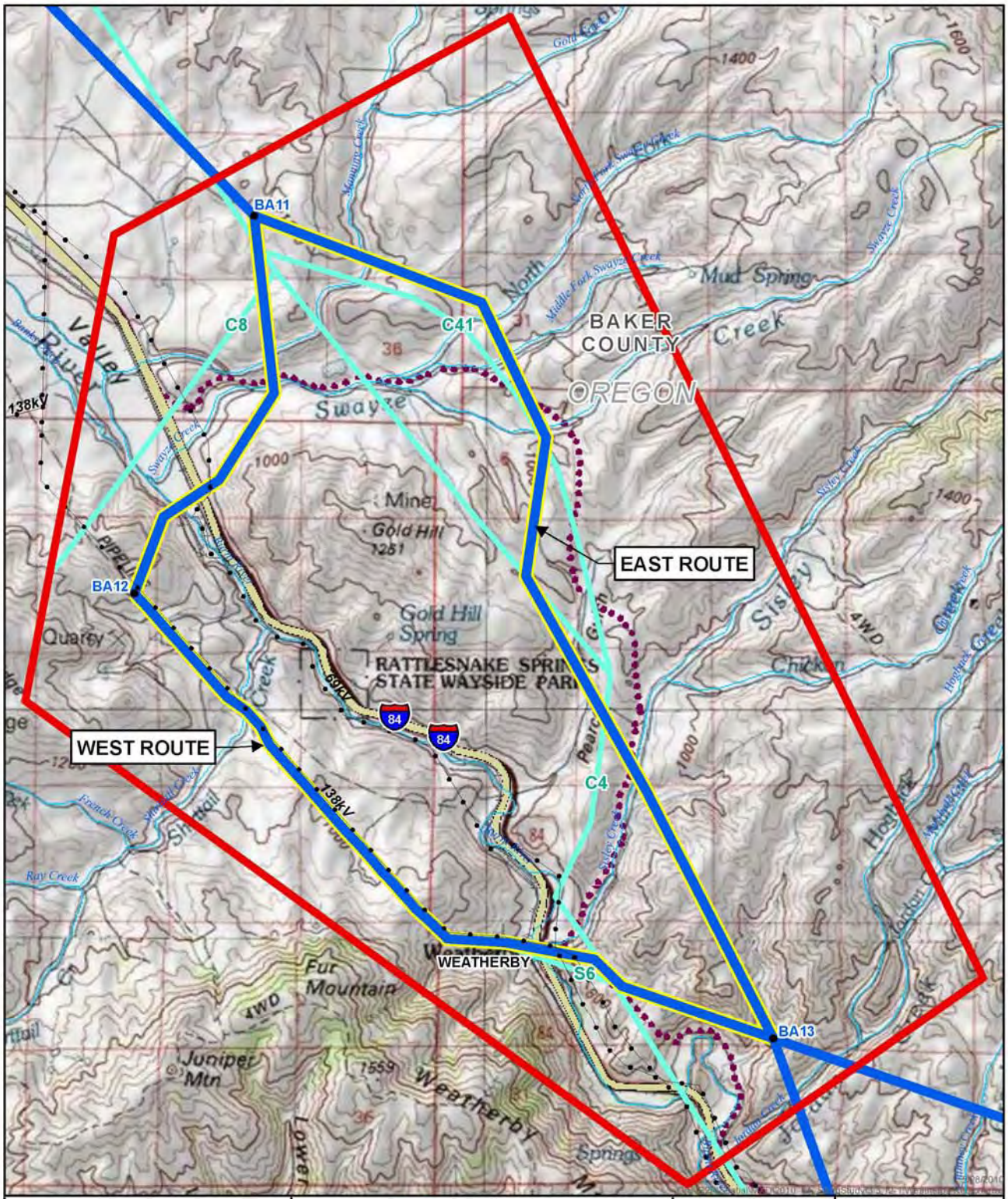


FIGURE 3.3.12-1
WEATHERBY REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010

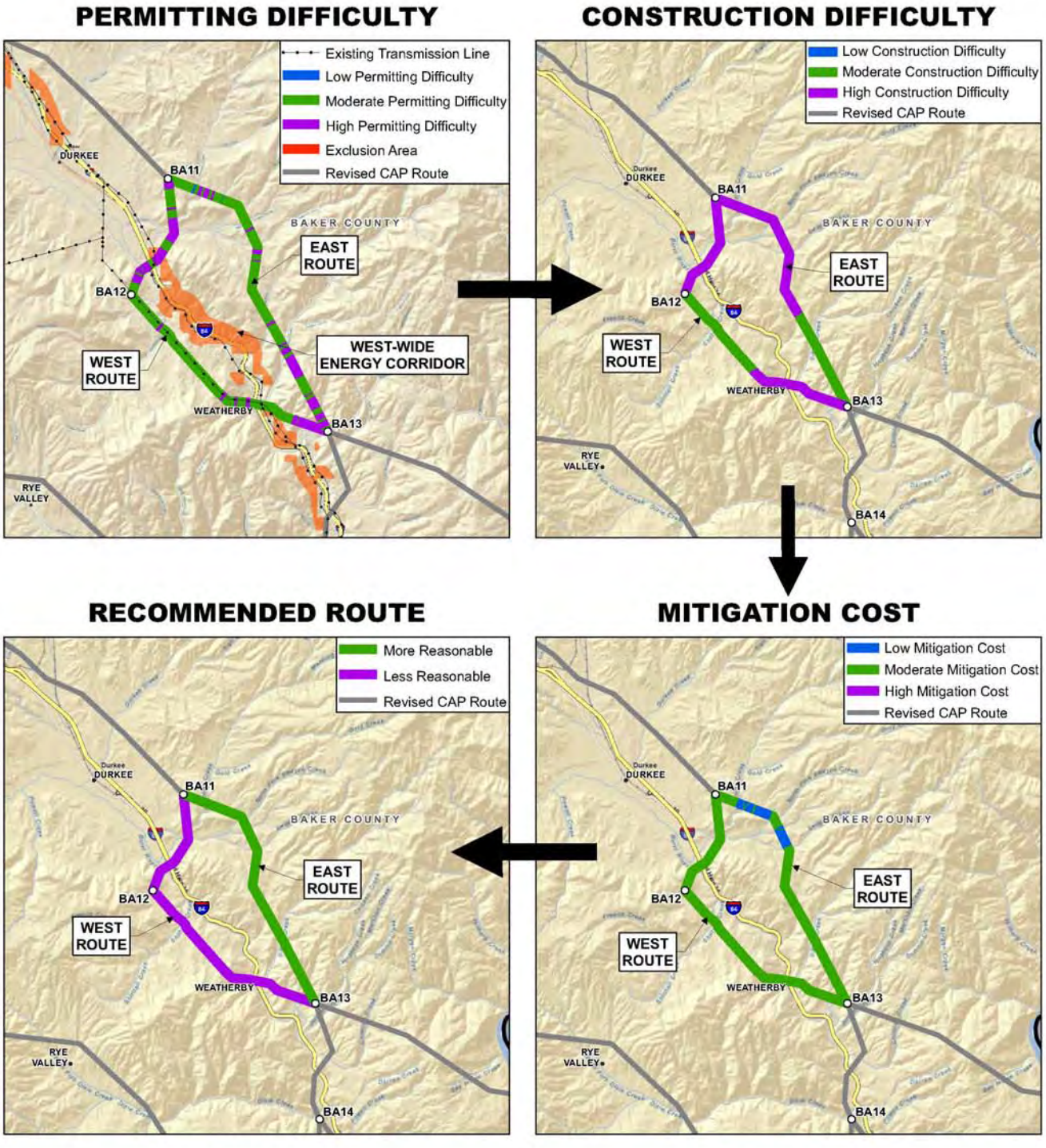


FIGURE 3.3.12-2
WEATHERBY REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

Table 3.3.12-1. Weatherby Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (BA11-BA12-BA13)	**East Route** (BA11-BA13)
	Length in Miles	
Permitting Difficulty		
Low	0.0	0.1
Moderate	6.1	5.5
High	3.0	2.1
Exclusion	0.0	0.0
Construction Difficulty		
Low	0.0	0.0
Moderate	3.0	3.0
High	6.1	4.7
Mitigation Cost		
Low	0.0	1.6
Moderate	9.1	6.1
High	0.0	0.0

3.3.13 Lime Region

The routing analysis within the Lime Region included two routes located on the west side of I-84, just south of the Weatherby Region, as shown on Figure 3.3.13-1. Similar to the Weatherby Region, much of this region comprises severe topography and is located on the east side of Table Rock. This is the smallest region, covering just over 5 miles in the vicinity of Lime, Oregon.

The two CAP routes developed in this area were C4 and S7 and both had the intended purpose of following existing corridors. CAP route C4 was minimally revised to parallel the west side of an existing 138-kV transmission line through the region and later was designated the West Route, BA14-BA16. CAP route S7 was intended to immediately parallel I-84 but due to the steep topography adjacent to I-84, portions of the route in this vicinity were relocated to avoid more difficult engineering and construction conditions. This route was designated the East Route, BA14-BA15-BA16.

Figure 3.3.13-2 shows the results of the permitting difficulty, construction difficulty and mitigation cost analyses along each route in the Lime Region. Table 3.3.13-1 is the summary table detailing the totals of each difficulty analysis. As this table details, the West Route has significantly fewer miles of high permitting difficulty and high construction difficulty. Additionally, Table D-13 in Appendix D shows the West Route avoids both the 1,200-foot Historic Trail Buffer Zone and the 1,200-foot Scenic Byway Buffer Zone that are crossed by the East Route and crosses 1.8 fewer miles of slopes greater than 35 percent as compared to the East Route.

Table 3.3.13-1 Lime Region Summary of Permitting and Construction Difficulty and Mitigation Cost

	West Route (BA14-BA16)	**East Route** (BA14-BA15-BA16)
	Length in Miles	
Permitting Difficulty		
Low	0.0	0.0
Moderate	5.2	2.9
High	0.7	3.1
Exclusion	0.0	0.0
Construction Difficulty		
Low	0.0	1.7
Moderate	5.9	0.0
High	0.0	4.3
Mitigation Cost		
Low	0.0	0.0
Moderate	5.9	6.0
High	0.0	0.0

The result of the Lime Regional analysis was that the West Route, BA14-BA16 (CAP route C4), was recommended as more reasonable than the East Route, BA14-BA15-BA16 (CAP route S7).

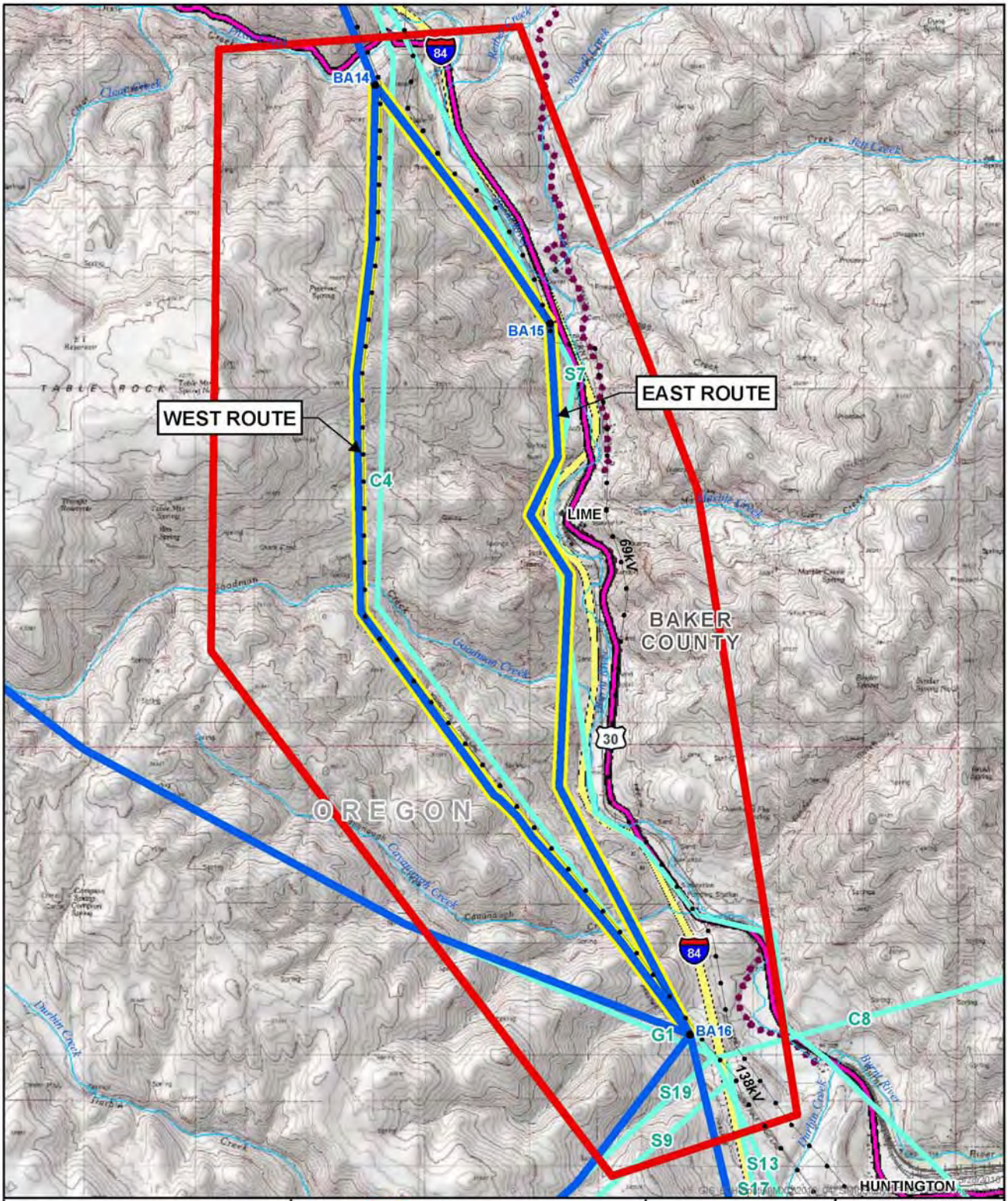


FIGURE 3.3.13-1
LIME REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

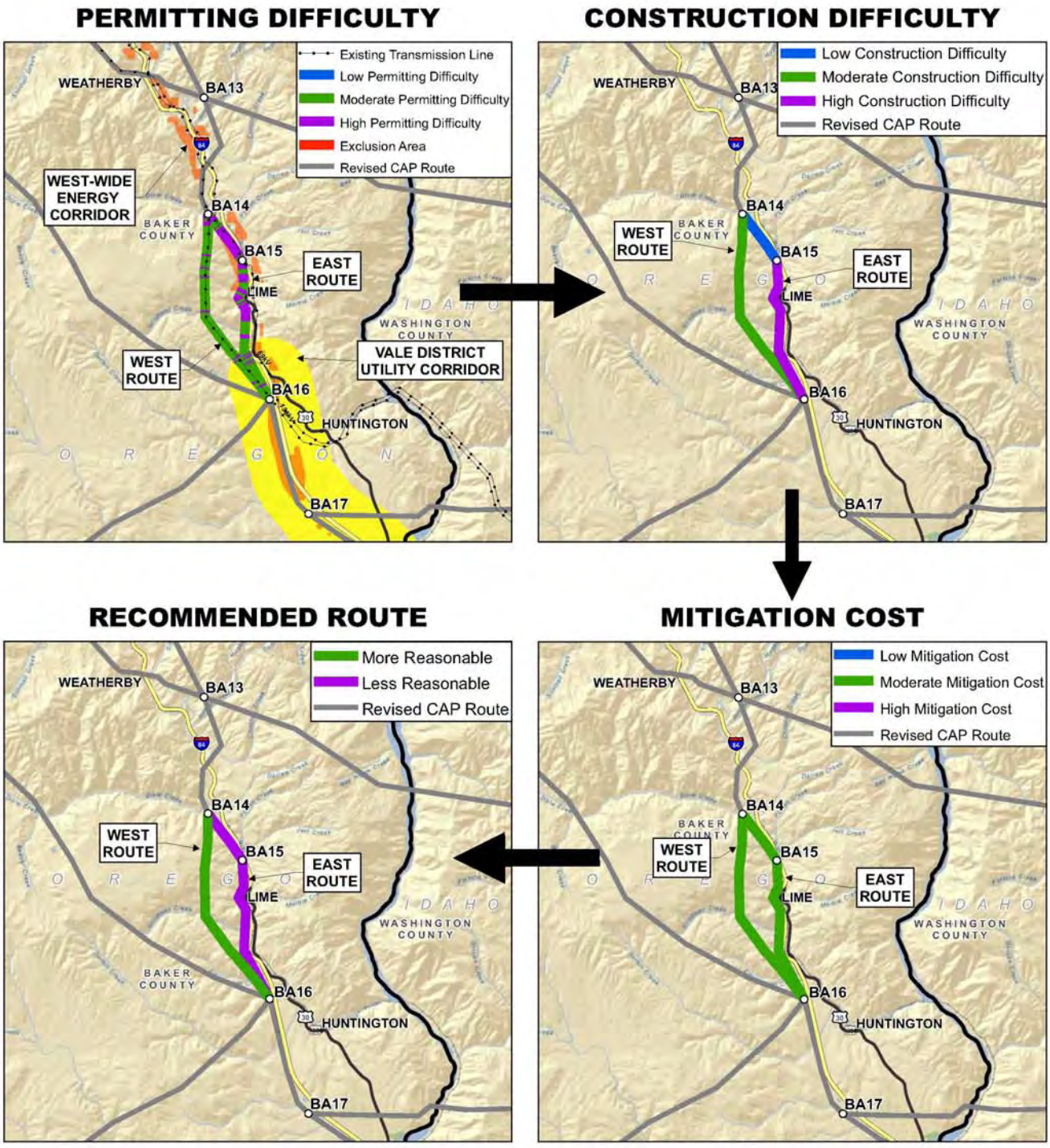


FIGURE 3.3.13-2
LIME REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

3.3.14 Snake River Valley Region

The Snake River Valley region extends south from point BA13 located just southeast of Weatherby in Baker County for about 90 miles to the Hemingway Substation in Owyhee County. This region includes portions of Baker and Malheur Counties in Oregon and portions of Washington, Payette, Canyon, and Owyhee Counties in Idaho. Large areas of irrigated farmland occur on both sides of the Snake River and these lands are bounded by high desert, hills, and mountains. I-84 is the main highway in this region with much associated development. In the Snake River Region, six routes were considered between point BA13, located about 1.8 miles southeast of Weatherby in Baker County, Oregon, and Hemingway Substation (Point OW2) in Owyhee County, Idaho. Initially, Routes A and B were dropped from further consideration.

Route A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2) is shown on Figure 3.3.14-1. This route, developed from CAP routes S30 and S17, generally follows I-84 for about 19 miles southeast and then turns south passing west of Ontario and proceeding for approximately 47 miles across the Snake River Valley where it would cross over the Mid-Point-Summer Lake 500-kV line and generally follow its southwest side back to the Hemingway Substation. This alternative route crosses 37 miles of land zoned EFU in Oregon that, with the removal of the proposed Sand Hollow Substation, can be avoided. As a result, this alternative would not meet the EFU requirements of ORS 215.275, could not be permitted, and was not recommended for further consideration.

Route B (BA13-BA14-BA16-BA17-MA3-PA2-OW2) follows I-84 south through the city of Ontario to point PA2 where it turns due south to cross the Snake River Valley. A preliminary engineering evaluation was completed for the segment of this route through Ontario. As a result of this evaluation it was determined to be not feasible for a variety of engineering and environmental factors such as four additional crossings of I-84, crossing the Ontario State Recreation Site, and two additional crossings of the Snake River requiring more substantial structures and foundations in very tight and challenging working conditions. This type of construction in city conditions has many constraints and is problematic in safety, cost, permitting, and inconveniences to local citizens. Based on this review, Route B was not recommended for further consideration.

After Routes A and B were removed from further consideration, Route C was compared to Route D and Route E was compared to Route F.

Route C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2) follows I-84 south to a location about 2 miles south of Huntington, Oregon, and then angles due east from point BA17 to cross the Snake River and the state line into Idaho. From point WA1, Route C continues south and east in steeper terrain north and east of Weiser, U.S. Highway 95, Payette, and the agricultural land along the east side of the Snake River. At point PA1, Route C turns south to cross the Payette River and then Highway 30 and I-84 west of New Plymouth. It then proceeds south, east of Parma and generally parallel to U.S. Highway 95 to a second crossing of the Snake River east of Homedale. It then crosses to the south side of the Mid-Point-Summer Lake 500-kV line and follows it south to the Hemingway Substation.

Route D (BA13-WA1-PA1-OW1-OW2) proceeds from point BA13 east and south across Morgan Mountain and the Snake River (State line) into Idaho. It continues east and south along the north side of Rock Creek and then turns south between Jenkins Creek and Sheep Creek until it joins Route C at point WA1. From point WA1 to the Hemingway Substation, both Route C and Route D share a common alignment as described above.

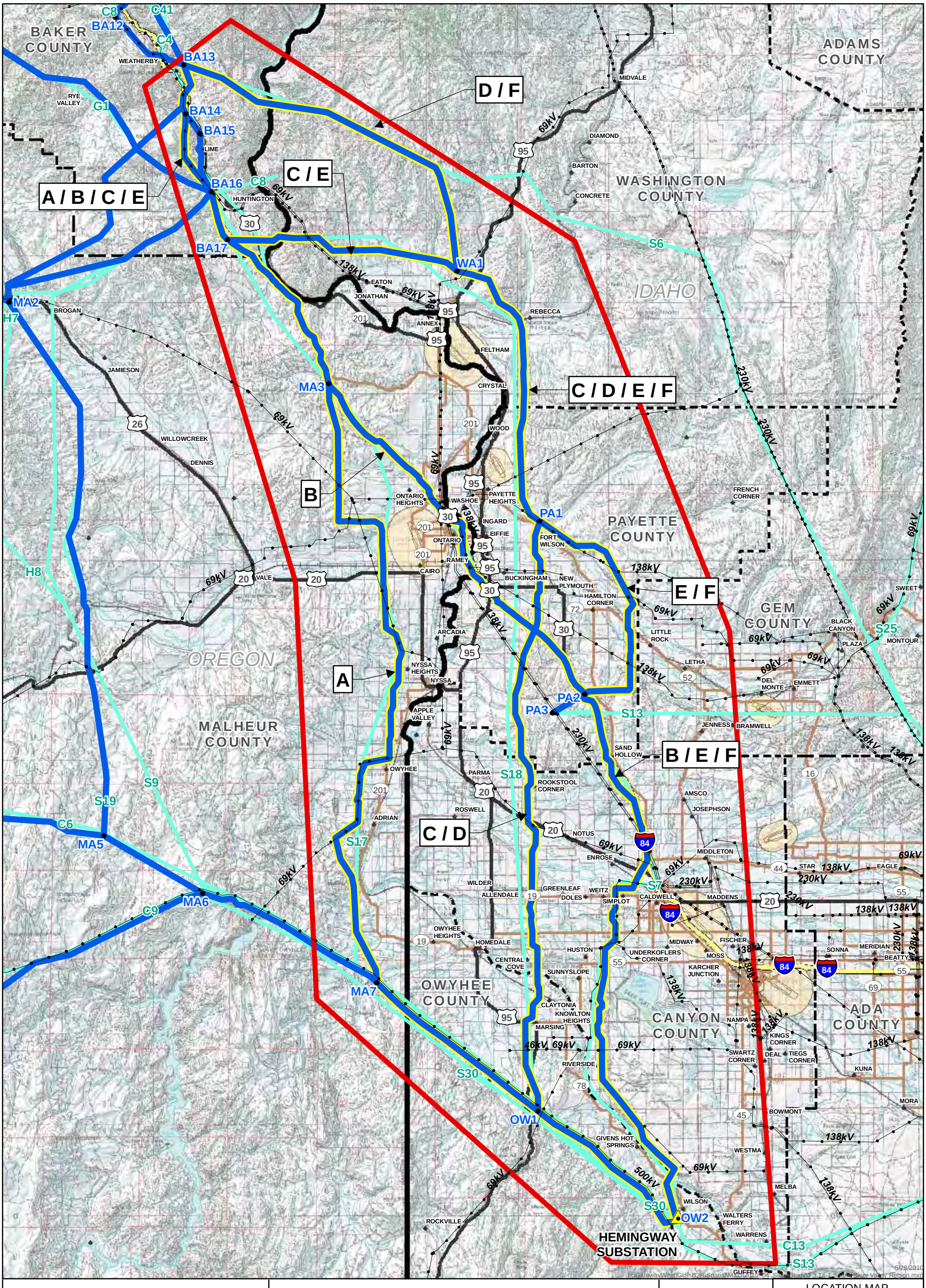


FIGURE 3.3.14-1
SNAKE RIVER VALLEY REGION
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

- Substation
- Analysis Region
- Revised CAP Route
- Initial CAP Route
- State Boundary
- County Boundary
- Airport - Controlled Airspace
- Existing Transmission Line

5/26/2010
P:\GatewayWest\GIS_B2H\Spatial\MXD\2010_04_SitingStudy\3.3.14-1 Snake River Valley Region.mxd

Figure 3.3.14-2 shows the results of the permitting difficulty, construction difficulty, and mitigation cost analyses along each route. Table 3.3.14-1 summarizes the totals of each difficulty analysis for each route while Table D-14 in Appendix D details the miles of each constraint crossed. Compared to Route C, Route D is 3.4 miles shorter and crosses less historic trail buffer, less deer and elk winter range, less big game critical winter habitat, less EFU, and less high erosion risk hazard soils. Route C crosses less sage-grouse key habitat (ID), less landslide hazard area, and fewer slopes over 25 percent, and also parallels more existing transmission lines and uses more miles of utility corridors. Overall, Routes C and D cross a similar number of miles of moderate and high permitting difficulty; however, Route D crosses 11.3 more miles of high difficulty construction.

Route E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2) follows I-84 south to a location about 2 miles south of Huntington, Oregon (BA17) and then angles due east to cross the Snake River and the state line into Idaho. From point WA1, Route E continues south and east in the steeper terrain north and east of Weiser, U.S. Highway 95, Payette, and the agricultural land along the east side of the Snake River. Continuing through point PA1 to PA2, this route remains on the north and east sides of the Payette River to a location just west of the Gem County line where it turns generally south and then west to cross the river and then I-84. This route then generally parallels I-84 almost to Caldwell where it angles west around the city and Lake Lowell. It continues southeast for about 12 miles along the east side of the Snake River where it crosses this river southeast of Rippee Island and then proceeds to the Hemingway Substation.

Route F (BA13-WA1-PA1-PA2-OW2) follows portions of the paths of Routes D and E. From point BA13 to WA1, the route follows the path of Route D, proceeding east and south across Morgan Mountain and the Snake River (state line) into Idaho. It continues east and south along the north side of Rock Creek and then turns south between Jenkins Creek and Sheep Creek until it joins Route E at point WA1. From WA1 to Hemingway Substation, Route F shares the same route as Route E as described above.

As shown in Appendix D, Table D-14, Route F in comparison to Route E is 3.5 miles shorter and crosses less historic trail buffer, less deer and elk winter range, less big game critical winter habitat, less Sage grouse Core Area, less EFU, and less high erosion risk hazard soils. Route E crosses less sage-grouse key habitat (ID), less landslide hazard area, and fewer slopes over 25 percent and it parallels more existing transmission lines and uses more miles of utility corridors. Overall, Route F and Route E seem similar in difficulty to permit; however, Route F appears more difficult to construct.

After completing the review of the alternative routes in the Snake River Valley Region as well as the alternative routes in the surrounding regions, it was decided that none of the six routes traversing this region should be recommended for further consideration. As shown on Figure 3.3.14-3, all of these routes would affect many farms and traverse 23.8 to 36.8 miles of irrigated farmlands. In Oregon all these routes cross some amount of EFU-zoned land. In Idaho the routes would pass in proximity to hundreds of residences and farms as well as urban and city impact areas. These are significant impacts and permitting issues that can be avoided by following routes to the west of Vale.

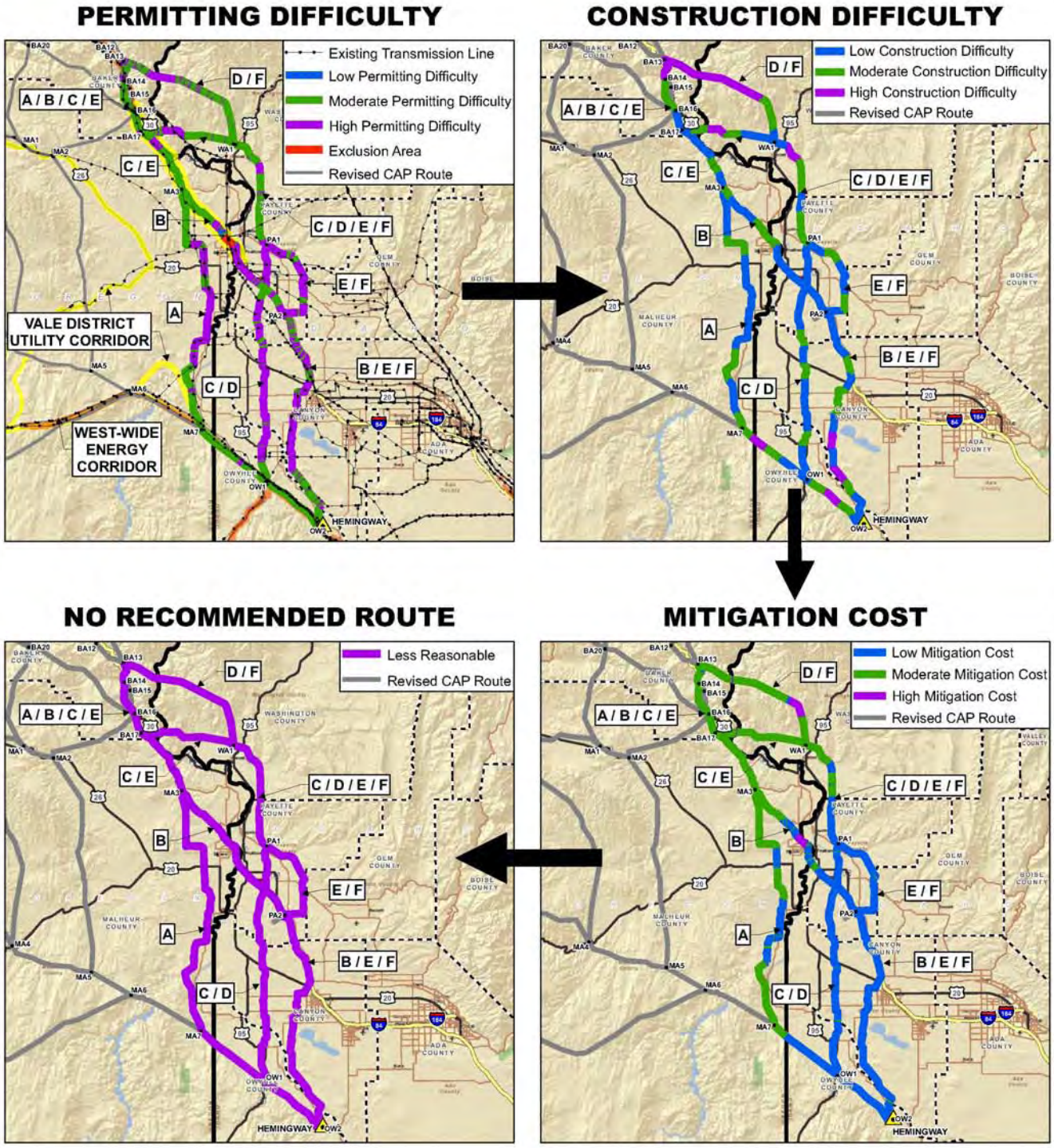


FIGURE 3.3.14-2
SNAKE RIVER VALLEY REGIONAL ANALYSIS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

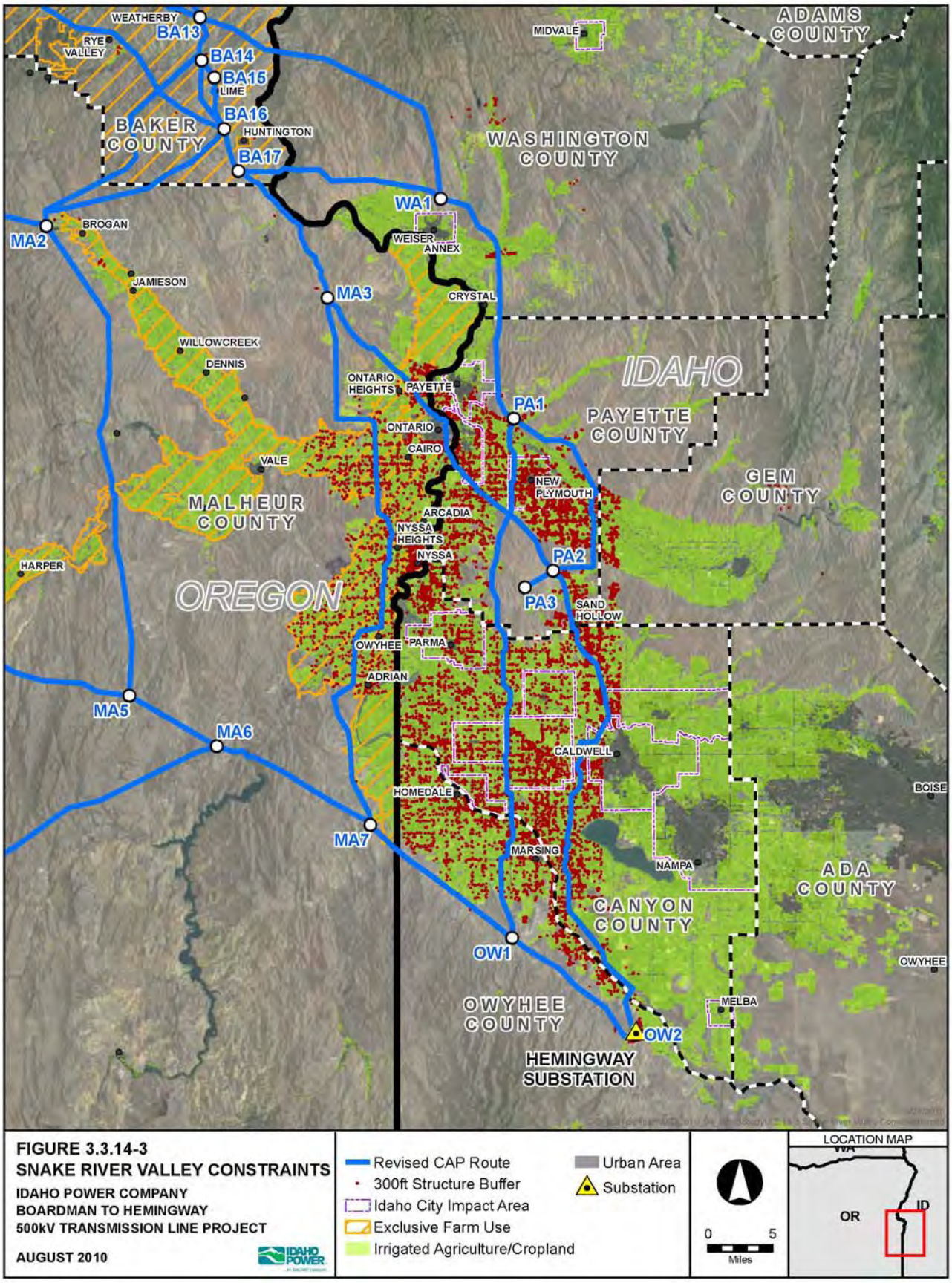

WEATHERBY
BA13
RYE VALLEY
BA14
BA15
LIME
BA16
HUNTINGTON
BA17
BAKER COUNTY
MIDVALE
ADAMS COUNTY
WASHINGTON COUNTY
WA1
BROGAN
MA2
WEISER
ANNEX
JAMIESON
MA3
CRYSTAL
WILLOWCREEK
DENNIS
IDAHO
ONTARIO HEIGHTS
PAYETTE
PA1
PAYETTE COUNTY
ONTARIO
CAIRO
VALE
NEW PLYMOUTH
GEM COUNTY
MALHEUR COUNTY
ARCADIA
NYSSA HEIGHTS
NYSSA
PA2
HARPER
OREGON
PA3
SAND HOLLOW
OWYHEE
PARMA
ADRIAN
MA5
MA6
CALDWELL
BOISE
HOMEDALE
MA7
MARSING
NAMPA
ADA COUNTY
CANYON COUNTY
OW1
OWYHEE
OWYHEE COUNTY
MELBA
OW2
HEMINGWAY SUBSTATION
FIGURE 3.3.14-3
SNAKE RIVER VALLEY CONSTRAINTS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Revised CAP Route
300ft Structure Buffer
Idaho City Impact Area
Exclusive Farm Use
Irrigated Agriculture/Cropland
Urban Area
Substation
0
5
Miles
LOCATION MAP
WA
OR
ID

Table 3.3.14-1. Snake River Valley Mileage Summary

	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	**B** (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	**C** (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	**D** (BA13-WA1-PA1-OW1-OW2)	**E** (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	**F** (BA13-WA1-PA1-PA2-OW2)
	Length in Miles					
Permitting Difficulty						
Low	0	0.6	0.1	0.1	0.3	0.3
Moderate	67.9	45.5	55	48.6	51.7	45.3
High	31.6	48	49.3	52.2	57.5	60.5
Exclusion	0	2.2	0	0	0	0
Construction Difficulty						
Low	54.9	57.9	52.5	43.6	52	43
Moderate	35	28.8	39	33	42	36
High	9.6	9.6	12.9	24.2	15.6	27
Mitigation Cost						
Low	40.6	60.3	65.7	66	71	71.2
Moderate	59	33.8	38.5	31.1	38.5	31.1
High	0	2.2	0.1	3.8	0.1	3.8

3.4 Alternative Routes

Selection of alternative routes extending from the proposed Grassland Substation to the existing Hemingway Substation was accomplished in three steps:

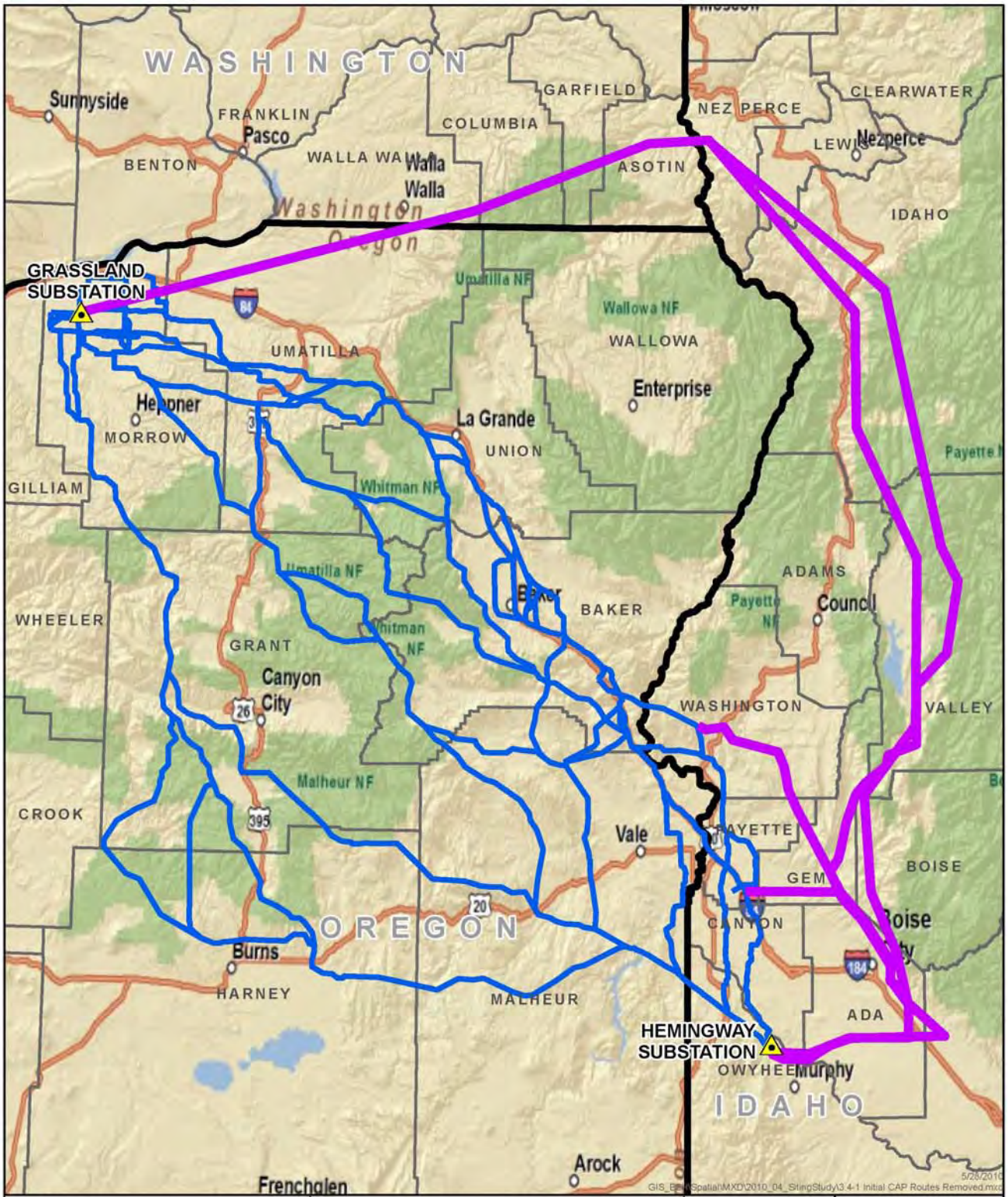
- Eliminated alternative routes that do not meet project purpose and need.
- Eliminated routes blocked by many significant constraints in central portion of study area.
- Selected a more reasonable route in each region.

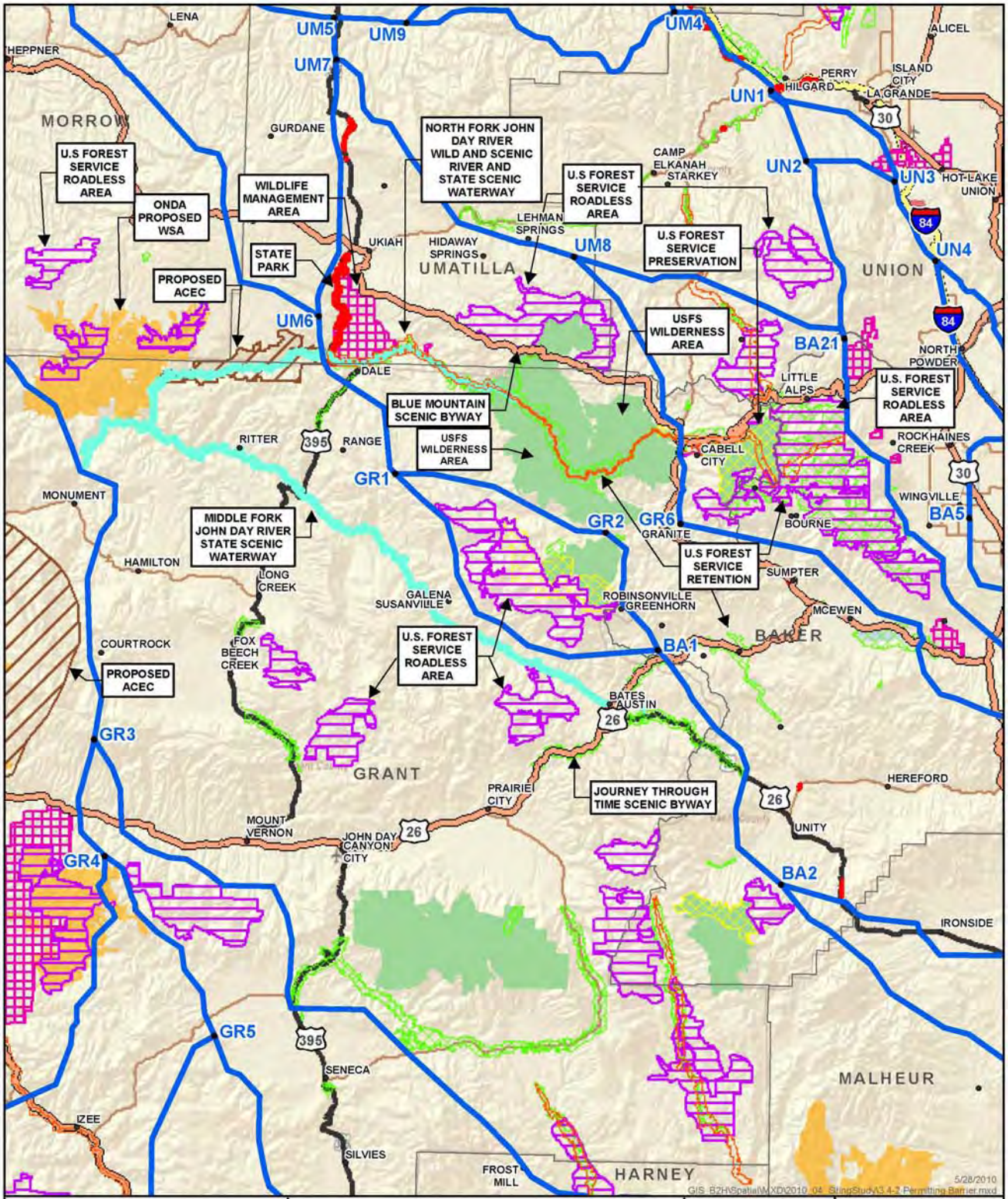
Initially, routes that do not meet the purpose and need of the Project as shown on Figure 3.4-1 were dropped from further consideration. For example, Alternative Routes S25 and C13 proceed east and then north in western Idaho eventually crossing into southeast Washington state and then into Oregon, terminating at the proposed Grassland Substation site. These routes are over 70 miles longer than the next longest proposed CAP route, add a third state for permitting, and would result in significantly more environmental impact and cost; they were therefore dropped from further consideration.

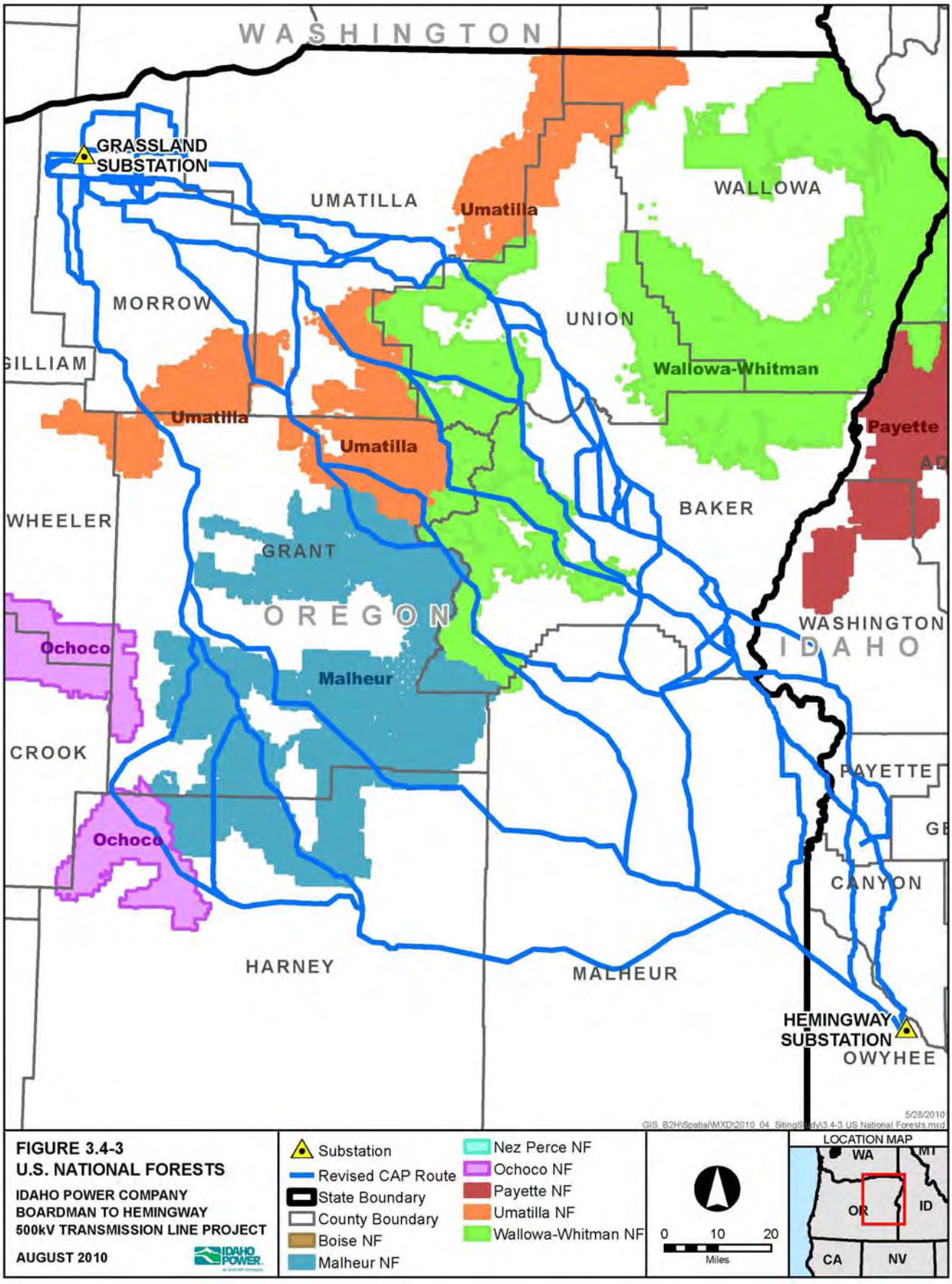
Next, as part of the regional analysis it was determined that siting a transmission line through the central portion of the study area as shown on Figure 3.4-2 was not viable. Forming an approximately 60-mile constraint barrier from about 3 miles north of the community of Monument in Grant County east to the western edge of the Baker Valley were the following restricted areas as identified in management plans and regulations: a State Scenic Waterway/Wild and Scenic River (North Fork of the John Day River), a State Wildlife Management Area (Bridge Creek), Scenic Byways (Blue Mountain and Elkhorn Scenic Byways), extensive USFS Roadless and Wilderness Areas, USFS Preservation and Retention Lands, and a proposed ACEC as shown on Figure 3.4-2. This constraint barrier effectively removed routes in the Blue Mountain Region from further consideration. In addition, routes through this central area would cross many miles of three National Forest lands as shown on Figure 3-4.3.

Figure 3.4-4 shows the routes in the central area dropped from further consideration. Figure 3.4-5 shows all of the routes considered in the regional analyses and identifies the routes removed from further consideration (as a direct result of the regional analyses described earlier in this section). Using the more reasonable routes resulting from the regional analyses, three complete route alternatives evolved: the Western, Central, and Eastern Routes (see Figure 3.4-6). Table 3.4-1 highlights some of the more significant differences between the three alternative routes, whereas Table D-15 in Appendix D details the constraints crossed by each route.

Figures 3.4-7, 3.4-8, and 3.4-9 present the permitting difficulty, construction difficulty, and mitigation cost analyses for the Western, Central, and Eastern Routes. Table 3.4-2 displays the mileage summaries by difficulty category for each analysis performed.


WASHINGTON
Sunnyside
FRANKLIN
Pasco
BENTON
WALLA WALLA
Walla Walla
COLUMBIA
GARFIELD
NEZ PERCE
CLEARWATER
Nezperce
LEWIS
ASOTIN
IDAHO
Washington
Oregon
GRASSLAND SUBSTATION
Umatilla NF
Wallowa NF
WALLOWA
UMATILLA
Enterprise
Heppner
MORROW
La Grande
UNION
GILLIAM
Whitman NF
ADAMS
Baker
BAKER
Payette NF
Council
WHEELER
GRANT
Canyon City
WASHINGTON
VALLEY
Malheur NF
CROOK
Vale
PAYETTE
GEM
BOISE
OREGON
Boise
CANYON
Burns
HARNEY
MALHEUR
ADA
HEMINGWAY SUBSTATION
OWYHEE
Murphy
IDAHO
Arock
Frenchglen
FIGURE 3.4-1
INITIAL CAP ROUTES REMOVED
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Initial CAP Route Removed
Revised CAP Route
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT


LENA
HEPPNER
MORROW
GURDANE
U.S FOREST SERVICE ROADLESS AREA
ONDA PROPOSED WSA
WILDLIFE MANAGEMENT AREA
STATE PARK
PROPOSED ACEC
NORTH FORK JOHN DAY RIVER WILD AND SCENIC RIVER AND STATE SCENIC WATERWAY
UKIAH
HIDAWAY SPRINGS
UMATILLA
LEHMAN SPRINGS
U.S FOREST SERVICE ROADLESS AREA
CAMP ELKANAH STARKEY
U.S FOREST SERVICE PRESERVATION
UM4
UM5
UM7
UM9
UM6
UM8
UN1
UN2
UN3
UN4
ALICEL
PERRY
HILGARD
ISLAND CITY
LA GRANDE
HOT LAKE
UNION
UNION
USFS WILDERNESS AREA
BA21
NORTH POWDER
LITTLE ALPS
U.S. FOREST SERVICE ROADLESS AREA
DALE
BLUE MOUNTAIN SCENIC BYWAY
USFS WILDERNESS AREA
RITTER
RANGE
CABELL CITY
ROCKHAINES CREEK
WINGVILLE
BA5
GR1
GR2
GR6
GRANITE
BOURNE
MONUMENT
MIDDLE FORK JOHN DAY RIVER STATE SCENIC WATERWAY
HAMILTON
LONG CREEK
U.S FOREST SERVICE RETENTION
SUMPTER
GALENA
SUSANVILLE
ROBINSONVILLE
GREENHORN
MCEWEN
BAKER
COURTROCK
FOX BEECH CREEK
PROPOSED ACEC
U.S. FOREST SERVICE ROADLESS AREA
BA1
BATES
AUSTIN
GR3
GRANT
PRAIRIE CITY
JOURNEY THROUGH TIME SCENIC BYWAY
HEREFORD
MOUNT VERNON
JOHN DAY
CANYON CITY
UNITY
GR4
BA2
IRONSIDE
GR5
SENECA
MALHEUR
IZEE
SILVIES
FROST MILL
HARNEY
5/28/2010
GIS_BZH\Spatial\MXD\2010_04_StingStudyA3.4-2_Permitting Barrier.mxd
FIGURE 3.4-2
PERMITTING BARRIER
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Revised CAP Route
Wild and Scenic River
Scenic Byway
State Scenic Waterway
Oregon State Park
Proposed ACEC
USFS Roadless Area
USFS VQO: Retention
USFS VQO: Preservation
USFS Wilderness Area
Wildlife Management Area
ONDA Proposed WSA
0 5 10
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV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UMATILLA
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WALLOWA
MORROW
UNION
Wallowa-Whitman
Umatilla
Umatilla
Payette
BAKER
WHEELER
GRANT
OREGON
WASHINGTON
IDAHO
Ochoco
Malheur
CROOK
PAYETTE
Ochoco
CANYON
HARNEY
MALHEUR
HEMINGWAY SUBSTATION
OWYHEE
5/28/2010
GIS_B2H\Spatial\MXD\2010_04_SitingStudy\3.4-3 US National Forests.mxd
FIGURE 3.4-3
U.S. NATIONAL FORESTS
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Revised CAP Route
State Boundary
County Boundary
Boise NF
Malheur NF
Nez Perce NF
Ochoco NF
Payette NF
Umatilla NF
Wallowa-Whitman NF
0 10 20
Miles
LOCATION MAP
WA
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OR
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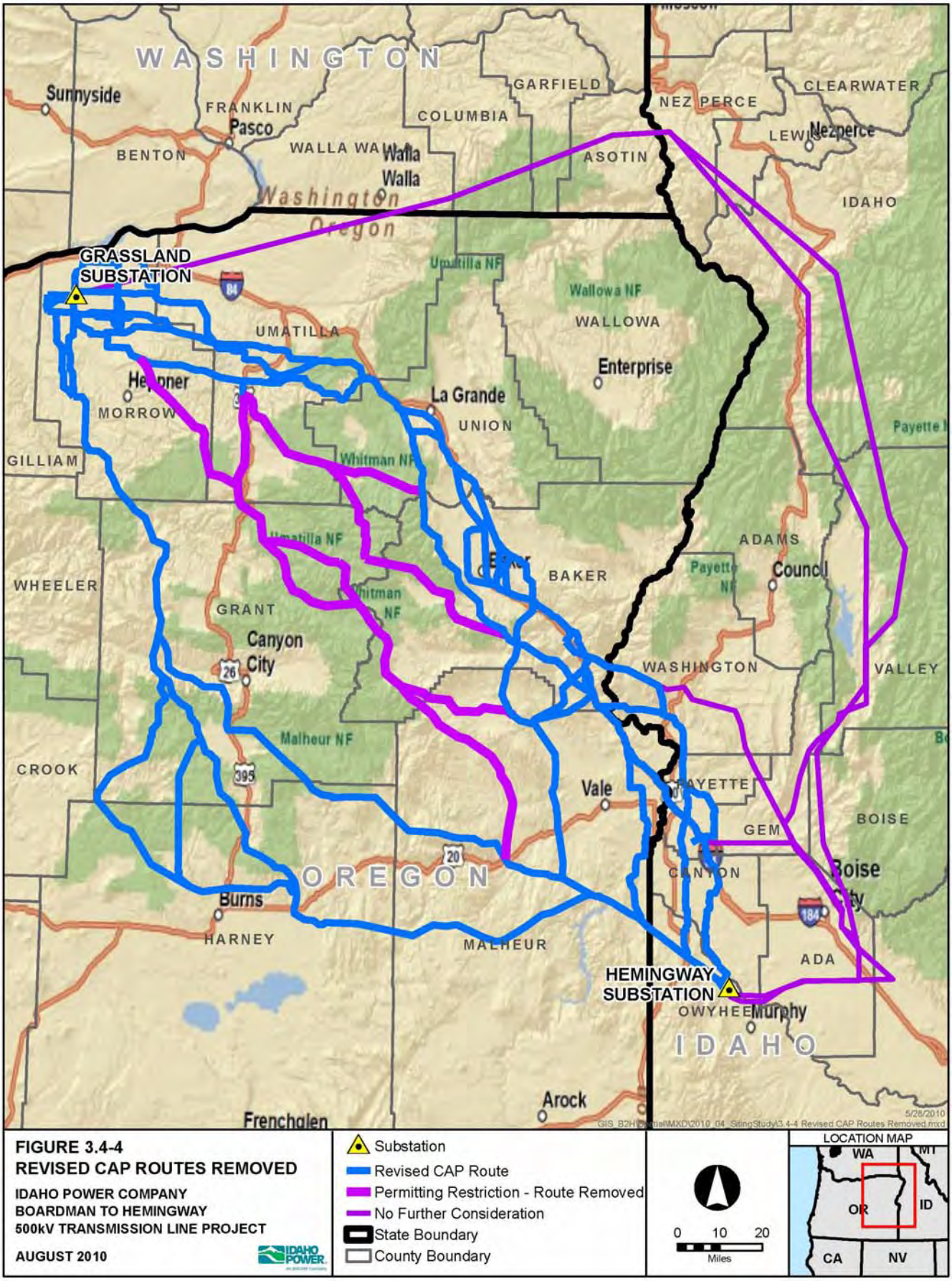
CA
NV


WASHINGTON
Sunnyside
FRANKLIN
Pasco
BENTON
WALLA WALLA
Walla Walla
COLUMBIA
GARFIELD
ASOTIN
NEZ PERCE
CLEARWATER
Nezperce
LEWIS
IDAHO
Washington
Oregon
GRASSLAND SUBSTATION
Umatilla NF
Wallowa NF
WALLOWA
UMATILLA
Enterprise
Heppner
MORROW
La Grande
UNION
GILLIAM
Whitman NF
Payette NF
ADAMS
Council
BAKER
WHEELER
GRANT
Canyon City
WASHINGTON
VALLEY
Malheur NF
CROOK
Vale
PAYETTE
BOISE
GEM
OREGON
CANYON
Boise
Burns
HARNEY
MALHEUR
ADA
HEMINGWAY SUBSTATION
OWYHEE
Murphy
IDAHO
Arock
Frenchglen
5/28/2010
GIS_B2H\Spatial\MXD\2010_04_SitingStudy\3.4-4 Revised CAP Routes Removed.mxd
FIGURE 3.4-4
REVISED CAP ROUTES REMOVED
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Revised CAP Route
Permitting Restriction - Route Removed
No Further Consideration
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
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CA
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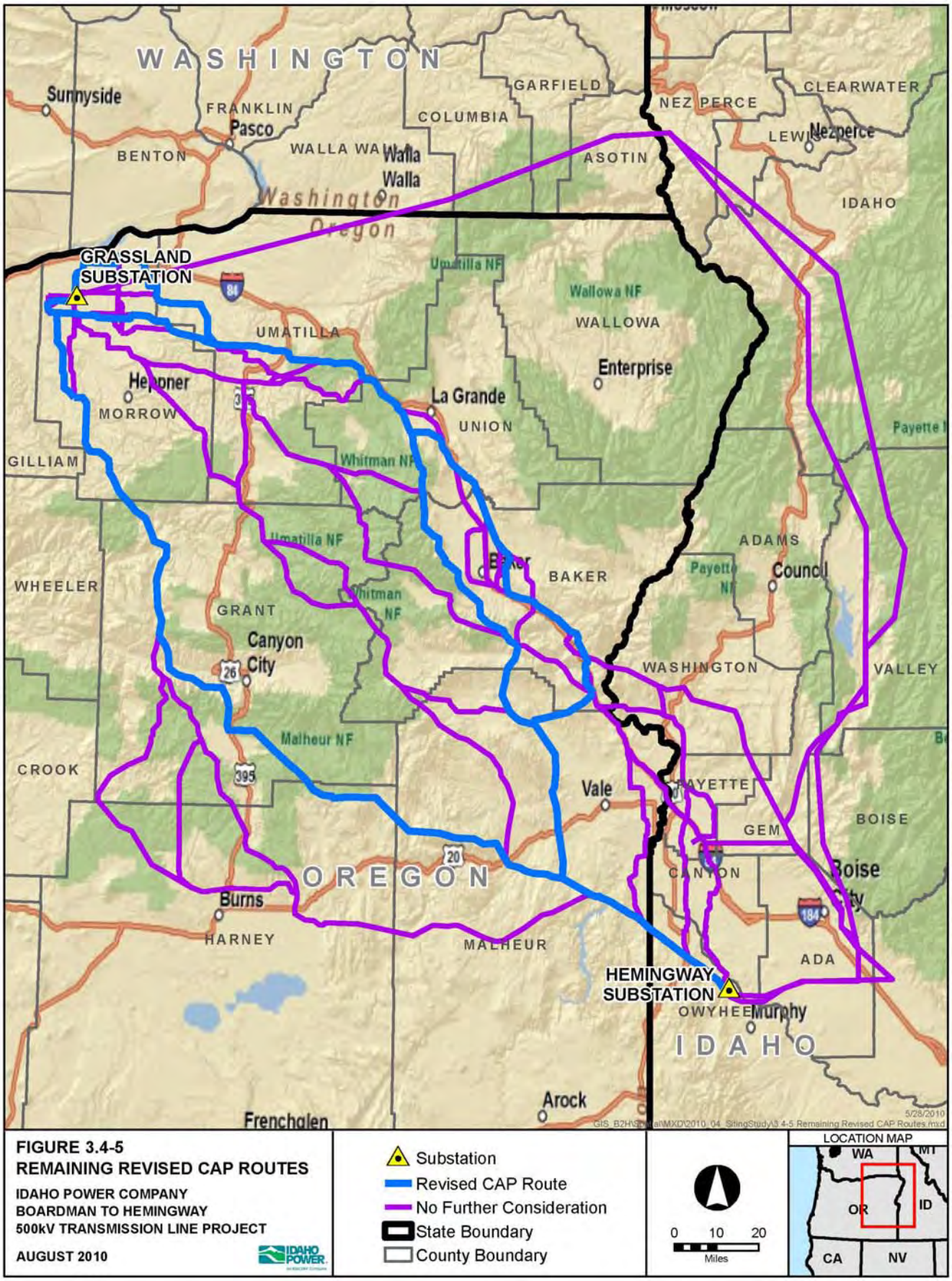
WASHINGTON
Sunnyside
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WALLA WALLA
Walla Walla
COLUMBIA
GARFIELD
NEZ PERCE
CLEARWATER
Nezperce
LEWIS
ASOTIN
IDAHO
Washington
Oregon
GRASSLAND SUBSTATION
Umatilla NF
Wallowa NF
WALLOWA
UMATILLA
Enterprise
Heppner
MORROW
La Grande
UNION
GILLIAM
Whitman NF
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Council
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GRANT
Canyon City
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Malheur NF
CROOK
Vale
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BOISE
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OREGON
CANYON
Boise
Burns
HARNEY
MALHEUR
ADA
HEMINGWAY SUBSTATION
OWYHEE
Murphy
IDAHO
Arock
Frenchglen
5/28/2010
GIS_B2HS\Final\MXD\2010_04_SitingStudy\3 4-5 Remaining Revised CAP Routes.mxd
FIGURE 3.4-5
REMAINING REVISED CAP ROUTES
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Revised CAP Route
No Further Consideration
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV


WASHINGTON
Oregon
GRASSLAND SUBSTATION
CENTRAL ROUTE
UMATILLA
MORROW
Heppner
Umatilla NF
Wallowa NF
WALLOWA
Enterprise
La Grande
UNION
395
84
CENTRAL ROUTE
EASTERN ROUTE
Whitman NF
Umatilla NF
Baker
BAKER
Payette NF
WHEELER
WESTERN ROUTE
GRANT
Whitman NF
OREGON
Canyon City
26
WASHINGTON
IDAHO
Malheur NF
CROOK
395
Vale
PAYETTE
20
84
CANYON
Burns
HARNEY
MALHEUR
HEMINGWAY SUBSTATION
OWYHEE
5/28/2010
GIS: B2H\Spatial\MXD\2010_04_SitingStudy\3.4-5_Remaining Revised CAP Routes.mxd
FIGURE 3.4-6
WESTERN, CENTRAL & EASTERN ALTERNATIVES
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
Substation
Alternative
State Boundary
County Boundary
0 10 20
Miles
LOCATION MAP
WA
OR
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CA
NV

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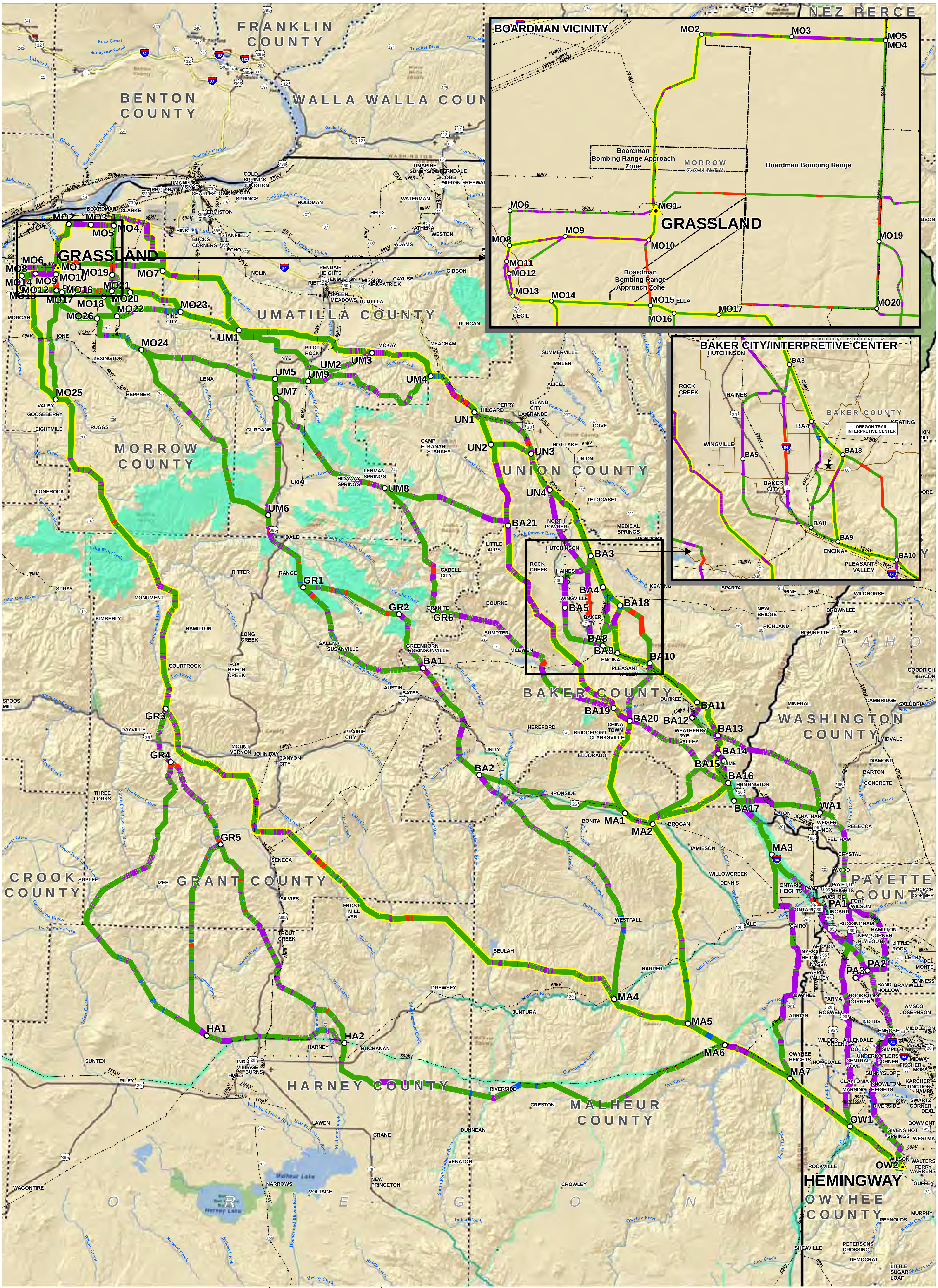


FIGURE 3.4-7
PERMITTING DIFFICULTY ANALYSIS

IDAHO POWER COMPANY
BOARDMAN - HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010

0 5 10
Miles

- Substation
- Route Node
- Low Permitting Difficulty
- Moderate Permitting Difficulty
- High Permitting Difficulty
- Exclusion Area
- Opportunity Area*
- City/Town
- State Boundary
- County Boundary
- Stream/River
- Existing Transmission Line

*Opportunity Area includes the following features:
- National Forest Visual Quality Objective: Maximum Modification
- Within 200ft of Existing Pipeline
- Vale District Utility Corridor
- West-wide Energy Corridor
- National Forest Utility Corridor

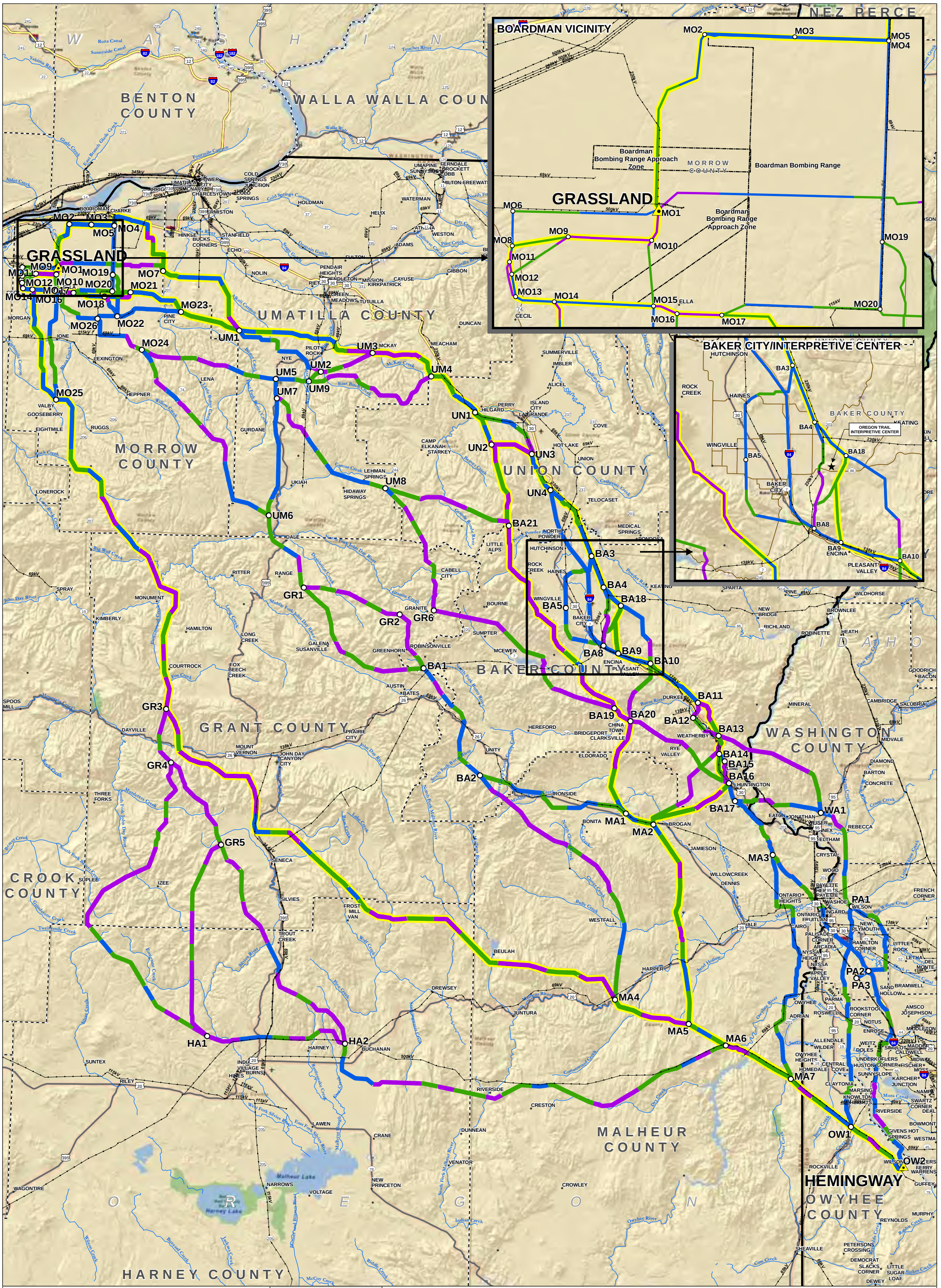
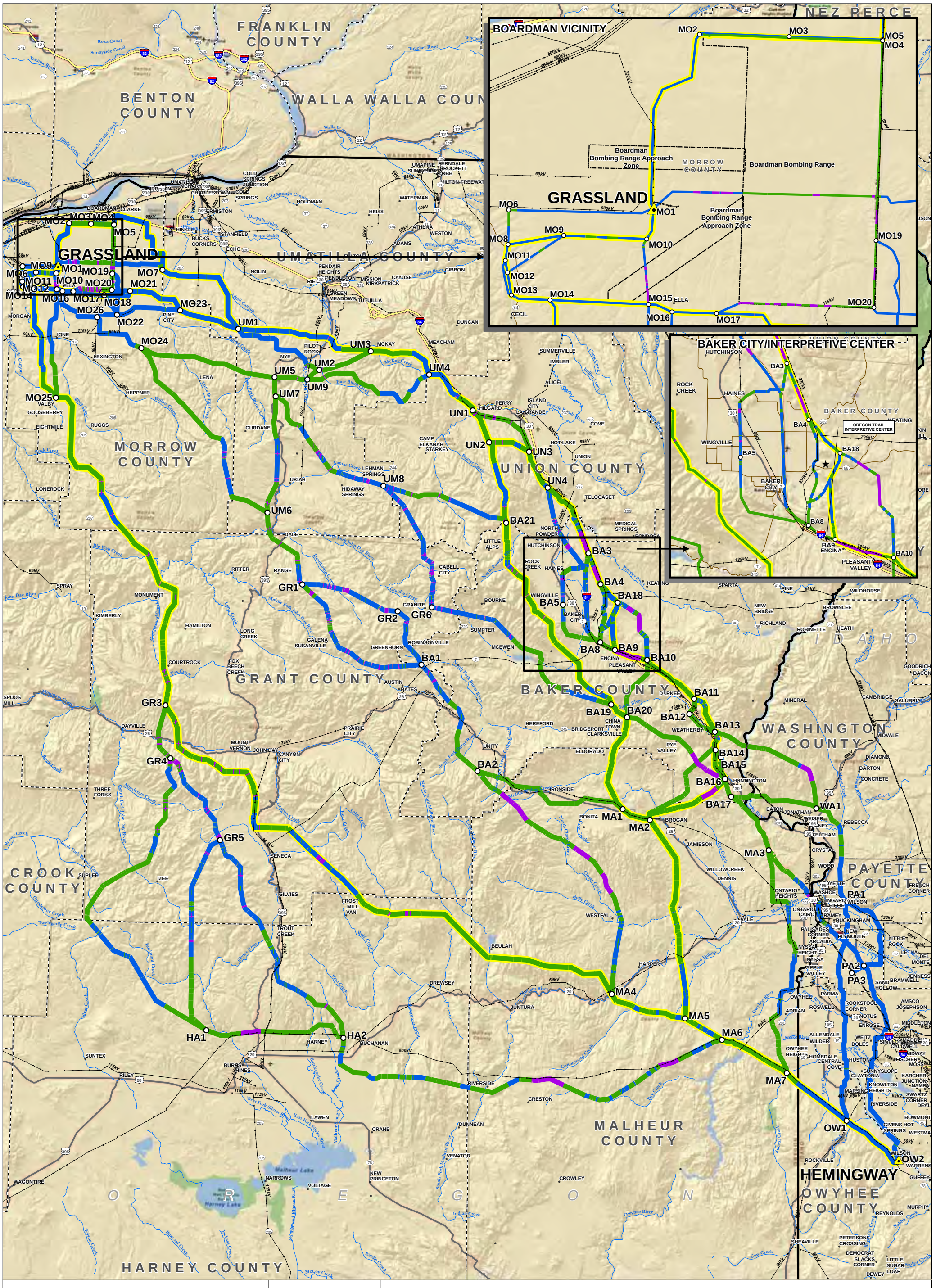


FIGURE 3.4-8
CONSTRUCTION DIFFICULTY ANALYSIS

IDAHO POWER COMPANY
BOARDMAN - HEMINGWAY
500kV TRANSMISSION LINE PROJECT

AUGUST 2010


BOARDMAN VICINITY
MO2
MO3
MO5
MO4
Boardman Bombing Range Approach Zone
MORROW COUNTY
Boardman Bombing Range
GRASSLAND
MO6
MO1
MO9
MO8
MO10
MO19
MO11
MO12
MO13
MO14
MO15
MO20
MO16
MO17
ELLA
CECIL
BAKER CITY/INTERPRETIVE CENTER
HUTCHINSON
BA3
ROCK CREEK
HAINES
BA4
BA18
WINGVILLE
BA5
BAKER CITY
BA8
BA9
BA10
ENCINA
PLEASANT VALLEY
FRANKLIN COUNTY
BENTON COUNTY
WALLA WALLA COUN
UMATILLA COUNTY
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OW1
OW2
HEMINGWAY
MORROW COUNTY
UNION COUNTY
GRANT COUNTY
BAKER COUNTY
WASHINGTON COUNTY
CROOK COUNTY
PAYETTE COUNTY
MALHEUR COUNTY
OWYHEE COUNTY
HARNEY COUNTY
NEZ PERCE
IDAHO
OREGON
BOARDMAN
HEPPNER
IONE
LEXINGTON
LENA
HEPPNER
VALBY
GOOSEBERRY
EIGHTMILE
RUGGS
GURDANE
LONEROCK
MORGAN
PINE CITY
PILOT ROCK
NYE
MCKAY
MEACHAM
DUNCAN
PENDLETON
PENDLETON
MISSION
KIRKPATRICK
CAYUSE
GIBBON
PENDAIR HEIGHTS
NOLIN
RIETH
GREEN MEADOWS
TUTUILLA
ECHO
STANFIELD
BUCKS CORNERS
HINKLE
ERMISTON
CLARKE
BOARDMAN
UMATILLA
MCNARY
CHARLESTON
COLD SPRINGS JUNCTION
COLD SPRINGS
HOLDMAN
HELIX
WATERMAN
UMAPINE
SUNNYSIDE
FERNDALE
BROCKETT
COBB
HILTON-FREEWAT
ATHENA
WESTON
ADAMS
WILDHORSE CREEK
STAGE GULCH
DESPAIN GULCH
COLD SPRINGS CANYON
FOURMILE CANYON
GLADE CREEK
EAST BRANCH GLADE CREEK
ALDER CREEK
SUNNYSIDE CANAL
ROZA CANAL
YAKIMA RIVER
TOUCHET RIVER
WALLA WALLA RIVER
COTTONWOOD C
DRY CREEK
PINE CREEK
ALKALI CANYON
BUTTER CREEK
MCKAY CREEK
EAST BIRCH CREEK
BIRCH CREEK
WILLOW CREEK
BLUE CREEK
ROCK CREEK
LEHMAN SPRINGS
UKIAH
HIDAWAY SPRINGS
CAMAS CREEK
CAMP ELKANAH STARKEY
HILGARD
PERRY
ISLAND CITY
LA GRANDE
COVE
HOT LAKE
UNION
TELOCASET
BEAVER CREEK
CATHERINE CREEK
SUMMERVILLE
IMBLER
ALICEL
GRANDE RONDE RIVER
INDIAN CREEK
GIANT CREEK
BEAR CREEK
HUTCHINSON
ROCK CREEK
HAINES
WINGVILLE
BAKER CITY
KEATING
SPARTA
PINE
WILDHORSE
NEW BRIDGE
BROWNLEE
RICHLAND
ROBINETTE
HEATH
GOODRICH
BACON
EAST PINE CREEK
BURKEE
CAMBRIDGE
SALUBRIA
MINERAL
HEREFORD
BRIDGEPORT
CLARKSVILLE
CHINA TOWN
WEATHERBY
MIDVALE
RYE VALLEY
ELDORADO
UNITY
DIAMOND
BARTON
CONCRETE
HUNTINGTON
IRONSIDE
BONITA
BROGAN
EATON
JONATHAN
WEISER
NEX
REBECCA
FELTHAM
JAMIESON
CRYSTAL
WOOD
WILLOWCREEK
DENNIS
ONTARIO HEIGHTS
WASHOE
INGARD
LEFFIE
ONTARIO
CAIRO
RAMEY
BUCKINGHAM
PALISADES CORNER
NEW PLYMOUTH
ARCADIA
NYSSA HEIGHT
NYSSA
APPLE VALLEY
LITTLE ROCK
LETHA
DEL MONTE
JENNESS
SAND HOLLOW
BRAMWELL
PARMA
OWYHEE
ROSWELL
ROOKSTOOL CORNER
NOTUS
ENROSE
AMSCO JOSEPHSON
MIDDLETON
ALLENDALE
WILDER
WEITZ
DOLES
SIMPLOT
CALDWELL
MIDWAY
OWYHEE HEIGHTS
HOMEDALE
CENTRAL COVE
HUSTON
FISCHER
MOSS
SUNNYSLOPE
CLAYTONIA
KARCHER JUNCTION
NAMPA
KNOWLTON HEIGHTS
MARSING
SWARTZ
CORNER
DEAL
RIVERSIDE
BOWMONT
GIVENS HOT SPRINGS
WESTMA
WILSON
WARRENS
GUFFEY
ROCKVILLE
SHEAVILLE
PETERSONS CROSSING
DEMOCRAT SLACKS CORNER
LITTLE SUGAR LOAF
DEWEY
REYNOLDS
MURPHY
FREICH CORNER
WILSON
BOISE RIVER
OWYHEE RIVER
MALHEUR RIVER
SNAKE RIVER
BIG WILLOW CREEK
BULLY CREEK
WESTFALL
BEULAH
HARPER
DREWSEY
JUNTURA
CRESTON
DUNNEAN
VENATOR
CROWLEY
NEW PRINCETON
CRANE
LAWEN
NARROWS
VOLTAGE
SENECA
SILVIES
FROST MILL VAN
TROUT CREEK
IZEE
SUPLEE
SUNTEX
RILEY
BURNS
HINES
HARNEY
BUCHANAN
WAGONTIRE
Malheur Lake
Harney Lake
DAYVILLE
PRAIRIE CITY
MOUNT VERNON
JOHN DAY
CANYON CITY
THREE FORKS
SPOOS MILL
SPRAY
MONUMENT
KIMBERLY
HAMILTON
LONG CREEK
GALENA
SUSANVILLE
COURTROCK
FOX BEECH CREEK
AUSTIN
BATES
GREENHORN
ROBINSONVILLE
MCEWEN
SUMPTER
GRANITE
BOURNE
RITTER
RANGE
CABELL CITY
NORTH POWDER
LITTLE ALPS
NORTH POWDER
MEDICAL SPRINGS
BONDOSA
HILGARD
GRANDE RONDE
COVE
CAMP ELKANAH STARKEY
HOT LAKE
UNION
TELOCASET
LEHMAN SPRINGS
UKIAH
HIDAWAY SPRINGS
DALE
NORTH FORK JOHN DAY RIVER
DEADLADLE CREEK
GRANITE CREEK
MIDDLE FORK JOHN DAY RIVER
LEVY CREEK
CANYON CREEK
BIG WALL CREEK
JOHN DAY RIVER
ROCK CREEK
MURDERERS CREEK
SOUTH FORK JOHN DAY RIVER
BEAVER CREEK
SILVIES RIVER
TWELVEMILE CREEK
BRIDGE CREEK
WILSON CREEK
BUZZARD CREEK
JACKASS CREEK
MCCOY CREEK
RIDDLE CREEK
WILLOW CREEK
BUTTER CREEK
BLUE CREEK
EAST FORK SILVIES RIVER
WEST FORK SILVIES RIVER
MALHEUR SLOUGH
SOUTH FORK MALHEUR RIVER
NORTH FORK MALHEUR RIVER
INDIAN CREEK
OWYHEE RIVER
SUCCOR CREEK
COW CREEK
RABBIT CREEK
SINKER CREEK
SILVIES RIVER
BULLY CREEK
WOLF CREEK
PINE CREEK
SAND HOLLOW
COTTONWOOD CREEK
DRY CREEK
CROOKED RIVER
DEER GULCH
CLOVER CREEK
MALHEUR RIVER
BIG WILLOW CREEK
MALHEUR COUNTY
HARNEY COUNTY
OREGON TRAIL INTERPRETIVE CENTER
BAKER COUNTY
FIGURE 3.4-9
MITIGATION COST ANALYSIS
IDAHO POWER COMPANY
BOARDMAN - HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
IDAHO POWER
0 5 10
Miles
Substation
Route Node
Low Mitigation Cost
Moderate Mitigation Cost
High Mitigation Cost
City/Town
Existing Transmission Line
Stream/River
State Boundary
County Boundary

Table 3.4-1. Summary Route Comparisons

Factors	Western Route	Central Route	Eastern Route
Land Use Characteristics			
Length/Counties Traversed	275/5	282/6	299/6
Private Land	138 Miles (50)	172 Miles (61)	206 Miles (69)
Public Land	137 Miles (50)	110 Miles (39)	93 Miles (31)
Follows Existing Corridors	46 Miles	58 Miles	111 Miles
New Corridor	229 Miles	224 Miles	188 Miles
Resources			
Irrigated Cropland	10 miles	9 miles	22 miles
Forest Clearing	1,754 acres	1,763 acres	681 acres
Rugged Terrain (> 25 slopes)	59 Miles	56 Miles	35 Miles
Special Status Streams	46 Crossings	13 Crossings	8 Crossings
Restrictive FS/BLM Visual Classes	9.1 Miles	25.5 Miles	8.6 Miles
Community and Agency Concerns			
Significant Issues	Community concerns and visual impacts in the John Day Valley and from the Journey Through Time Scenic Byway	Developing areas on the West Side of Baker Valley	Proximity to the National Historic Oregon Trail and Interpretive Center
National Forests	Malheur and Umatilla (45 miles) New Corridor	Wallowa-Whitman (30 miles) New Corridor	Wallowa-Whitman but in a designated utility corridor (5 miles)
High Construction Difficulty	117.1 miles	94.8 miles	61.7 miles

Table 3.4-2. Western, Central, and Eastern Route Mileage Summaries

	Western Route	Central Route	Eastern Route
	Length In Miles		
Permitting Difficulty			
Low	3.5	5.4	6.0
Moderate	220.9	211.9	247.2
High	47.1	64.8	43.7
Exclusion	3.5	1.6	1.8
Construction Difficulty			
Low	62.9	80.2	112.5
Moderate	95.0	108.8	124.6
High	117.1	94.8	61.7
Mitigation Cost			
Low	82.6	136.1	132.6
Moderate	187.0	146.3	154.0
High	5.4	1.3	12.3

3.4.1 Western Route

The Western Route exits the proposed Grassland Substation to the south, heads west for about 6 miles, and then turns south crossing the western part of Morrow County, continuing southwest across Grant, Harney, Malheur, and Owyhee Counties to the Hemingway Substation. Table D-15 in Appendix D shows that, of the three remaining routes for further consideration, the Western Route is the shortest by about 7 to 24 miles and crosses the least private and most public land; however, it parallels the least amount of existing utility and transportation corridors (46 miles) and would require the most new ROW (229 miles).

Although the shortest alternative, the Western Route crosses about 117.1 miles of what has been designated as high difficulty construction conditions, 51.8 miles and 17.8 miles more than the Eastern and Central Routes, respectively. Compared to the Central and Eastern Routes in permitting difficulty, this alternative requires the most new corridor, parallels the least utility corridor, crosses over 30 more special status streams, requires over 1,750 acres of clearing, and would cross about 45 miles through the Malheur and Umatilla National Forests. Overall, the Western Route has 47.1 miles of high permitting difficulty, compared to 43.7 for the Eastern Route and 64.8 for the Central Route as shown in Table 3.4-2.

3.4.2 Central Route

The Central Route also exits the proposed Grassland Substation to the west and then proceeds south. However, as this route passes to the south of the Boardman Grasslands Conservation Area it angles to the east across Morrow and Umatilla Counties and then through the designated utility corridor in the Wallowa-Whitman National Forest. This alternative then turns southeast through Union County and along the west side of the Baker Valley in Baker County. It continues southeast through Malheur and Owyhee Counties into the new Hemingway Substation.

This alternative route is about 7 miles longer than the Western Route and 17 miles shorter than the Eastern Route. It parallels more existing utility and transportation corridor than the Western Route, but 53 miles less than the Eastern Route and it requires 5 miles less new corridor than the Western Route and 36 more miles of new corridor than the Eastern Route.

The Central Route crosses about 56 miles of slopes over 25 percent and would require clearing of approximately 1,760 acres about the same as the Western Route and significantly more than the Eastern Route. The evaluation of construction difficulty shows that the Central Route traverses 22.3 fewer miles of high construction difficulty than the Western Route and 33.1 more miles than the Eastern Route. Much of this difficulty would happen along the west side of the Baker Valley.

Significant permitting concerns include the 30 miles through the Wallowa-Whitman National Forests, potential visibility of the line on the west side of Baker Valley, 224 miles of new corridor, and about 1,760 acres of clearing. As shown on Table 3.4-2, this alternative route crosses more miles of high permitting difficulty than the Eastern or Western Routes.

3.4.3 Eastern Route

The Eastern Route is similar to the Central Route except that it exits the proposed Grassland Substation to the north and east around the Boardman Bombing Range and then proceeds southeastward. It joins the Central Route at the Morrow/Umatilla County line about 2 miles east of Four Corners. The two alternatives continue together to the southeast end of the Wallowa-Whitman utility corridor. At this point the Eastern Route proceeds to the southeast across Union County and then into the Baker County following the east side of the Baker Valley. The Eastern Route rejoins the Central Route in northern

Malheur County and then continues generally southeast across this county and Owyhee County to Hemingway Substation.

Although this alternative is 17 miles longer than the Central Route and 7 miles longer than the Western Route, it requires significantly less new corridor and parallels significantly more existing utility and transportation corridor. Also, this alternative crosses more than 20 fewer miles of slopes over 25 percent, requires over 1,000 less acres of clearing, and has 33 to 55 fewer miles designated as high construction difficulty (see Table 3.4-2).

The Eastern Route has the least miles designated high permitting difficulty, parallels the most existing corridor, requires the least new corridor, requires significantly less clearing, and avoids creating a new utility corridor through one or more National Forests. An important permitting issue remaining for this route is related to crossing the Oregon National Historic Trail and proximity to the National Historic Oregon Trail Interpretive Center.

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4 PROPOSED AND ALTERNATIVE ROUTES

After analysis of each of the three remaining alternatives, Idaho Power selected the Eastern Route as the Proposed Route (see Figure 4-1). Compared to the Western and Central Routes, the Eastern Route:

- Requires 36 to 41 fewer miles of new corridor;
- Parallels existing utility corridors for 53 to 65 miles more;
- Requires over 1,000 fewer acres of clearing;
- Would be significantly less difficult to construct; and
- Would not create a new 30- to 45-mile utility corridor through one or more National Forests.

In addition, compared to the Central Route the Proposed Route crosses 33.1 fewer miles designated as high construction difficulty and 21.1 fewer miles designated high permitting difficulty and will not require a plan amendment to designate a utility corridor in the Wallowa-Whitman National Forest. The Western Route would have a similar degree of permitting difficulty as the Proposed Route, but would require plan amendments for utility corridors crossing the Malheur and Umatilla National Forests and would traverse 55.1 more miles designated high construction difficulty.

Idaho Power transmission line engineers reviewed the Proposed Route for constructability, making changes to minimize construction difficulty. In addition, the route was modified in the Burnt River Region (as described in Section 3.3.10) after spring 2010 aerial surveys discovered new active sage-grouse leks. As additional data are collected, more detailed engineering is developed, and additional public input is received, Idaho Power expects further changes to the Proposed Route.

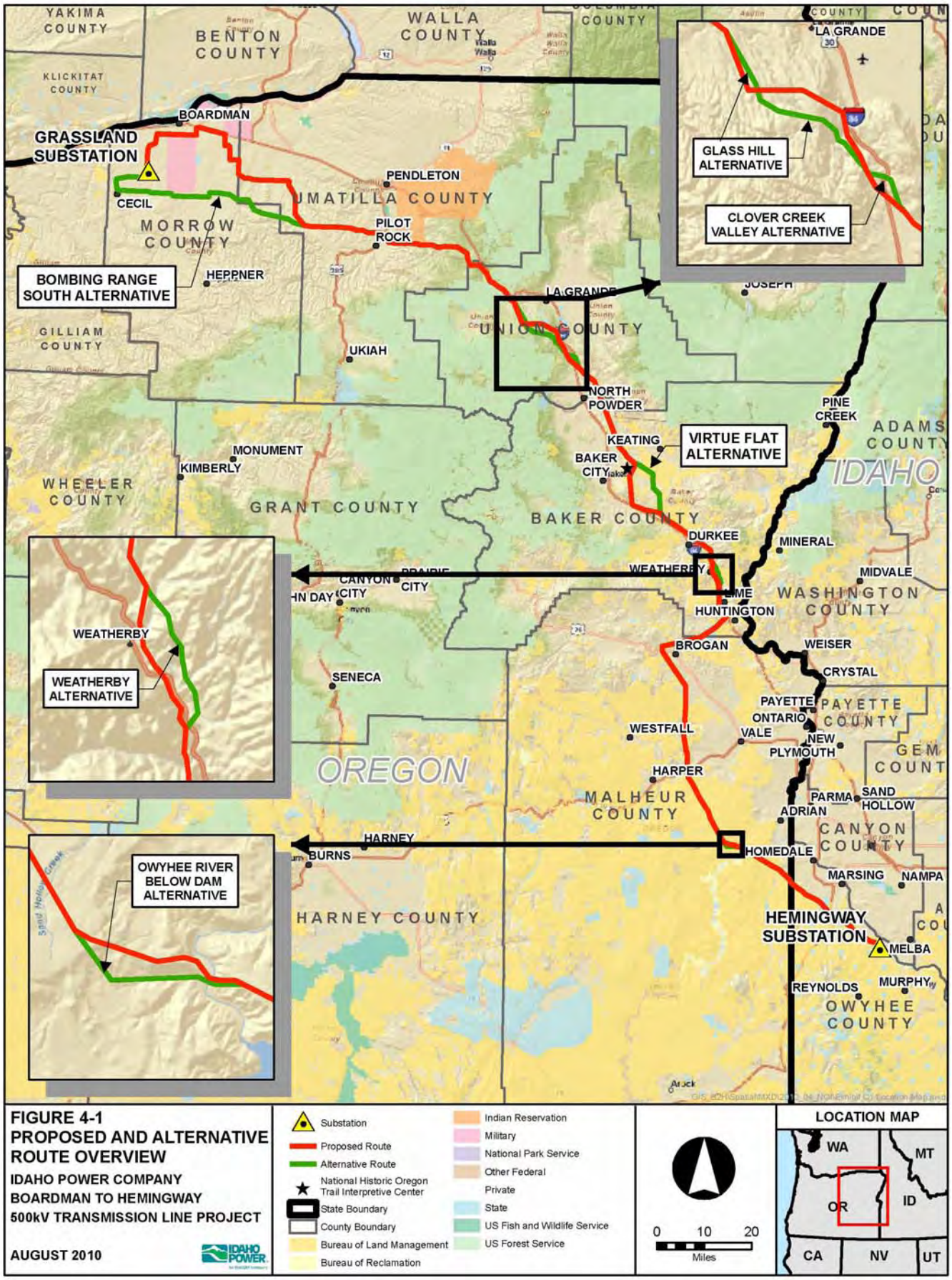
4.1 Proposed Route Description by County

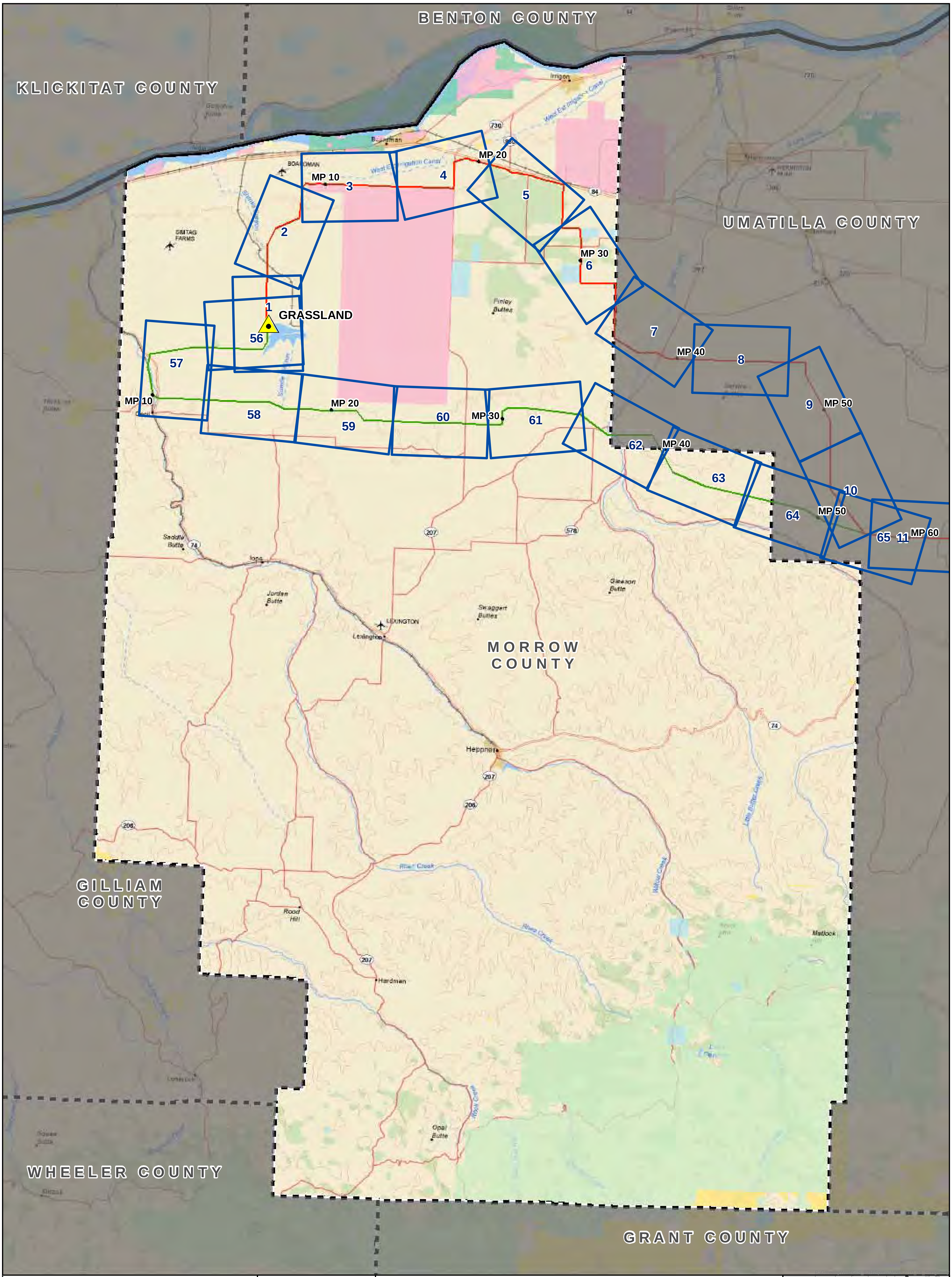
4.1.1 Segment 1—Morrow County

The majority of this northernmost 36.2-mile segment crosses irrigated agricultural land and poplar tree farms owned by private individuals, except for the 8.1-mile segment that crosses the Boardman Bombing Range owned by the Department of Defense. The line passes to the south and east of the city of Boardman and follows I-84 for about 6 miles.

Segment 1 begins at the proposed Grassland Substation, which is the northern terminus of the B2H Project (see Figure 4.1.1-1 and Appendix E, Maps 1 to 7). The proposed substation site is located west of the Boardman Power Plant and south of the city of Boardman in northern Morrow County. The Proposed Route exits the Grassland Substation site to the northwest, crossing and then paralleling the west side of an unpaved and unnamed road and the Bonneville Power Administration (BPA) Boardman-Dalreed PACW 230-kV line for about 1.6 miles. In the segment between mileposts (MPs) 1.8 and 2.8, the proposed 500-kV line parallels an existing 230-kV line and the west side of Tower Road and crosses the approach zone to the Boardman Bombing Range. At MP 3.7 the existing 230-kV line angles to the west and the Proposed Route will cross over this wood-pole H-frame line.

At about MPs 4.8 and 5.4 the Proposed Route crosses an unpaved and unnamed road in a location where the road curves northeast to avoid several irrigation pivots. The route then parallels the northwest side of this road for approximately 1.2 miles before crossing Tower Road and paralleling its east side for about


YAKIMA COUNTY
BENTON COUNTY
WALLA WALLA COUNTY
KLICKITAT COUNTY
BOARDMAN
GRASSLAND SUBSTATION
CECIL
PENDLETON
UMATILLA COUNTY
MORROW COUNTY
PILOT ROCK
BOMBING RANGE SOUTH ALTERNATIVE
HEPPNER
LA GRANDE
JOSEPH
UNION COUNTY
GILLIAM COUNTY
UKIAH
NORTH POWDER
PINE CREEK
ADAMS COUNTY
KEATING
VIRTUE FLAT ALTERNATIVE
BAKER CITY
IDAHO
MONUMENT
KIMBERLY
WHEELER COUNTY
GRANT COUNTY
BAKER COUNTY
DURKEE
MINERAL
WEATHERBY
MIDVALE
CANYON CITY
JOHN DAY
PRAIRIE CITY
HUNTINGTON
WASHINGTON COUNTY
BROGAN
WEISER
SENECA
CRYSTAL
PAYETTE
PAYETTE COUNTY
ONTARIO
WESTFALL
VALE
NEW PLYMOUTH
GEM COUNTY
OREGON
HARPER
MALHEUR COUNTY
PARMA
SAND HOLLOW
ADRIAN
CANYON COUNTY
HARNEY
BURNS
HOMEDALE
MARSING
NAMPA
HARNEY COUNTY
HEMINGWAY SUBSTATION
MELBA
REYNOLDS
MURPHY
OWYHEE COUNTY
GLASS HILL ALTERNATIVE
CLOVER CREEK VALLEY ALTERNATIVE
WEATHERBY ALTERNATIVE
OWYHEE RIVER BELOW DAM ALTERNATIVE
FIGURE 4-1
PROPOSED AND ALTERNATIVE ROUTE OVERVIEW
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
AUGUST 2010
Substation
Proposed Route
Alternative Route
National Historic Oregon Trail Interpretive Center
State Boundary
County Boundary
Bureau of Land Management
Bureau of Reclamation
Indian Reservation
Military
National Park Service
Other Federal
Private
State
US Fish and Wildlife Service
US Forest Service
0 10 20
Miles
LOCATION MAP
WA
MT
OR
ID
CA
NV
UT

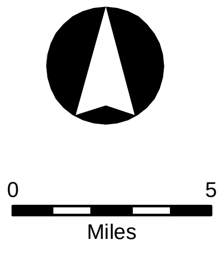


BENTON COUNTY
KLICKITAT COUNTY
UMATILLA COUNTY
MORROW COUNTY
GILLIAM COUNTY
WHEELER COUNTY
GRANT COUNTY
GRASSLAND
MP 10
MP 20
MP 30
MP 40
MP 50
MP 60
1
2
3
4
5
6
7
8
9
10
11
56
57
58
59
60
61
62
63
64
65
Irrigon
Boardman
BOARDMAN
SIMTAG FARMS
Finley Buttes
Saddle Butte
Ione
Jordan Butte
LEXINGTON
Lexington
Swaggart Buttes
Gleason Butte
Heppner
Road Hill
Hardman
Opal Butte
Matlock
Rhea Creek
Willow Creek
Little Butter Creek
Rock Creek
West Extension Irrigation Canal

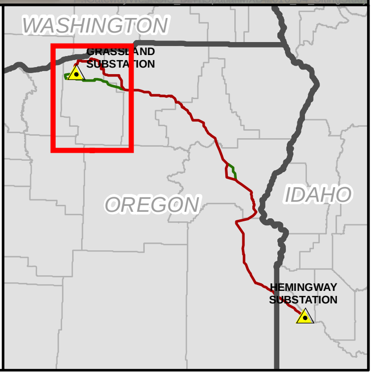
FIGURE 4.1.1-1
SEGMENT 1-MORROW COUNTY, OR

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010



Appendix E Map Sheet
Substation
Ten Mile Marker
Proposed Route
Alternative Route
State Boundary
County Boundary
Bureau of Land Management
Bureau of Reclamation
Indian Reservation
Military
National Park Service
Other Federal
Private
State
US Fish and Wildlife Service
US Forest Service



2 miles. At MP 8.6 it turns northeast, crossing into the Boardman Bombing Range at MP 9.0 and paralleling the south side of its northern boundary for 8.1 miles to its eastern boundary.

After crossing the Boardman Bombing Range, the Proposed Route turns almost due north and parallels the west side of Bombing Range Road and a BPA 115-kV line for about 1.5 miles. At MP 18.6 on the south side of Wilson Road the route angles northeast crossing Bombing Range Road, the BPA 115-kV line and the Umatilla Electric Cooperative Association 69-kV line to join the south side of I-84 at MP 19.3. The route parallels I-84 for 5.6 miles to MP 24.9 where it turns south following the border of a poplar tree farm. At MP 36.2 the Proposed Route turns southeast into Umatilla County, passing south of a wind farm and north of Echo Wind Farm.

As described in greater detail in Section 4.2, Idaho Power has included an alternative for this first segment of the Proposed Route called the "Bombing Range South Alternative."

4.1.2 Segment 2—Umatilla County

Segment 2 of the Proposed Route is approximately 61 miles long and crosses only privately owned land. The Proposed Route (see Figure 4.1.2-1 and Appendix E, Maps 7 to 18) crosses into Umatilla County about 5.0 miles north of Butter Creek Junction and almost immediately crosses the Oregon National Historic Trail. It then continues generally southeast for about 1.6 miles before angling east and descending into and crossing Butter Creek (MP 38.2) and State Route 207 (MP 39.1). On the east side of State Route 207 this route continues eastward for 8.0 miles and passes along the north side of Service Buttes. At MP 47.1 the route turns due south to MP 47.8 where it angles southeast, crossing Alkali Canyon twice. It then turns due south on the south side of the canyon at MP 50.7 and angles southeast at MP 54.5 to continue across Spikes Gulch and Slusher Canyon.

From MP 57.6, the Proposed Route proceeds nearly due east, crossing Slusher Canyon and Alkali Canyon once more. The route continues in this general direction for about 16.7 miles where it turns slightly southeast and crosses Birch Creek (MP 74.3) and U.S. Route 395 (MP 74.5) about 2.9 miles northeast of Pilot Rock. The route continues southeast and at MP 77.0 it turns east paralleling about 0.5 mile to the south of the Umatilla Indian Reservation boundary for approximately 6.7 miles. The route crosses Little McKay Creek at MP 77.0 and then McKay Creek at about MP 84.7, about 0.7 mile south of McKay, and continues east.

At MP 91.3 the Proposed Route turns southeast after crossing Red Spring Canyon. The route continues about 5.3 miles to MP 96.5 where it turns due east passing along the southern boundary of a Umatilla National Forest Service land parcel and entering Union County at approximately MP 97.2.

As described in greater detail in Section 4.2, Idaho Power's "Bombing Range South Alternative" provides an alternative route for the beginning of Segment 2 in Umatilla County.

4.1.3 Segment 3—Union County

Figure 4.1.3-1 and Appendix E, Maps 18 to 25, show the location of the Proposed Route in Union County. The Proposed Route crosses Union County for 40.2 miles, with 6.3 miles in the Wallowa-Whitman National Forest Utility Corridor, 0.7 mile across the Vale District of the BLM, and the rest on privately owned lands.

After entering Union County, the Proposed Route continues east for 1.3 miles crossing an existing railroad, the Blue Mountain Forest Wayside, Old U.S. Highway 30, and Summit Road twice before turning southeast at MP 98.4. At this location the Proposed Route begins running parallel, (offset

approximately 1,200 feet) to the south and west sides of an existing BPA 230-kV line. About 2.0 miles farther, the Proposed Route leaves the existing transmission line and continues southeast along the east side of Railroad Canyon, which it crosses at MP 103.5. Proceeding southeast, the route crosses National Forest Development (NFD) 21 Road (MP 104.4) and the existing BPA 230-kV line (MP 104.9) mentioned earlier. In the 8.8-mile section from MP 98.4 to 107.2, the Proposed Route is 0.25 mile to 0.75 mile southwest of I-84 with 6.3 miles in the existing Wallowa-Whitman National Forest utility Route. Idaho Power's application to the USFS for a Special Use Permit includes this 6.3-mile segment.

At MP 106.9 the Proposed Route angles southeast and crosses the existing 230-kV line a second time at MP 107.4. About 0.5 mile farther it turns to cross the Grande Ronde River and State Route 244 approximately one mile south of I-84. At about 0.9 mile southeast of State Route 244 the route angles to parallel a ridge on the east side of Whiskey Creek and crosses Whiskey Creek Road at about MP 111.4. The route continues parallel to the ridges to MP 114.4 where it angles due east for 4.3 miles crossing Little Graves Creek, Graves Creek, Little Rock Creek, and Rock Creek. On the north side of Glass Hill (MP 118.7) the Proposed Route angles southeast, crossing Glass Hill Road and Sheep Creek. The route continues for 3.5 miles to MP 122.2 where it again angles almost due south to cross Ladd Creek and Ladd Canyon Road (about MP 123.6).

On the south side of Ladd Creek and Ladd Canyon Road, the route continues for about 6.1 miles on the west side of I-84 until it crosses this highway and Ladd Canyon-North Powder Road at approximately MP 129.7. On the east side of I-84 the route crosses Heber Road and the Oregon National Historic Trail and then continues southeast on the northeast side of Clover Creek Valley, generally parallel to an existing Idaho Power 230-kV line and offset from that line to the southwest by more than 2,500 feet. At MP 133.4 the Proposed Route crosses Jimmy Creek Road and at approximately MP 134.6 it crosses the northern end of Jimmy Creek Reservoir.

The route continues southeast, maintaining at least a 1,500-foot offset from the existing 230-kV line, and crosses State Route 237 at MP 136.0. About 1.4 miles farther southeast it crosses the Powder River and the Union County/Baker County line into Baker County at about MP 137.4.

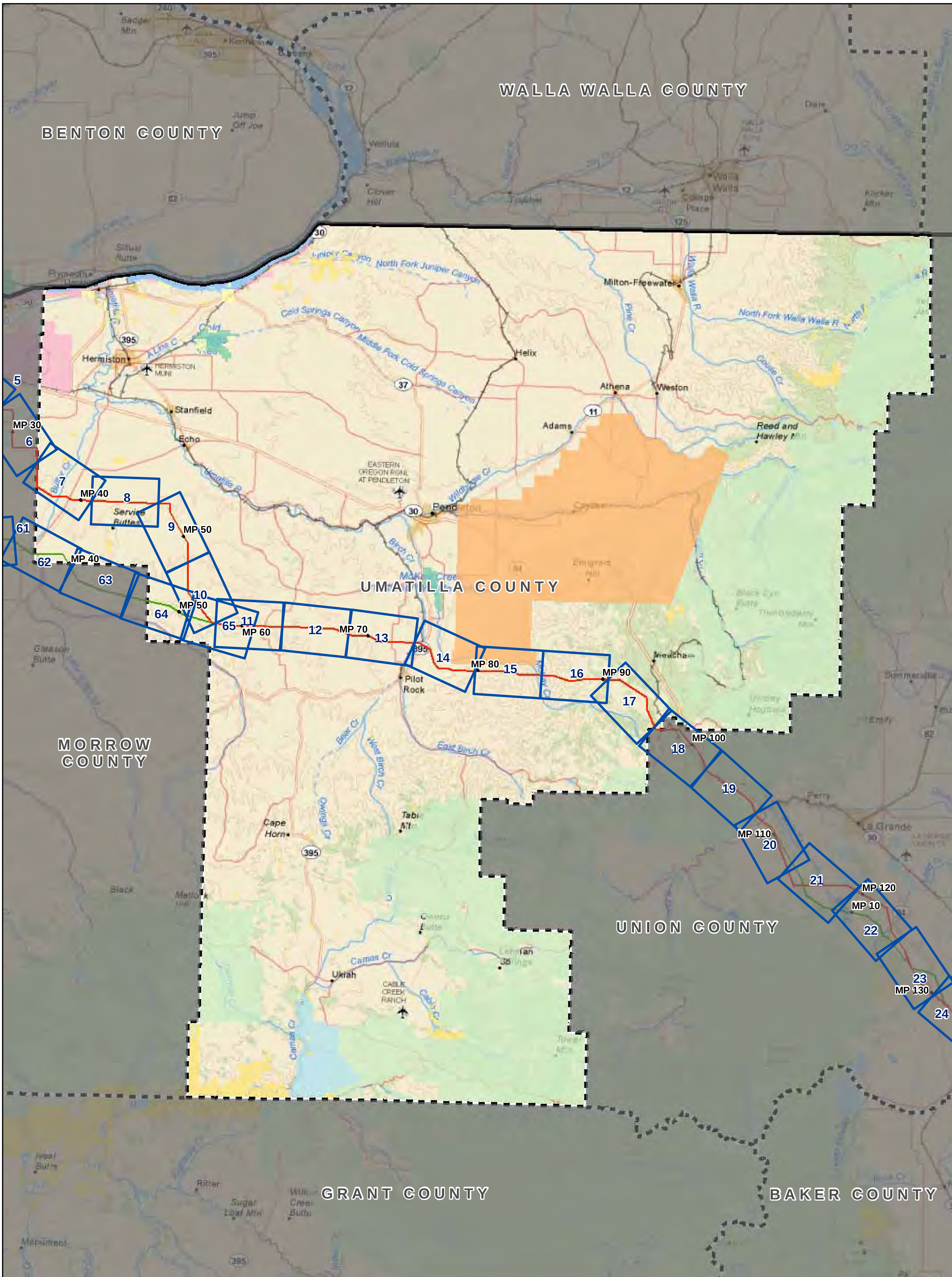
As described in greater detail in Section 4.2, Idaho Power has included two alternatives for short segments of the proposed Route through Union County: the Glass Hill Alternative and the Clover Creek Valley Alternative.

4.1.4 Segment 4—Baker County

The Proposed Route crosses Baker County for 68.2 miles as shown on Figure 4.1.4-1 and Appendix E, Maps 25 to 37. Approximately 16.0 miles of Segment 4 cross BLM-managed lands in the Vale District and about 3.0 miles cross state and local government property.

Once across the Powder River, the Proposed Route continues southeast and is generally offset 1,500 feet west of the existing Idaho Power 230-kV line for about 13.2 miles to MP 150.6. In this segment the terrain is hilly and the Proposed Route passes across the west side of Riverdale Hill and the east side of Magpie Peak.

From MP 150.6 the Proposed Route angles more southeasterly crossing over the existing 230-kV line at MP 151.3 and State Route 203 at about MP 152.0. At MP 155.2 the proposed 500-kV line turns southwest and crosses State Route 86, Ruckles Creek Road, and the Oregon National Historic Trail before proceeding to the first ridgeline. At its closest, this segment of the Proposed Route is 1.1 mile east of the National Historic Oregon Trail Interpretive Center (Center) and 0.4 mile from the Flagstaff ACEC



WALLA WALLA COUNTY
BENTON COUNTY
UMATILLA COUNTY
MORROW COUNTY
UNION COUNTY
GRANT COUNTY
BAKER COUNTY
Walla Walla
College Place
Milton-Freewater
Hermiston
HERMISTON MUNI
Stanfield
Echo
Helix
Athena
Weston
Adams
Reed and Hawley
EASTERN OREGON RGNL AT PENDLETON
Pendleton
Service Buttes
Pilot Rock
Meacham
Cape Horn
Ukiah
CABLE CREEK RANCH
La Grande
Perry
Summerville
Emily
Wallula
Clover Hill
Touchet
Jump Off Joe
Badger Mtn
Kennewick
Sillusi Butte
Emigrant Hill
Ritter
Sugar Loaf Mtn
Monument
Glasson Butte
North Fork Juniper Canyon
Cold Springs Canyon
Middle Fork Cold Springs Canyon
North Fork Walla Walla R
Walla Walla R
Pine Cr
Couse Cr
Umatilla R
Birch Cr
East Birch Cr
Bear Cr
West Birch Cr
Owings Cr
Camas Cr
Butter Cr
A Line C
Wildhorse Cr
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6
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23
24
61
62
63
64
65
MP 30
MP 40
MP 50
MP 60
MP 70
MP 80
MP 90
MP 100
MP 110
MP 120
MP 10
MP 130
MP 40
MP 50
395
30
37
11
12
125
82

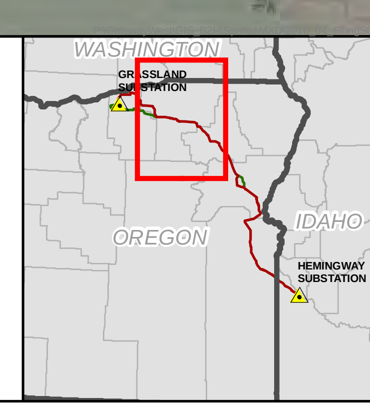
FIGURE 4.1.2-1
SEGMENT 2-UMATILLA COUNTY, OR

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

0 5
Miles

- Appendix E Map Sheet
- Substation
- Ten Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military
- National Park Service
- Other Federal
- Private
- State
- US Fish and Wildlife Service
- US Forest Service



WALLA WALLA COUNTY
COLUMBIA COUNTY
ASOTIN COUNTY
UMATILLA COUNTY
WALLOWA COUNTY
UNION COUNTY
GRANT COUNTY
BAKER COUNTY

MP 80
MP 90
MP 100
MP 110
MP 120
MP 10
MP 130
MP 140
MP 150
MP 160
MP 10

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Touchet
College Place
Walla Walla
Dixie
Oregon Butte
Saddle Butte
Big Butte
Klicker Mtn
Table Rock
Milton-Freewater
Helix
Athens
Weston
Adams
Reed and Hawley Ridge
Elgin
Summerville
Imbler
Mt Harris
Emily
Perry
La Grande
LA GRANDE UNION CO
Cove
Union
Clark Mtn
Stubblefield Mtn
Wallowa
Enterprise
Haines
Baker City
Anthony Buttes

125
11
82
30
84
86
220

FIGURE 4.1.3-1
SEGMENT 3-UNION COUNTY, OR

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

IDAHO POWER
An IDACORP Company

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Miles

- Appendix E Map Sheet
- Substation
- Ten Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military
- National Park Service
- Other Federal
- Private
- State
- US Fish and Wildlife Service
- US Forest Service

WASHINGTON
GRASSLAND SUBSTATION
OREGON
IDAHO
HEMINGWAY SUBSTATION

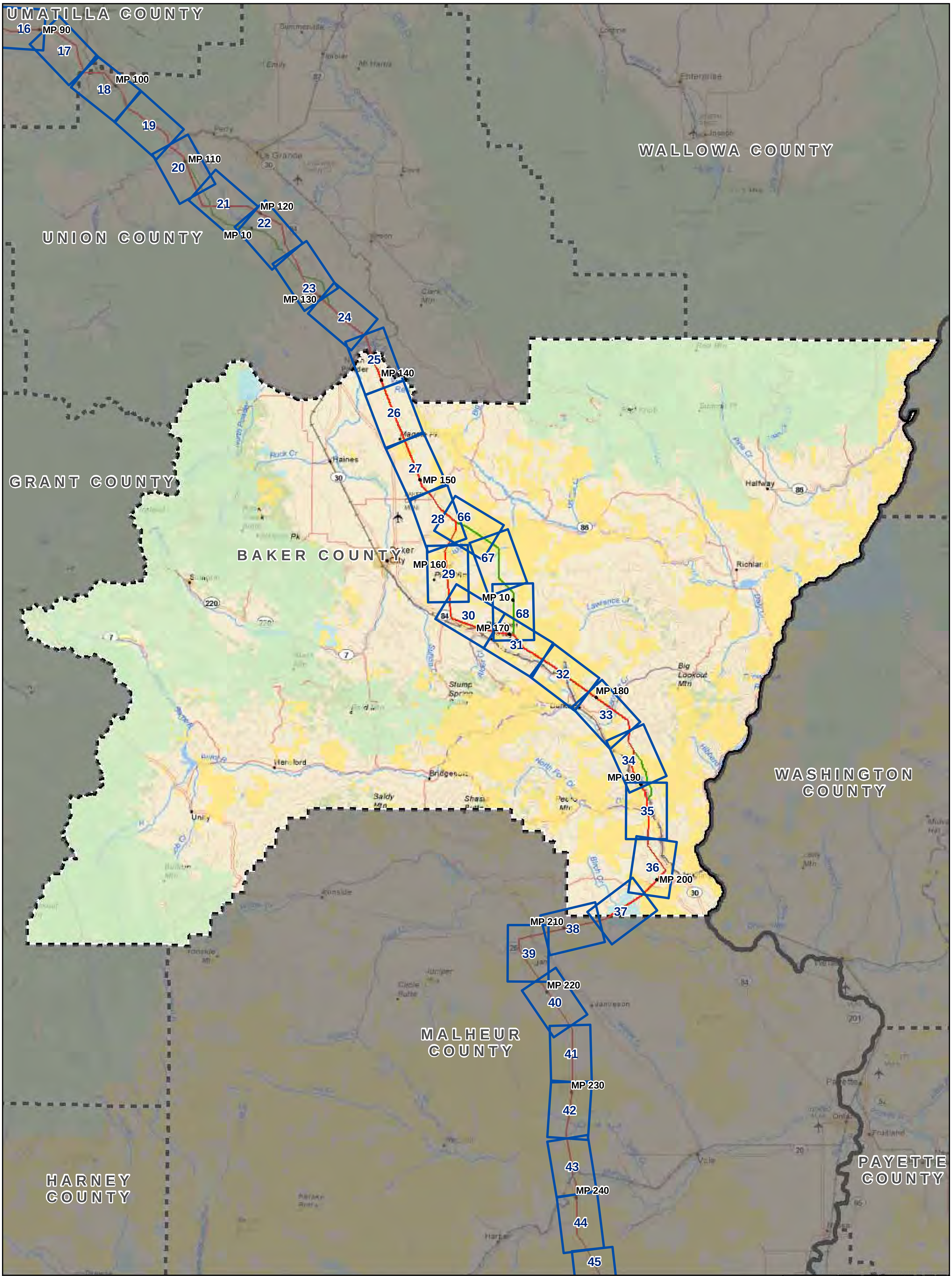

FIGURE 4.1.4-1
SEGMENT 4-BAKER COUNTY, OR

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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0 5 10
Miles

- Appendix E Map Sheet
- Substation
- Ten Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military
- National Park Service
- Other Federal
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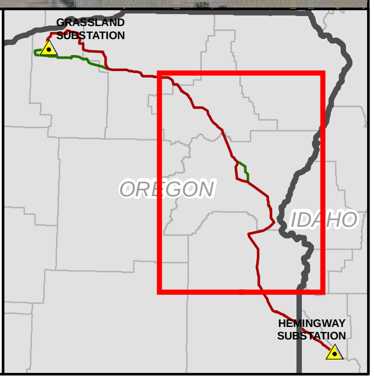
- State
- US Fish and Wildlife Service
- US Forest Service



boundary which includes the Center. It continues southwest across to MP 158.1 where it turns south and proceeds approximately 6.1 miles to MP 164.2. It then crosses an existing 69-kV line and an existing 138-kV transmission line just northeast east of I-84 and about 4.5 miles southeast of Baker City.

The Proposed Route remains generally in the same route with the existing 138-kV and 69-kV facilities on the northeast side of I-84 for about 2.5 miles and then crosses the 69-kV line (MP 167.1) and 138-kV line (MP 169.1) while passing to the north and east of Pleasant Valley. After crossing the Oregon National Historic Trail at MP 170.0, the Proposed Route continues southeast, passing northeast of the community of Durkee. The proposed 500-kV line will cross Hindman Road and Lawrence (Pritchard) Creek at about MP 176.6, Iron Mountain Road at MP 177.9, Durkee Creek at MP 178.8, Vandecar Road at MP 178.9, and Manning Basin Road at MP 181.7.

The route continues southeast across Manning Creek and North Fork Swayze Creek until MP 183.7, where the route angles south and crosses the Oregon National Historic Trail at MP 184.3. The route continues south, passing east of Gold Hill and crossing the Oregon National Historic Trail a second and third time at MP 188.2 and MP 188.5 before joining with the existing 69-kV and 138-kV Route at MP 188.6, near the community of Weatherby. At MP 189.6 the route crosses the existing 138-kV and 69-kV facilities before crossing I-84 and Burnt River at MP 189.7 and 189.8. The route then proceeds south passing along the east side of the Weatherby Mountains while parallel to the west side of the existing 138-kV line.

At the southern end of the Weatherby Mountains, the Proposed Route crosses Dixie Creek and Dixie Creek Road at about MP 192.8 and passes east of Table Rock while continuing to follow the west side of the existing 138-kV line. At MP 198.7, after crossing Cavanaugh Creek, the Proposed Route leaves the 138-kV line and proceeds southwest approximately 0.3 mile west of I-84.

In proceeding southwest the Proposed Route passes northwest of Lost Tom Mountain and crosses Malheur Reservoir Road and Durbin Creek at about MP 200.7. The route passes southeast of Limestone Butte, north of Little Valley, and continues southwest across Birch Creek before entering Malheur County at MP 205.6.

As described in greater detail in Section 4.2, Idaho Power has included two alternatives for short segments of the proposed Route through Baker County: the Virtue Flat Alternative and the Weatherby Alternative.

4.1.5 Segment 5—Malheur County

The Proposed Route crosses 70.7 miles of northeast Malheur County as shown on Figure 4.1.5-1 and in Appendix E, Maps 37 to 51. In addition to 23.4 miles across privately owned land, 46.8 miles of Segment 5 cross BLM-managed land and 0.5 mile of the route is across Bureau of Reclamation land.

Entering Malheur County at MP 205.6, the route angles southwest, crossing to the north of Matthew Gulch. Continuing southwest, the route crosses Phipps Creek at MP 207.2, an unnamed road at MP 207.4, followed by the West Fork Phipps Creek at MP 208.1, before proceeding across another unnamed road to Becker Creek at about MP 212.1. Traversing a steep canyon between MPs 212.8 and 213.3, the Proposed Route crosses Willow Creek Road and Willow Creek before angling due south at about MP 214.2. Heading south, the route crosses US Route 26 just after MP 215.0 and Canyon Creek at MP 215.1. On the south side of U.S. Route 26, the transmission line route angles southeast (MP 215.5) and continues in this direction for 8.5 miles passing west of Pole Creek Reservoir and approximately 1.8 miles west of the community of Brogan.

At MP 224.0, the route angles south, passing east of Morrison Reservoir and between Hope Butte and Sugarloaf Butte. Passing west of the Bully Creek Reservoir, the route crosses Cottonwood Creek at MP 232.7, approximately 1.0 mile northwest of its confluence with Bully Creek. At MP 233.8 the Proposed Route turns southeast crossing Bully Creek at MP 234.0, the Vale Oregon Canal at MP 237.2, the Malheur River and Malheur Canyon at MP 237.7 and the Union Pacific Railroad at MP 237.9. Approximately 4.5 miles farther south at MP 242.4, the Proposed Route crosses U.S. Route 20 before angling southeast at MP 243.5.

For the next 15.7 miles the route continues southeasterly across Malheur County, crossing Sand Hollow and passing southwest of Sagebrush Gulch. At MP 259.2, the line crosses the existing Summer Lake to Midpoint 500-kV line and Grassy Mountain. At about MP 261.3 the route begins its descent down to the Owyhee River, which it crosses at about MP 262.3, approximately 1.5 miles north and west of the Owyhee Dam.

After crossing the Owyhee River the Proposed Route proceeds easterly before turning southeast at MP 262.7 where it parallels the existing Summer Lake to Midpoint 500-kV line at a minimum offset distance of about 1,500 feet. The route continues southeast parallel to the existing 500-kV line crossing Long Draw, North Alkali Creek, and Succor Creek. At MP 276.3 the Proposed Route leaves Malheur County, Oregon, and enters Owyhee County, Idaho.

As described in greater detail in Section 4.2, Idaho Power has included one alternative for a short segment of the proposed Route through Malheur County: the Owyhee River Below Dam Alternative.

4.1.6 Segment 6—Owyhee County

The Proposed Route enters Owyhee County south of Graveyard Point and southwest of Rattlesnake Butte, and continues southeast generally parallel and offset to the southwest of the Summer Lake to Midpoint 500-kV line in the hills and desert bordering the Snake River Valley. Figure 4.1.6-1 and Appendix E, Maps 51 to 68 show the location of the 23.5-mile Proposed Route in Owyhee County, 17.3 miles of which are located on BLM-managed land.

The route passes northeast of Flat Top Butte before crossing Poison Creek at MP 281.9 and continuing to the northeast side of the South Canal. It then crosses Jump Creek Road at MP 283.3 and U.S. Route 95 at MP 287.0. Continuing southeast, the Proposed Route passes to the south of Elephant Butte and across Squaw Creek before crossing Coyote Grade Road at MP 291.1. At MP 297.2, the route angles east crossing the 500-kV line at MP 297.6 where it turns south, crossing Wilson Creek Road at MP 299.1. The route then crosses Reynolds Creek at MP 299.4, turns southwest, and enters the Hemingway Substation at MP 299.8.

BAKER COUNTY

GRANT COUNTY

WASHINGTON COUNTY

PAYETTE COUNTY

GEM COUNTY

CANYON COUNTY

HARNEY COUNTY

MALHEUR COUNTY

OWYHEE COUNTY

HUMBOLDT COUNTY

ELKO COUNTY

MP 190

MP 200

MP 210

MP 220

MP 230

MP 240

MP 250

MP 260

MP 270

MP 280

MP 290

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HEMINGWAY SUBSTATION

FIGURE 4.1.5-1
SEGMENT 5-MALHEUR COUNTY, OR

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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Miles

- Appendix E Map Sheet
- Substation
- Ten Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military
- National Park Service
- Other Federal
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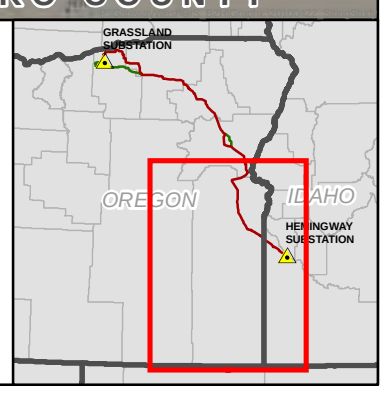
- US Fish and Wildlife Service
- US Forest Service



PAYETTE COUNTY
MALHEUR COUNTY
GEM COUNTY
BOISE COUNTY
CUSTER COUNTY
BLAINE COUNTY
CANYON COUNTY
CAMAS COUNTY
ADA COUNTY
ID
ELMORE COUNTY
OR
GOODING COUNTY
OWYHEE COUNTY
TWIN FALLS COUNTY
NV
ELKO COUNTY

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MP 260
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MP 270
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MP 280
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MP 290
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HEMINGWAY SUBSTATION

FIGURE 4.1.6-1
SEGMENT 6-OWYHEE COUNTY, ID

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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Miles

- Appendix E Map Sheet
- Substation
- Ten Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military
- National Park Service
- Other Federal
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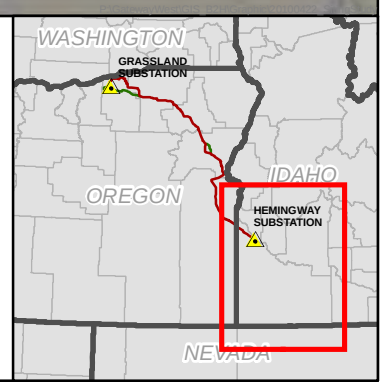
- State
- US Fish and Wildlife Service
- US Forest Service



4.2 FEASIBLE ALTERNATIVE SEGMENTS FOR DETAILED EVALUATION

Seven alternatives for portions of the Proposed Route were developed by Idaho Power for further study and consideration. Idaho Power determined that these particular segments warranted further consideration and they are discussed briefly below. The locations of these alternatives are shown on Figure 4-1, by county on Figures 4.1.1-1 through 4.1.6-1, and in Appendix E.

4.2.1 Bombing Range South Alternative

The Bombing Range South Alternative (shown on Figure 4.1.1-1 and Appendix E, Maps 56 to 65) has been proposed to be a feasible alternative because it avoids several potentially problematic areas, such as the Boardman Bombing Range property, irrigated agriculture, and/or ODFW Category 1 Habitat for Washington ground squirrels. The U.S. Navy, which manages the range, is currently evaluating the use of the north edge of the property for the proposed 500-kV transmission line. The Bombing Range South Alternative avoids the Bombing Range property but also has a difficult approach from the south and west to the Grassland Substation (the northern terminus of the B2H Project) and could add several miles to the Project.

The Bombing Range South Alternative exits the Grassland Substation to the south and angles southwest across an unnamed road (MP 1.1). The route then heads west offset approximately 1,500 feet and parallel to the northern boundary of the Boardman Conservation Area for about 3.8 miles to MP 5.3, crossing three unnamed roads. The alternative route then turns slightly south and continues west before again angling south at MP 7.7 near the Boardman Conservation Area boundary.

The route continues along the western edge of the Willow Creek Valley, following the now abandoned Union Pacific Railroad from MP 8.4 to MP 10.0, before crossing State Highway 74 about 0.9 mile north of the community of Cecil. At MP 10.4 the alternative proceeds due east crossing Schoolhouse Canyon at about MP 11.0, Immigrant Road at about MP 13.2, Squaw Butte at MP 14.5, and both the Oregon National Historic Trail and Fourmile Canyon at MP 15.0. At MP 16.5 the alternative proceeds southeast crossing Ella Road and Sixmile Canyon and passing approximately 0.4 mile south of the community of Ella, Oregon. The route continues east from MP 17.3 parallel to the southern boundary of the Boardman Conservation Area and the Boardman Bombing Range from MPs 20.3 to about MP 26.6.

The route passes to the south of Butter Creek Junction before leaving Morrow County and entering Umatilla County at MP 36.9. At MP 40.0, the alternative leaves Umatilla County and heads south back into Morrow County.

Continuing southeasterly in Morrow County, the route crosses NFD Road 827 at MP 43.5 and then heads back across the county line into Umatilla County at approximately MP 47.3. The alternative then angles south to cross Slusher Canyon and an unnamed road at MP 49.4, before continuing 3.3 miles to join with the Proposed Route at its MP 57.6.

The Bombing Range South Alternative is 52.7 miles long as compared to the corresponding segment of the Proposed Route, which is 57.6 miles long. .

4.2.2 Glass Hill Alternative

The Glass Hill Alternative (Figure 4.1.3-1 and Appendix E, Maps 20 to 23), stretching 16.8 miles, is located southwest of the city of La Grande, Oregon, in Union County. The Glass Hill Alternative was added because it avoids an Eastern Oregon University Rebarrow Research Forest at the northern end of

Glass Hill. In addition, the Glass Hill Alternative was reviewed by an engineering team to minimize route construction difficulty through the very severe topography throughout this area.

The Glass Hill Alternative departs from the Proposed Route at MP 109.5 approximately 1.0 mile south of State Highway 244 in Union County, Oregon. Following ridgelines to the east of the Proposed Route, the alternative proceeds southeast across Mill Canyon Road at MP 1.5 and across Little Graves Creek at approximately MP 2.0 before turning south toward Elk Mountain and crossing the Proposed Route at the alternative's MP 5.3 (Proposed Route MP 115.1). From MP 6.0 the alternative proceeds east across the foothills of Elk Mountain, crossing Graves Creek at MP 6.8, Little Rock Creek at MP 7.3, and Rock Creek at MP 9.2. Traversing a canyon at MP 9.5, the alternative proceeds up the western slope of Glass Hill, crossing Glass Hill Road at MP 9.9 before reaching the top of Glass Hill at about MP 10.4. The alternative begins its descent down the eastern slope of Glass Hill, crossing several switchbacks and severe terrain as it angles southeasterly toward Ladd Canyon and I-84. Crossing Ladd Canyon Road and Ladd Creek at MP 13.2, the alternative continues southeasterly for approximately the next 3.6 miles, across the foothills of Baldy Mountain, until joining with the Proposed Route at its MP 127.4.

The Glass Hill Alternative is 16.8 miles long as compared the corresponding segment of the Proposed Route, which is 17.9 miles long.

4.2.3 Clover Creek Valley Alternative

The Clover Creek Valley Alternative, shown in Figure 4.1.3-1 and in Appendix E, Maps 23 and 24, was carried forward to avoid crossing the northern end of the Clover Creek Valley, which is actively farmed and zoned Exclusive Farm Use. The Clover Creek Valley Alternative, while avoiding the farmland by crossing to the north of the valley, does require two crossings of an existing 230-kV line within a stretch of 2.7 miles.

The Clover Creek Valley Alternative angles east away from the Proposed Route at MP 127.4, crossing over the existing Idaho Power 230-kV transmission line at MP 0.5 before turning southeast to cross to the east side of I-84 at MP 1.4, where it is offset north and east approximately 1,400 feet from the existing 230-kV line. Proceeding south, the alternative crosses the existing 230-kV line a second time at MP 3.2 and continues for approximately 1.4 miles before joining with the Proposed Route at its MP 131.7.

The Clover Creek Alternative is 4.7 miles long as compared the corresponding segment of the Proposed Route, which is 4.2 miles long.

4.2.4 Virtue Flat Alternative

The Virtue Flat Alternative, shown in Figure 4.1.4-1 and in Appendix E Maps 66 to 68, is located in central Baker County, east of Baker City and the National Historic Oregon Trail Interpretive Center. Idaho Power recognizes this alterative crosses a 2-mile active sage-grouse lek buffer zone considered ODFW Category 1 Habitat; however, there is local citizen interest in locating the route farther from the National Historic Oregon Trail Interpretive Center. Idaho Power believes evaluation of the Virtue Flat Alternative in conjunction with the Proposed Route would allow for an analysis and balancing of recognized resource issues. As a result, this alternative is being carried forward for further detailed study.

The Virtue Flat Alternative angles east away from the Proposed Route at MP 155.2, approximately 1.8 miles northeast of the National Historic Oregon Trail Interpretive Center. Proceeding southeast, the alternative angles through steep terrain before crossing Keating Cutoff Road at about MP 2.1 and State Highway 86 at MP 2.4. At approximately MP 4.5, this alternative turns south, crossing Ruckles Creek and Ruckles Creek Road between MP 5.0 and MP 5.1, an unnamed road at about MP 5.7 and First Creek Road at MP 6.7. The alternative angles southeast at MP 7.5 for approximately 1.7 miles before turning

due south and continuing for 4 miles through significant topography until joining with the Proposed Route at MP 170.4, approximately 2.0 miles northeast of Pleasant Valley.

The Virtue Flat Alternative is 13.3 miles long as compared the corresponding segment of the Proposed Route, which is 15.2 miles long.

4.2.5 Weatherby Alternative

The Weatherby Alternative, shown in Figure 4.1.4-1 and in Appendix E, Maps 34 and 35, is located east of I-84 and the Burnt River in Baker County, Oregon. The Weatherby Alternative is being carried forward in the event that the corresponding section of the Proposed Route proves infeasible due to potential construction or other issues along I-84. However, the alternative crosses severe terrain and may face significant construction difficulties as well.

The Weatherby Alternative departs from the Proposed Route at MP 186.7 and immediately crosses the Oregon National Historic Trail, Sisley Creek Road, and Sisley Creek at approximately MP 0.4. Traversing Gold Cliff Gulch at MP 0.8, the alternative turns south and travels along severe slopes for about 2.5 miles. After angling southeasterly at MP 1.7 the alternative crosses Quartz Gulch at MP 2.3 and follows it south for approximately the next 0.5 mile. The alternative crosses Jordan Creek and an unnamed road at MP 3.3 before crossing Lookout Mountain Road and proceeding south across the Oregon National Historic Trail at MP 4.4. Just east of Dixie, the alternative angles to the southwest, across an existing 69-kV transmission line at MP 4.8 followed by the Burnt River, I-84, and an existing 138-kV transmission line between MP 4.8 and MP 5.0 before joining with the Proposed Route at its MP 191.6.

The Weatherby Alternative is 5.1 miles long as compared the corresponding segment of the Proposed Route, which is 4.9 miles long.

4.2.6 Owyhee River Below Dam Alternative

The Owyhee River Below Dam Alternative, located in Malheur County, Oregon, is shown in Figure G4.1.5-1 and in Appendix E, Maps 47 to 48. This alternative, from an engineering viewpoint, provides advantages in constructability. However, while both the Proposed Route and the alternative cross a designated environmentally sensitive landscape called the Owyhee Below Dam ACEC, the alternative crosses and bisects a larger intact portion of the area than the Proposed Route does.

Leaving from the Proposed Route at MP 259.2, just south of the existing Summer Lake to Midpoint 500-kV transmission line, the Owyhee River Below Dam Alternative heads southeast for approximately 1.2 miles where it angles due east. At MP 3.0 the alternative angles southeast across Haystack Rock Road, the Owyhee River, and Owyhee Lake Road between MP 3.0 and MP 3.2, approximately 1.4 miles north of the Owyhee Dam. East of the river, the alternative crosses an unnamed road at MP 3.5 before joining with the Proposed Route at its MP 262.9.

The Owyhee River Below Dam Alternative is 3.9 miles long as compared the corresponding segment of the Proposed Route, which is 3.7 miles long.

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APPENDIX A

Constraints and Opportunities

Table A-1. Constraints and Opportunities

	Resource Type	Constraint/Opportunity	Source
1	Cultural Resources	Burns District Archaeological Site	BLM Field Offices
2	Cultural Resources	Vale District Cultural Site	BLM Field Offices
3	Cultural Resources	Cemetery	USGS
4	Cultural Resources	Historic Trail/Oregon Trail	BLM
5	Cultural Resources	National Register Historic Place	NRHP
6	Cultural Resources	Intact Oregon National Historic Trail Segment (OR BLM)	BLM
7	Cultural Resources	Oregon National Historic Trail Brochure - Trailrut	NPS/BLM/USFS National Parks and Monuments brochure
8	Cultural Resources	Oregon National Historic Trail Visitor's Center	USGS/Aerial Image
9	Cultural Resources	Native American Traditional Use Areas	BLM Field Office
10	Visual Resources	Viewshed Area (Baker County)	Baker County, OR Planning Department
11	Visual Resources	Devine Scenic Corridor (Burns District)	BLM Field Office
12	Visual Resources	Nationally Designated Scenic Byway	NSBP
13	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	USFS
14	Visual Resources	National Forest Visual Quality Objective: Modification	USFS
15	Visual Resources	National Forest Visual Quality Objective: Partial Retention	USFS
16	Visual Resources	National Forest Visual Quality Objective: Retention	USFS
17	Visual Resources	National Forest Visual Quality Objective: Preservation	USFS
18	Visual Resources	BLM Visual Resource Management Class 1	BLM Field Offices
19	Visual Resources	BLM Visual Resource Management Class 2	BLM Field Offices
20	Visual Resources	BLM Visual Resource Management Class 3	BLM Field Offices
21	Visual Resources	BLM Visual Resource Management Class 4	BLM Field Offices

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
22	Fish and Wildlife	ODFW Conservation Opportunity Area	ODFW
23	Fish and Wildlife	IDFG Focal Area	IDFG
24	Fish and Wildlife	ODFW Big Game Deer Winter Range	ODFW
25	Fish and Wildlife	ODFW Big Game Elk Winter Range	ODFW
26	Fish and Wildlife	IDFG Big Game Crucial Winter Range	IDFG
27	Fish and Wildlife	Pronghorn Antelope Habitat (Boise District, ID)	BLM Field Office
28	Fish and Wildlife	Prineville District Fish Restoration Area	BLM Field Office
29	Fish and Wildlife	Prineville District Wildlife Habitat Seasonal Closure Area	BLM Field Office
30	Fish and Wildlife	Washington Ground Squirrel 785ft Habitat Buffer	TNC
31	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	ODFW
32	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	ODFW
33	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	ODFW
34	Fish and Wildlife	Sage-grouse Key Habitat Area (Idaho)	BLM
35	Fish and Wildlife	Sage-grouse Restoration Habitat Type 1: Perennial Grasslands (Idaho)	BLM
36	Fish and Wildlife	Sage-grouse Restoration Habitat Type 2: Annual Grass Understories (Idaho)	BLM
37	Fish and Wildlife	Within 2-mile Idaho Sage-grouse Lek Buffer (Unknown)	BLM
38	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied)	ODFW
39	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied but able to Permit)	ODFW
40	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	ODFW
41	Fish and Wildlife	Special Status Stream: Bull Trout	USFWS
42	Fish and Wildlife	Special Status Stream: Chinook Salmon	StreamNet
43	Fish and Wildlife	Special Status Stream: Coho Salmon	StreamNet
44	Fish and Wildlife	Special Status Stream: Cutthroat Trout	StreamNet

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
45	Fish and Wildlife	Special Status Stream: Red Band Trout	StreamNet
46	Fish and Wildlife	Special Status Stream: Steelhead	StreamNet
47	Fish and Wildlife	Wild Horse and Burro Area (OR BLM)	BLM
48	Land Use	Area of Critical Environmental Concern	BLM
49	Land Use	Airport/Airstrips	USGS
50	Land Use	Community Parks	IDPR
51	Land Use	Fish Hatcheries	ODFW
52	Land Use	Hospitals	OR Geospatial Enterprise Office
53	Land Use	Dairy Farms	ID Dept. of Agriculture, ID Dept. of Environmental Quality
54	Land Use	Recreation Sites	USGS, BLM, IDPR
55	Land Use	Wind Turbines	Morrow County, OR Planning Department; Aerial Image
56	Land Use	BLM Wild and Scenic River: Recreation	BLM
57	Land Use	BLM Wild and Scenic River: Suitable Lands (Prineville District, OR)	BLM
58	Land Use	Burns District Off-Highway Vehicle: Seasonal Closure	BLM Field Office
59	Land Use	Burns District ROW Avoidance Corridor	BLM Field Office
60	Land Use	City Impact Area - Idaho	ID County Comprehensive Plans
61	Land Use	Confederated Tribes of the Umatilla Indian Reservation	Umatilla County, OR Department of Land Use Planning
62	Land Use	Cropland/Irrigated Agriculture	USDA/NRCS
63	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	DLCD
64	Land Use	Forested Land: Private	NLCD
65	Land Use	Forested Land: Public	NLCD
66	Land Use	Grazing Allotment - ID	BLM
67	Land Use	Grazing/Pasture - OR	BLM
68	Land Use	Lands with Wilderness Characteristics (OR BLM)	BLM
69	Land Use	Morrow County Park	Morrow County, OR Planning Department
70	Land Use	National Forest Old Growth Forest Stand	USFS
71	Land Use	National Forest: Special Interest Area	USFS
72	Land Use	Naval Weapons System Training Facility	DoD

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
73	Land Use	North Powder Valley	USGS
74	Land Use	Noxious Weeds (OR BLM)	BLM
75	Land Use	ODFW Wildlife Management Area	ODFW
76	Land Use	Oregon State Park	ORPD
77	Land Use	Prineville District Lands Proposed for Acquisition by the BLM	BLM Field Office
78	Land Use	Prineville District Noxious Weeds	BLM Field Office
79	Land Use	Prineville District Off-Highway Vehicle: Limited Use	BLM Field Office
80	Land Use	Prineville District Proposed Area of Critical Environmental Concern	BLM Field Office
81	Land Use	Prineville District Special Recreation Management Area	BLM Field Office
82	Land Use	Proposed Wilderness Study Area (ONDA)	ONDA
83	Land Use	Proposed Wind Farm Boundary (Burns District, OR)	BLM Field Office
84	Land Use	Recreation Area (OR BLM)	BLM
85	Land Use	Restricted Airspace - Airport	URS Corporation
86	Land Use	Special Recreation Management Area (Malheur RA, Vale District, OR)	BLM Field Offices
87	Land Use	The Nature Conservancy: Portfolio	TNC
88	Land Use	The Nature Conservancy: Preserve	TNC
89	Land Use	Urban Area	ESRI Streetmap
90	Land Use	Urban Growth Boundary - Oregon	ODOT, OR Employment Dept., DLCD, OR Geospatial Enterprise Office
91	Land Use	Vale District Off-Highway Vehicle: Limited to Designated Routes	BLM Field Office
92	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	BLM Field Office
93	Land Use	Virtue Flat OHV	BLM Field Office
94	Land Use	Wind Farm Boundary	Morrow County, OR Planning Department
95	Ownership	Bureau of Land Management	BLM
96	Ownership	Bureau of Reclamation	BLM
97	Ownership	Military Land	BLM
98	Ownership	Other Federal Land	BLM
99	Ownership	Private	BLM
100	Ownership	State Land	BLM
101	Ownership	U.S. Forest Service	BLM
102	Ownership	Water	BLM
103	Geological Resources	Erosion Hazard: High (Prineville District, OR)	BLM Field Office
104	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co., OR data n/a)	NRCS
105	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co., OR data n/a)	NRCS

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
106	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co., OR data n/a)	NRCS
107	Geological Resources	Idaho Landslide Susceptibility: Moderate	USGS
108	Geological Resources	Idaho Landslide Susceptibility: Low	USGS
109	Geological Resources	Fault Lines	USGS
110	Geological Resources	U.S. Geological Survey Active Mining Area	USGS
111	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	NRCS, SSURGO
112	Geological Resources	Oregon Landslide Feature: Fan	SLIDO v1
113	Geological Resources	Oregon Landslide Feature: Landslide	SLIDO v1
114	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	SLIDO v1
115	Slope	Slope 0-15	USGS
116	Slope	Slope 15-25	USGS
117	Slope	Slope 25-35	USGS
118	Slope	Slope >35	USGS
119	Water and Wetlands	Floodplain: 500-yr Flood Zone	FEMA
120	Water and Wetlands	Floodplain: Area Not Mapped	FEMA
121	Water and Wetlands	Floodplain: Not in Flood Zone	FEMA
122	Water and Wetlands	Floodplain: Zone A	FEMA
123	Water and Wetlands	Floodplain: Zone ANI	FEMA
124	Water and Wetlands	National Wetland Inventory	NWI
125	Water and Wetlands	Oregon Watershed Restoration Inventory Project Areas	OWRI
126	Water and Wetlands	Snake River	ESRI Streetmap
127	Water and Wetlands	Oregon State Scenic Waterway	ORPD
128	Other Features	Existing Pipeline	Penwell
129	Other Features	Vale District Utility Corridor	BLM Field Office
130	Other Features	West-wide Energy Corridor	Argonne National Laboratory – DOE

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
131	Other Features	National Forest Utility Corridor	USFS
132	Oregon Statewide Zoning	Oregon Statewide Zoning: Agriculture	DLCD
133	Oregon Statewide Zoning	Oregon Statewide Zoning: Forest	DLCD
134	Oregon Statewide Zoning	Oregon Statewide Zoning: Rural Commercial	DLCD
135	Oregon Statewide Zoning	Oregon Statewide Zoning: Rural Industrial	DLCD
136	Oregon Statewide Zoning	Oregon Statewide Zoning: Rural Residential	DLCD
137	Oregon Statewide Zoning	Oregon Statewide Zoning: Agriculture (Range)	DLCD
138	Oregon Statewide Zoning	Oregon Statewide Zoning: Urban	DLCD
139	Morrow County, OR Zoning	Morrow County: Exclusive Farm Use	Morrow County, OR Planning Department
140	Morrow County, OR Zoning	Morrow County: Forest Use	Morrow County, OR Planning Department
141	Morrow County, OR Zoning	Morrow County: General Industrial	Morrow County, OR Planning Department
142	Morrow County, OR Zoning	Morrow County: Public Use	Morrow County, OR Planning Department
143	Morrow County, OR Zoning	Morrow County: Space Age Industrial	Morrow County, OR Planning Department
144	Morrow County, OR Zoning	Morrow County: STR	Morrow County, OR Planning Department
145	Union County, OR Zoning	Union County: Agriculture Grazing A-2	Union County, OR Planning Department
146	Union County, OR Zoning	Union County: Exclusive Farm Use A-1	Union County, OR Planning Department

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
147	Union County, OR Zoning	Union County: Timber Grazing A-4	Union County, OR Planning Department
148	Baker County, OR Zoning	Baker County: Airport Overlay	Baker County, OR Planning Department
149	Baker County, OR Zoning	Baker County: Exclusive Farm Use	Baker County, OR Planning Department
150	Baker County, OR Zoning	Baker County: Industrial	Baker County, OR Planning Department
151	Baker County, OR Zoning	Baker County: Mining Extraction	Baker County, OR Planning Department
152	Baker County, OR Zoning	Baker County: Primary Forest	Baker County, OR Planning Department
153	Baker County, OR Zoning	Baker County: Recreation/Residential RR1	Baker County, OR Planning Department
154	Baker County, OR Zoning	Baker County: Recreation/Residential RR5	Baker County, OR Planning Department
155	Baker County, OR Zoning	Baker County: Timber Grazing	Baker County, OR Planning Department
156	Baker County, OR Zoning	Baker County: Watershed Overlay	Baker County, OR Planning Department
157	Harney County, OR Zoning	Harney County: Farm & Ranch Use - 160 AC	Harney County, OR GIS Department
158	Harney County, OR Zoning	Harney County: Farm & Ranch Use - 80 AC	Harney County, OR GIS Department
159	Harney County, OR Zoning	Harney County: Forest Use	Harney County, OR GIS Department
160	Washington County, ID Zoning	Washington County: Agricultural Area	Washington County, ID Comprehensive Plan
161	Washington County, ID Zoning	Washington County: Residential Area	Washington County, ID Comprehensive Plan

Table A-1. Constraints and Opportunities (continued)

	Resource Type	Constraint/Opportunity	Source
162	Payette County, ID Zoning	Payette County: Agriculture 1	Payette County, ID Comprehensive Plan
163	Payette County, ID Zoning	Payette County: Agriculture 2	Payette County, ID Comprehensive Plan
164	Payette County, ID Zoning	Payette County: Commercial	Payette County, ID Comprehensive Plan
165	Payette County, ID Zoning	Payette County: Government	Payette County, ID Comprehensive Plan
166	Payette County, ID Zoning	Payette County: Greenway	Payette County, ID Comprehensive Plan
167	Payette County, ID Zoning	Payette County: Industrial	Payette County, ID Comprehensive Plan
168	Payette County, ID Zoning	Payette County: Mixed Agriculture	Payette County, ID Comprehensive Plan
169	Payette County, ID Zoning	Payette County: Rural Residential	Payette County, ID Comprehensive Plan

Notes:
BLM – Bureau of Land Management
DoD – Department of Defense
DOE – Department of Energy
DLCD – Department of Land Conservation and Development
FEMA – Federal Emergency Management Agency
IDFG – Idaho Department of Fish and Game
IDPR – Idaho Department of Parks and Recreation
NLCD –National Land Cover Database
NPS – National Park Service
NRCS – Natural Resources Conservation Service
NRHP – National Register of Historic Places
NSBP – National Scenic Byway Program
NWI – National Wetlands Inventory
ODOT – Oregon Department of Transportation
ONDA – Oregon Natural Desert Association
ORPD – Oregon Parks and Recreation Department
OWRI – Oregon Watershed Restoration Inventory
SLIDO –Statewide Landslide Information Database of Oregon
SSURGO –Soil Survey Geographic Database
USDA – U.S. Department of Agriculture
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey

APPENDIX B

Community Criteria

Definitions

Placement Opportunities – Project Advisory Teams identified areas for the transmission line that would be preferred by the communities.

Avoidance Areas – Project Advisory Teams identified areas that are important to the communities. The communities recommend avoiding these areas when siting the transmission line.

North Project Advisory Area

Placement Opportunities	Avoidance Areas
Existing energy corridors	Irrigated farmland
West-wide energy corridor	Bisecting fields
Public land (federal and state)	Aerial spraying activity areas
Transportation & rail corridors	Scenic viewsheds
Across the bombing range	Areas that have potential for residential and/or business development
Co-locate with wind farms	Urban growth boundaries
Private property (owned by people who want the line on their land)	Areas of tourism
	Historic landmarks
	Narrow valleys with agricultural operations
	Private resource land (i.e., timber)
	Sensitive wildlife areas (i.e., sage-grouse leks)
	Water resources and wetlands
	Schools
	City impact areas
	Private residences
	Confined animal feeding operations

Central Project Advisory Area

Placement Opportunities	Avoidance Areas
Existing energy corridors	Exclusive Farm Use (EFU) land
West-wide energy corridor	Irrigated farmland
Public land (federal and state)	Bisecting fields
Transportation & rail corridors	Aerial spraying activity areas
	Rangeland
	Scenic viewsheds
	Areas that have potential for residential and/or business development
	Areas of tourism (specifically the Oregon Trail Interpretive Center)
	Historic landmarks (specifically the Oregon Trail)
	Narrow valleys with agricultural operations
	Private resource land (i.e., timber)
	Sensitive wildlife areas (i.e., sage-grouse leks)
	Water resources and wetlands

Central Project Advisory Area

Placement Opportunities	Avoidance Areas
	Schools
	Private residences
	Medical facilities
	Airports
	Developed areas for recreation (Wolf Creek, parks)
	South La Grande
	Powder River Valley
	Designated scenic highway routes
	High priority noxious weed sites
	Below Thief Valley
	Howard Meadows area

South Project Advisory Area

Placement Opportunities	Avoidance Areas
Existing energy corridors	EFU land in Oregon
West-wide energy corridor	Prime farmland in Idaho
Public land (federal and state)	Irrigated farmland
Transportation & rail corridors	Bisecting fields
	Aerial spraying activity areas
	Private rangeland
	Scenic viewsheds
	Areas that have potential for residential and/or business development
	Urban growth boundaries
	Areas of tourism
	Historic landmarks
	Narrow valleys with agricultural operations
	Private resource land (i.e., timber)
	Sensitive wildlife areas (i.e., sage-grouse leks)
	Water resources and wetlands
	Schools
	City impact areas
	Private residences
	Confined animal feeding operations

Grant County Project Advisory Area

Placement Opportunities	Avoidance Areas
Existing energy corridors	Undeveloped areas
I-84 corridor	Wilderness areas
Direct route between Boardman and Hemingway	Rural areas
	Roadless areas
	Designated wild and scenic rivers - Riparian areas (strips of land that border creeks, rivers or other bodies of water.)
	Critical watershed enhancement and restoration areas
	Scenic areas - The cedar grove - The fossil beds - Viewsheds
	Recreation areas
	Wildlife habitats - Big game winter range - Sage-grouse leks - Threatened and endangered species
	Forest land and old growth
	Private property
	EFU land

Harney County Project Advisory Area

Placement Opportunities	Avoidance Areas
Existing energy corridors	Wildlife habitats - Sage-grouse leks
I-84 corridor	Undeveloped areas
Areas with potential for wind power	Wilderness areas
Direct route between Boardman and Hemingway	Riparian areas (strips of land that border creeks, rivers or other bodies of water.)
	EFU land
	Private land
	Forests and timberland
	Roadless areas

APPENDIX C

Constraints Crossed – Permitting Difficulty Overview

Table C-1. Constraints Crossed – Permitting Difficulty Overview

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]
1	Cultural Resources	Burns District Archaeological Site	Avoidance High	
2	Cultural Resources	Vale District Cultural Site	Avoidance High	
3	Cultural Resources	Within 500ft of Cemetery	Avoidance Mod	
4	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod	
5	Cultural Resources	Within .5mi National Register Historic Place Buffer	Avoidance High	
6	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High	
7	Cultural Resources	Oregon Trail Brochure - Trailrut	Avoidance High	
8	Visual Resources	Viewshed Area (Baker County)	Avoidance High	CC
9	Visual Resources	Devine Scenic Corridor (Burns District)	Avoidance Mod	
10	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC
11	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	Opportunity	
12	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod	
13	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High	
14	Visual Resources	National Forest Visual Quality Objective: Retention	Exclusion	CC
15	Visual Resources	National Forest Visual Quality Objective: Preservation	Exclusion	CC
16	Visual Resources	BLM Visual Resource Management Class 2	Avoidance High	CC
17	Visual Resources	BLM Visual Resource Management Class 3	Avoidance Mod	
18	Visual Resources	BLM Visual Resource Management Class 4	Avoidance Low	
19	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low	
20	Fish and Wildlife	IDFG Focal Area	Avoidance Low	
21	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC
22	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC
23	Fish and Wildlife	IDFG Big Game Crucial Winter Range	Avoidance Mod	CC
24	Fish and Wildlife	Pronghorn Antelope Habitat (Boise District, ID)	Avoidance Mod	CC
25	Fish and Wildlife	Prineville District Fish Restoration Area	Avoidance Mod	
26	Fish and Wildlife	Prineville District Wildlife Habitat Seasonal Closure Area	Avoidance Mod	
27	Fish and Wildlife	Washington Ground Squirrel 785ft Buffer	Exclusion	
28	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod	
29	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low	
30	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low	
31	Fish and Wildlife	Sage-grouse Key Habitat Area (ID BLM)	Avoidance Mod	CC
32	Fish and Wildlife	Sage-grouse Restoration Habitat Type 1: Perennial Grasslands (ID BLM)	Avoidance Low	CC
33	Fish and Wildlife	Sage-grouse Restoration Habitat Type 2: Annual Grass Understories (ID BLM)	Avoidance Low	
34	Fish and Wildlife	Within 2-mile Idaho Sage-grouse Lek Buffer (Unknown)	Exclusion	
35	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied)	Exclusion	CC
36	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied but Permittable)	Avoidance Mod	CC
37	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low	
38	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC
39	Fish and Wildlife	Within 300-ft Special Status Stream: Chinook Salmon	Avoidance Mod	CC
40	Fish and Wildlife	Within 300-ft Special Status Stream: Coho Salmon	Avoidance Mod	CC
41	Fish and Wildlife	Within 300-ft Special Status Stream: Cutthroat Trout	Avoidance Mod	CC

Table C-1. Constraints Crossed - Permitting Difficulty Overview (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]
42	Fish and Wildlife	Within 300-ft Special Status Stream: Red Band Trout	Avoidance Mod	CC
43	Fish and Wildlife	Within 300-ft Special Status Stream: Steelhead	Avoidance Mod	CC
44	Fish and Wildlife	Wild Horse and Burro Area (OR BLM)	Avoidance Low	
45	Land Use	Burns District ROW Avoidance Corridor	Avoidance High	
46	Land Use	North Powder Valley	Avoidance Low	CC
47	Land Use	Cropland/Irrigated Agriculture	Avoidance High	
48	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High	
49	Land Use	Grazing Allotment - ID	Avoidance Low	
50	Land Use	Grazing/Pasture - OR	Avoidance Low	
51	Land Use	City Impact Area - Idaho	Avoidance High	
52	Land Use	Urban Growth Boundary - Oregon	Avoidance High	CC
53	Land Use	Urban Area	Avoidance High	CC
54	Land Use	Naval Weapons System Training Facility	Avoidance Mod	CC
55	Land Use	Restricted Airspace - Airport	Exclusion	
56	Land Use	Forested Land: Private	Avoidance Mod	
57	Land Use	Forested Land: Public	Avoidance Mod	
58	Land Use	National Forest Old Growth Forest Stand	Exclusion	CC
59	Land Use	National Forest: Special Interest Area	Avoidance Mod	
60	Land Use	Area of Critical Environmental Concern	Avoidance High	
61	Land Use	Prineville District Proposed Area of Critical Environmental Concern	Avoidance High	
62	Land Use	Prineville District Lands Proposed for Acquisition by the BLM	Avoidance Low	
63	Land Use	Prineville District Noxious Weeds	Avoidance Low	
64	Land Use	Noxious Weeds (OR BLM)	Avoidance Low	
65	Land Use	Prineville District Off-Highway Vehicle: Limited Use	Avoidance Low	
66	Land Use	Burns District Off-Highway Vehicle: Seasonal Closure	Avoidance Low	
67	Land Use	Vale District Off-Highway Vehicle: Limited to Designated Routes	Avoidance Low	
68	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	Avoidance Low	
69	Land Use	Oregon State Park	Exclusion	
70	Land Use	Morrow County Park	Exclusion	
71	Land Use	Virtue Flat OHV Park	Avoidance Mod	
72	Land Use	Recreation Area (OR BLM)	Avoidance High	
73	Land Use	Special Recreation Management Area (Malheur RA, Vale District, OR)	Avoidance Mod	CC
74	Land Use	Prineville District Special Recreation Management Area	Avoidance Mod	
75	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod	
76	Land Use	The Nature Conservancy: Preserve	Exclusion	
77	Land Use	Proposed Wind Farm Boundary (Burns District, OR)	Avoidance High	
78	Land Use	Wind Farm Boundary	Avoidance High	
79	Land Use	Wind Turbine 1,200-ft Buffer Zone	Avoidance High	
80	Land Use	ODFW Wildlife Management Area	Exclusion	
81	Land Use	BLM Wild and Scenic River: Recreation	Avoidance High	
82	Land Use	BLM Wild and Scenic River: Suitable Lands (Prineville District, OR)	Avoidance Mod	
83	Land Use	Proposed Wilderness Study Area (ONDA)	Avoidance Low	
84	Land Use	Lands with Wilderness Characteristics (OR BLM)	Avoidance Mod	

Table C-1. Constraints Crossed - Permitting Difficulty Overview (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]
85	Land Use	Confederated Tribes of the Umatilla Indian Reservation	Exclusion	
86	Ownership	Bureau of Land Management	Avoidance Low	CC
87	Ownership	Bureau of Reclamation	Avoidance Low	CC
88	Ownership	Military Land	Avoidance Low	CC
89	Ownership	Other Federal Land	Avoidance Low	CC
90	Ownership	Private	Avoidance Low	CC
91	Ownership	State Land	Avoidance Low	CC
92	Ownership	U.S. Forest Service	Avoidance Low	CC
93	Ownership	Water	Avoidance High	
94	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod	
95	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co., OR data n/a)	Avoidance Mod	
96	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co., OR data n/a)	Avoidance Mod	
97	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co., OR data n/a)	Avoidance Low	
98	Geological Resources	Idaho Landslide Susceptibility: Moderate	Avoidance Mod	
99	Geological Resources	Idaho Landslide Susceptibility: Low	Avoidance Low	
100	Geological Resources	Within 500ft of Fault Line	Avoidance Low	
101	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High	
102	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC
103	Geological Resources	Oregon Landslide Feature: Fan	Avoidance Mod	
104	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod	
105	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod	
106	Slope	Slope 0-15	Opportunity	
107	Slope	Slope 15-25	Avoidance Low	
108	Slope	Slope 25-35	Avoidance Mod	
109	Slope	Slope >35	Avoidance High	
110	Water and Wetlands	Floodplain: 500-yr Flood Zone	Avoidance Low	
111	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low	
112	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low	
113	Water and Wetlands	Floodplain: Zone A	Avoidance Mod	
114	Water and Wetlands	Floodplain: Zone ANI	Avoidance Mod	
115	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC
116	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod	
117	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft of site location)	Avoidance High	
118	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low	
119	Water and Wetlands	Snake River	Avoidance High	
120	Water and Wetlands	Oregon State Scenic Waterway	Exclusion	
121	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC
122	Other Features	Vale District Utility Corridor	Opportunity	
123	Other Features	West-wide Energy Corridor	Opportunity	CC
124	Other Features	National Forest Utility Corridor	Opportunity	CC

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

APPENDIX D

Constraints Crossed – Data Tables

Table D-1. Boardman Data Table

	Resource Group	Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	NORTH ROUTE (MO1-MO2-MO4-MO5-MO7-UM1)	CENTRAL ROUTE (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO17-MO18-MO21-MO23-UM1)	SOUTH ROUTE (MO1-MO10-MO9-MO8-MO11-MO12-MO13-MO14-MO15-MO16-MO26-MO22-MO23-UM1)
					LENGTH IN MILES		
				TOTAL LENGTH	**57.3**	**52.7**	**54.6**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		0.5	0.7	0.7
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		-	0.3	0.3
3	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	-	1.0	1.0
4	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		13.1	20.7	16.2
5	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		0.5	0.2	0.2
6	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		31.8	18.6	17.9
7	Land Use	Cropland/Irrigated Agriculture	Avoidance High		14.6	8.3	7.8
8	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		57.3	52.7	54.6
9	Land Use	Naval Weapons System Training Facility	Avoidance Mod	CC	9.1	-	-
10	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		37.6	34.6	34.6
11	Land Use	Wind Farm Boundary	Avoidance High		-	1.3	1.3
12	Land Use	Wind Turbine 1200ft Buffer Zone	Avoidance High		-	0.3	0.3
13	Ownership	Military Land	Avoidance Low	CC	8.1	-	-
14	Ownership	Private	Avoidance Low	CC	49.2	52.7	54.6
15	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		18.3	38.2	40.0
16	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		16.9	11.1	11.5
17	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		22.1	3.2	3.0
18	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.2	-	0.2

Table D-2. Morgan-Ione Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (MO14-MO25)	EAST ROUTE (MO14-MO15-MO25)
					Length in Miles	
				TOTAL LENGTH	**21.9**	**25.2**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		0.5	0.7
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		0.5	0.3
3	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	0.5	0.5
4	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		2.2	6.2
5	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	5.8	8.2
6	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		5.5	5.2
7	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.2	0.2
8	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		21.9	25.2
9	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		9.2	13.9
10	Ownership	Private	Avoidance Low	CC	21.9	25.2
11	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		19.2	22.7
12	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		0.5	0.3
13	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		2.3	2.2
14	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.2	0.2
15	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	19.5	23.0
16	Slope	Slope 0-15%	Opportunity		17.3	21.1
17	Slope	Slope 15-25%	Avoidance Low		3.1	2.5
18	Slope	Slope 25-35%	Avoidance Mod		1.2	1.3
19	Slope	Slope >35%	Avoidance High		0.3	0.3
20	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		21.6	25.0
21	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		0.3	0.2
22	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.1	-
23	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft of site location)	Avoidance High		-	0.2
24	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		0.1	1.6
25	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.1	0.1

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1 Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-3. Umatilla National Forest Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (MO24-UM6)	EAST ROUTE (MO24-UM5-UM7-UM6)
					Length in Miles	
				TOTAL LENGTH	**41.3**	**50.7**
1	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	0.5	0.5
2	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	Opportunity		10.5	0.3
3	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod		1.1	-
4	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		0.2	0.3
5	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		-	26.7
6	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	28.6	42.9
7	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	13.6	15.4
8	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		24.2	42.2
9	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		16.2	5.0
10	Fish and Wildlife	Within 300ft Special Status Stream: Red Band Trout	Avoidance Mod	CC	0.7	0.2
11	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	0.2	0.5
12	Land Use	Cropland/Irrigated Agriculture	Avoidance High		1.0	0.3
13	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		20.9	35.1
14	Land Use	Grazing/Pasture - OR	Avoidance Low		2.7	8.7
15	Land Use	Forested Land: Private	Avoidance Mod		5.0	4.9
16	Land Use	Forested Land: Public	Avoidance Mod		9.9	0.2
17	Land Use	National Forest Old Growth Forest Stand[3/]	Exclusion	CC	0.6	-
18	Land Use	Prineville District Lands Proposed for Acquisition by the BLM	Avoidance Low		1.2	-
19	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		0.6	0.8
20	Ownership	Private	Avoidance Low	CC	29.8	50.1
21	Ownership	U.S. Forest Service	Avoidance Low	CC	11.5	0.6
22	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod		-	1.0
23	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		2.1	14.2
24	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		12.4	13.8

Table D-3. Umatilla National Forest Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (MO24-UM6)	EAST ROUTE (MO24-UM5-UM7-UM6)
					Length in Miles	
				TOTAL LENGTH	**41.3**	**50.7**
25	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		10.6	13.1
26	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.1	0.6
27	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	24.3	31.0
28	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		0.3	-
29	Slope	Slope 0-15%	Opportunity		26.7	29.7
30	Slope	Slope 15-25%	Avoidance Low		9.4	11.2
31	Slope	Slope 25-35%	Avoidance Mod		4.1	7.1
32	Slope	Slope >35%	Avoidance High		1.1	2.8
33	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low		16.9	32.6
34	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		24.1	17.9
35	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		0.3	0.3
36	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.4	0.1
37	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod		1.3	0.6
38	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft of site location)	Avoidance High		0.1	-

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1 Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.
3/ Old-growth Forest Areas will be avoided during micro-siting.

Table D-4. Pilot Rock Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	SOUTH ROUTE (UM1-UM2-UM3)	NORTH ROUTE (UM1-UM3)
					Length in Miles	
				TOTAL LENGTH	**29.3**	**25.6**
1	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		10.3	11.1
2	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	12.9	5.5
3	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	6.4	5.5
4	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		25.2	17.5
5	Fish and Wildlife	Within 300ft Special Status Stream: Coho Salmon	Avoidance Mod	CC	-	0.1 (1 crossing)
6	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	0.3 (2 crossings)	0.1 (1 crossing)
7	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.1	-
8	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		29.3	25.8
9	Land Use	Forested Land: Private	Avoidance Mod		0.1	-
10	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		10.1	7.5
11	Ownership	Private	Avoidance Low	CC	29.3	25.8
12	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		9.3	13.7
13	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		15.9	10.5
14	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		4.1	1.5
15	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.6	0.2
16	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	23.8	22.5
17	Slope	Slope 0-15%	Opportunity		19.2	18.5
18	Slope	Slope 15-25%	Avoidance Low		4.4	3.2
19	Slope	Slope 25-35%	Avoidance Mod		3.7	1.9
20	Slope	Slope >35%	Avoidance High		2.1	2.1
21	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low		29.3	20.1
22	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		-	5.6
23	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		-	0.1
24	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	-	-

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-5. West of National Forest Utility Corridor Data Table

	Resource Group	Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	NORTH ROUTE (MO16-MO17-MO18-MO21-MO23-UM1-UM3-UM4)	SOUTH ROUTE (MO16-MO26-MO24-UM5-UM9-UM4)
					Length in Miles	
				TOTAL LENGTH	**74.3**	**81.0**
1	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		20.7	21.3
2	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	8.8	48.7
3	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	13.1	13.5
4	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		33.4	51.2
5	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		4.5	4.3
6	Fish and Wildlife	Within 300ft Special Status Stream: Coho Salmon	Avoidance Mod	CC	0.1	-
7	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	0.1	0.3
8	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		66.8	67.2
9	Land Use	Forested Land: Private	Avoidance Mod		6.3	6.0
10	Land Use	Forested Land: Public	Avoidance Mod		-	0.1
11	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		30.1	17.2
12	Ownership	Bureau of Land Management	Avoidance Low	CC	-	0.1
13	Ownership	Private	Avoidance Low	CC	74.3	80.8
14	Ownership	U.S. Forest Service	Avoidance Low	CC	-	0.1
15	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		42.8	32.2
16	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		16.3	14.8
17	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		7.6	22.0
18	Geological Resources	Within 500ft of Fault Line	Avoidance Low		1.0	1.1
19	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	64.6	56.1
20	Geological Resources	Oregon Landslide Feature: Fan	Avoidance Mod		4.6	-
21	Slope	Slope 0-15%	Opportunity		57.4	48.0
22	Slope	Slope 15-25%	Avoidance Low		8.6	15.2
23	Slope	Slope 25-35%	Avoidance Mod		4.0	11.5

Table D-5. West of National Forest Utility Corridor (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	NORTH ROUTE (MO16-MO17-MO18-MO21-MO23-UM1-UM3-UM4)	SOUTH ROUTE (MO16-MO26-MO24-UM5-UM9-UM4)
					Length in Miles	
				TOTAL LENGTH	**74.3**	**81.0**
24	Slope	Slope >35%	Avoidance High		4.4	6.2
25	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low		41.5	38.8
26	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		32.2	41.5
27	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		0.7	0.6
28	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.1	-
29	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod		-	0.3
30	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.1	0.1
31	Other Features	Parallel to Existing Transmission Line	Opportunity		-	4.2

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-6. Blue Mountain Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	NORTH ROUTE (GR1-GR2-BA1)	SOUTH ROUTE (GR1-BA1)
					Length in Miles	
				TOTAL LENGTH	**30.2**	**30.1**
1	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	Opportunity		10.3	6.2
2	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod		17.3	2.1
3	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		3.5	-
4	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		12.9	14.0
5	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	-	4.5
6	Fish and Wildlife	Prineville District Fish Restoration Area	Avoidance Mod		4.3	4.7
7	Fish and Wildlife	Prineville District Wildlife Habitat Seasonal Closure Area	Avoidance Mod		-	2.7
8	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		29.9	30.1
9	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC	0.3 (2 crossings)	0.5 (3 crossings)
10	Fish and Wildlife	Within 300ft Special Status Stream: Chinook Salmon	Avoidance Mod	CC	0.2 (1 crossing)	0.4 (3 crossings)
11	Fish and Wildlife	Within 300ft Special Status Stream: Cutthroat Trout	Avoidance Mod	CC	0.5 (3 crossings)	-
12	Fish and Wildlife	Within 300ft Special Status Stream: Red Band Trout	Avoidance Mod	CC	1.4 (11 crossings)	2.1 (15 crossings)
13	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	1.5 (11 crossings)	2.0 (15 crossings)
14	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		0.4	5.7
15	Land Use	Forested Land: Private	Avoidance Mod		0.6	-
16	Land Use	Forested Land: Public	Avoidance Mod		26.7	21.1
17	Land Use	National Forest Old Growth Forest Stand[3/]	Exclusion	CC	2.0	0.7
18	Land Use	National Forest: Special Interest Area	Avoidance Mod		17.0	-
19	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		5.8	15.2
20	Ownership	Private	Avoidance Low	CC	0.6	-
21	Ownership	U.S. Forest Service	Avoidance Low	CC	29.6	30.1
22	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod		8.6	6.4

Table D-6. Blue Mountain Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	NORTH ROUTE (GR1-GR2-BA1)	SOUTH ROUTE (GR1-BA1)
					Length in Miles	
				TOTAL LENGTH	**30.2**	**30.1**
23	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.5	-
24	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High		0.1	-
25	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		4.9	5.9
26	Slope	Slope 0-15%	Opportunity		9.8	12.5
27	Slope	Slope 15-25%	Avoidance Low		11.7	9.7
28	Slope	Slope 25-35%	Avoidance Mod		6.4	4.8
29	Slope	Slope >35%	Avoidance High		2.3	3.1
30	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	-	-
31	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		-	13.3

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.
3/ Old-growth Forest Areas will be avoided during micro-siting.

Table D-7. Onion Creek Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	**EAST ROUTE** (UM8-BA21-BA19)	**WEST ROUTE** (UM8-GR6-BA19)
					Length in Miles	
				TOTAL LENGTH	**66.6**	**66.6**
1	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	1.2	6.0
2	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	Opportunity		2.4	1.7
3	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod		18.5	43.5
4	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		12.7	11.2
5	Visual Resources	National Forest Visual Quality Objective: Retention	Exclusion	CC	-	2.5
6	Visual Resources	National Forest Visual Quality Objective: Preservation	Exclusion	CC	-	0.1
7	Visual Resources	BLM Visual Resource Management Class 2 (Baker RMP)	Avoidance High		1.0	-
8	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		17.1	8.7
9	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	36.2	8.5
10	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	42.1	12.7
11	Fish and Wildlife	Prineville District Fish Restoration Area	Avoidance Mod		-	3.3
12	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		1.6	-
13	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		9.5	3.6
14	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		53.7	56.3
15	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC	1.2 (4 crossings)	2.4 (5 crossings)
16	Fish and Wildlife	Within 300ft Special Status Stream: Chinook Salmon	Avoidance Mod	CC	0.3 (2 crossings)	0.2 (2 crossings)
17	Fish and Wildlife	Within 300ft Special Status Stream: Red Band Trout	Avoidance Mod	CC	-	1.1 (8 crossings)
18	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	0.7 (5 crossings)	2.6 (15 crossings)
19	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.5	1.1
20	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		8.3	-
21	Land Use	Grazing/Pasture - OR	Avoidance Low		11.6	2.6
22	Land Use	Forested Land: Private	Avoidance Mod		17.6	4.9

Table D-7. Onion Creek Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	EAST ROUTE (UM8-BA21-BA19)	WEST ROUTE (UM8-GR6-BA19)
					Length in Miles	
				TOTAL LENGTH	**66.6**	**66.6**
23	Land Use	Forested Land: Public	Avoidance Mod		33.5	49.1
24	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		27.1	19.2
25	Land Use	BLM Wild and Scenic River: Recreation	Avoidance High		0.7	1.2
26	Ownership	Bureau of Land Management	Avoidance Low	CC	3.3	0.4
27	Ownership	Private	Avoidance Low	CC	27.8	7.0
28	Ownership	U.S. Forest Service	Avoidance Low	CC	35.5	59.1
29	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod		-	6.5
30	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		3.3	0.2
31	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		6.8	1.6
32	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.9	2.4
33	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	23.5	10.6
34	Geological Resources	Oregon Landslide Feature: Fan	Avoidance Mod		0.5	0.7
35	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		4.4	4.0
36	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		5.3	6.1
37	Slope	Slope 0-15%	Opportunity		19.9	23.2
38	Slope	Slope 15-25%	Avoidance Low		16.5	16.5
39	Slope	Slope 25-35%	Avoidance Mod		12.9	12.0
40	Slope	Slope >35%	Avoidance High		17.4	14.8
41	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low		1.8	2.4
42	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		21.8	11.8
43	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		0.2	-
44	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.5	0.3

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-8. Interpretive Center Data Table

	Resource Group	Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA4-BA8-BA9-BA10 + 230-kV ReRoute)	CENTRAL ROUTE (BA4-BA18-BA9-BA10)	EAST ROUTE (BA4-BA18-BA10)
					Length in Miles		
				TOTAL LENGTH	***500kV* - 20.6** ***230kV* - 10.2**	**19.8**	**17.9**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		1.6	1.1	-
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		1.1	0.5	-
3	Cultural Resources	Oregon Trail Brochure - Trailrut	Avoidance High		0.5	0.5	-
4	Visual Resources	Viewshed Area (Baker County)	Avoidance High	CC	8.2	4.9	-
5	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	2.0	1.0	1.1
6	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		5.1	0.5	0.5
7	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	10.5	7.0	0.5
8	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		15.3	9.4	5.9
9	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		15.6	10.4	12.1
10	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied)	Exclusion	CC	-	-	4.6
11	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied but Permittable)	Avoidance Mod	CC	3.5	3.5	-
12	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low		1.4	1.4	-
13	Land Use	Cropland/Irrigated Agriculture	Avoidance High		1.8	0.1	0.1
14	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		30.8	19.8	17.9
15	Land Use	Grazing/Pasture - OR	Avoidance Low		21.1	14.8	16.3
16	Land Use	Virtue Flat OHV Park	Avoidance Mod		0.1	0.1	2.7
17	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		1.9	1.9	3.6
18	Ownership	Bureau of Land Management	Avoidance Low	CC	3.8	4.2	5.6
19	Ownership	Private	Avoidance Low	CC	27.0	15.6	12.4
20	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		0.5	0.5	0.5
21	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		24.2	15.9	15.7

Table D-8. Interpretive Center Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA4-BA8-BA9-BA10 + 230kV ReRoute)	CENTRAL ROUTE (BA4-BA18-BA9-BA10)	EAST ROUTE (BA4-BA18-BA10)
					Length in Miles		
				TOTAL LENGTH	***500kV*** **- 20.6** ***230kV*** **- 10.2**	**19.8**	**17.9**
22	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		6.0	3.4	1.7
23	Geological Resources	Within 500ft of Fault Line	Avoidance Low		1.9	1.7	0.9
24	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High		0.2	0.1	-
25	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	23.3	15.8	16.2
26	Slope	Slope 0-15%	Opportunity		21.4	14.2	13.7
27	Slope	Slope 15-25%	Avoidance Low		7.0	3.8	3.1
28	Slope	Slope 25-35%	Avoidance Mod		1.9	1.5	0.9
28	Slope	Slope >35%	Avoidance High		0.6	0.3	0.2
30	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.2	0.1	-
31	Other Features	Parallel to Existing Transmission Line	Opportunity		17.5	9.2	2.9

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-9. Southwest Region Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
					Length in Miles			
				TOTAL LENGTH	**186.6**	**174.6**	**156.2**	**132.9**
1	Cultural Resources	Burns District Archaeological Site	Avoidance High		-	0.1	-	0.1
2	Cultural Resources	Vale District Cultural Site	Exclusion		0.4	0.4	0.4	-
3	Visual Resources	Devine Scenic Corridor (Burns District)	Avoidance Mod		-	-	0.4	-
4	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	1.5	0.5	0.5	0.5
5	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		0.5	0.1	7.1	5.3
6	Visual Resources	National Forest Visual Quality Objective: Retention	Exclusion	CC	-	-	-	0.2
7	Visual Resources	BLM Visual Resource Management Class 3 - John Day Basin	Avoidance Mod		-	-	-	0.5
8	Visual Resources	BLM Visual Resource Management Class 4 - John Day Basin	Avoidance Low		0.5	0.6	0.6	-
9	Visual Resources	BLM Visual Resource Management Class 2 - OR	Avoidance High	CC	0.4	0.4	0.4	-
10	Visual Resources	BLM Visual Resource Management Class 3 - OR	Avoidance Mod		3.3	3.3	3.3	4.9
11	Visual Resources	BLM Visual Resource Management Class 4 - OR	Avoidance Low		34.4	34.4	34.4	40.0
12	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		31.8	6.7	6.4	7.3
13	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	65.7	52.2	23.6	38.8
14	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	78.5	59.1	40.1	73.2
15	Fish and Wildlife	Prineville District Fish Restoration Area	Avoidance Mod		1.8	3.7	4.2	1.3

Table D-9. Southwest Region Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
					Length in Miles			
				TOTAL LENGTH	**186.6**	**174.6**	**156.2**	**132.9**
16	Fish and Wildlife	Prineville District Wildlife Habitat Seasonal Closure Area	Avoidance Mod		36.4	16.9	13.6	27.9
17	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		59.9	59.4	45.4	25.0
18	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		59.9	54.2	43.8	55.5
19	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Mod		51.5	49.4	60.9	46.3
20	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied but Permittable)	Avoidance Mod	CC	7.3	7.3	3.6	-
21	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low		6.1	6.1	6.1	-
22	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC	0.1 (1 crossing)	0.1 (1 crossing)	0.1 (1 crossing)	0.3 (2 crossings)
23	Fish and Wildlife	Within 300ft Special Status Stream: Chinook Salmon	Avoidance Mod	CC	0.1 (1 crossing)	0.1 (1 crossing)	0.1 (1 crossing)	0.1 (1 crossing)
24	Fish and Wildlife	Within 300ft Special Status Stream: Cutthroat Trout	Avoidance Mod	CC	-	0.3 (2 crossings)	0.3 (2 crossings)	0.5 (4 crossings)
25	Fish and Wildlife	Within 300ft Special Status Stream: Red Band Trout	Avoidance Mod	CC	3.8 (19 crossings)	3.2 (22 crossings)	3.4 (23 crossings)	1.0 (8 crossings)
26	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	1.0 (7 crossings)	1.1 (7 crossings)	1.1 (7 crossings)	1.1 (9 crossings)
27	Fish and Wildlife	Wild Horse and Burro Area (OR BLM)	Avoidance Low		34.6	16.7	16.7	5.3
28	Land Use	Burns District ROW Avoidance Corridor	Avoidance High		1.7	1.7	1.7	-
29	Land Use	Cropland/Irrigated Agriculture	Avoidance High		2.2	1.6	1.1	1.1

Table D-9. Southwest Region Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
					Length in Miles			
				TOTAL LENGTH	**186.6**	**174.6**	**156.2**	**132.9**
30	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		26.3	10.4	10.8	22.3
31	Land Use	Grazing/Pasture - OR	Avoidance Low		122.5	123.5	90.3	63.9
32	Land Use	Forested Land: Private	Avoidance Mod		5.4	4.5	6.1	7.4
33	Land Use	Forested Land: Public	Avoidance Mod		38.1	37.1	48.3	33.4
34	Land Use	National Forest Old Growth Forest Stand***	Exclusion	CC	0.8	3.5	3.2	2.7
35	Land Use	Area of Critical Environmental Concern	Avoidance High		0.4	0.4	0.4	-
36	Land Use	Prineville District Lands Proposed for Acquisition by the BLM	Avoidance Low		4.5	-	-	-
37	Land Use	Prineville District Noxious Weeds	Avoidance Low		1.4	0.9	0.9	1.4
38	Land Use	Noxious Weeds (OR BLM)	Avoidance Low		1.3	1.3	0.7	-
39	Land Use	Burns District Off-Highway Vehicle: Seasonal Closure	Avoidance Low		7.8	11.4	-	-
40	Land Use	Vale District Off-Highway Vehicle: Limited to Designated Routes	Avoidance Low		0.4	0.4	0.4	-
41	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	Avoidance Low		-	-	-	3.0
42	Land Use	Recreation Area (OR BLM)	Avoidance High		2.9	3.1	-	-
43	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		25.5	24.9	31.7	21.5
44	Land Use	Proposed Wind Farm Boundary (Burns District, OR)	Avoidance High		2.6	2.6	2.6	-
45	Land Use	BLM Wild and Scenic River: Recreation	Avoidance High		0.4	-	-	-

Table D-9. Southwest Region Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
					Length in Miles			
				TOTAL LENGTH	**186.6**	**174.6**	**156.2**	**132.9**
46	Land Use	Proposed Wilderness Study Area (ONDA)	Avoidance Mod		33.2	29.0	28.6	40.0
47	Land Use	Lands with Wilderness Characteristics (OR BLM)	Avoidance Mod		-	-	-	1.3
48	Ownership	Bureau of Land Management	Avoidance Low	CC	82.9	88.3	62.0	50.8
49	Ownership	Bureau of Reclamation	Avoidance Low	CC	-	-	-	0.3
50	Ownership	Private	Avoidance Low	CC	56.6	41.5	38.2	41.4
51	Ownership	State Land	Avoidance Low	CC	3.7	4.1	4.2	2.0
52	Ownership	U.S. Forest Service	Avoidance Low	CC	43.5	40.7	52.0	38.4
53	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod		16.2	18.7	17.2	15.6
54	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		3.0	3.0	3.0	-
55	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		11.8	12.1	10.3	0.1
56	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		48.5	52.0	22.2	11.3
57	Geological Resources	Within 500ft of Fault Line	Avoidance Low		12.3	9.9	8.6	10.2
58	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	57.1	59.7	33.6	5.9
59	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		12.3	11.7	10.3	6.2
60	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		5.6	2.2	4.9	4.5
61	Slope	Slope 0-15%	Opportunity		115.7	105.0	92.5	62.2
62	Slope	Slope 15-25%	Avoidance Low		36.7	34.0	32.7	35.6
63	Slope	Slope 25-35%	Avoidance Mod		18.8	20.2	17.7	21.5
64	Slope	Slope >35%	Avoidance High		15.3	15.4	13.4	13.6

Table D-9. Southwest Region Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (GR3-GR4-HA1-HA2-MA6)	B (GR3-GR4-GR5-HA1-HA2-MA6)	C (GR3-GR4-GR5-HA2-MA6)	D (GR3-MA4-MA5-MA6)
					Length in Miles			
				TOTAL LENGTH	**186.6**	**174.6**	**156.2**	**132.9**
65	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.4	0.4	-	-
66	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod		0.2	-	-	-
67	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		0.5	0.5	0.7	0.2
68	Other Features	Vale District Utility Corridor	Opportunity		14.8	14.8	14.8	1.3
69	Other Features	West-wide Energy Corridor	Opportunity	CC	22.1	22.1	11.8	0.8
70	Other Features	Parallel to Existing Transmission Line	Opportunity		35.7	35.7	19.2	6.3

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.
3/ Old-growth Forest Areas will be avoided during micro-siting.

Table D-10. Burnt River Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA10-BA20-MA1-MA2)	EAST ROUTE (BA10-BA11-BA13-MA2)
					Length in Miles	
				TOTAL LENGTH	**36.1**	**41.9**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		1.0	2.6
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		1.0	-
3	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	0.5	0.6
4	Visual Resources	BLM Visual Resource Management Class 4	Avoidance Low		1.1	1.7
5	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		0.7	1.3
6	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	15.3	33.4
7	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	31.0	19.4
8	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		10.5	11.8
9	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		18.0	23.4
10	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		2.3	-
11	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low		-	4.0
12	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.4	0.3
13	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		16.4	35.7
14	Land Use	Grazing/Pasture - OR	Avoidance Low		31.4	35.3
15	Land Use	Forested Land: Private	Avoidance Mod		2.1	-
16	Land Use	Forested Land: Public	Avoidance Mod		1.4	-
17	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		0.6	-
18	Ownership	Bureau of Land Management	Avoidance Low	CC	10.2	13.5
19	Ownership	Private	Avoidance Low	CC	25.9	28.4
20	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		-	5.1
21	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		1.2	17.3
22	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		14.8	13.3
23	Geological Resources	Within 500ft of Fault Line	Avoidance Low		2.3	0.4
24	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	13.0	23.3

Table D-10. Burnt River Data Table (continued)

	Resource Group	Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA10-BA20-MA1-MA2)	EAST ROUTE (BA10-BA11-BA13-MA2)
					Length in Miles	
				TOTAL LENGTH	**36.1**	**41.9**
25	Geological Resources	Oregon Landslide Feature: Fan	Avoidance Mod		0.2	-
26	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		-	1.2
27	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		2.0	1.4
28	Slope	Slope 0-15%	Opportunity		15.9	20.4
29	Slope	Slope 15-25%	Avoidance Low		7.7	11.0
30	Slope	Slope 25-35%	Avoidance Mod		6.3	5.3
31	Slope	Slope >35%	Avoidance High		6.3	5.3
32	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.3	0.3
33	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod		0.2	-
34	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		-	0.1
35	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.1	0.1
36	Other Features	Vale District Utility Corridor	Opportunity		3.0	0.4
37	Other Features	West-wide Energy Corridor	Opportunity	CC	0.4	0.0
38	Other Features	Parallel to Existing Transmission Line	Opportunity		7.2	3.2

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-11. West of Vale Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA2-MA4-MA5)	EAST ROUTE (BA2-MA1-MA2-MA5)
					Length in Miles	
				TOTAL LENGTH	**67.8**	**73.4**
1	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod		3.2	1.1
2	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		2.9	-
3	Visual Resources	BLM Visual Resource Management Class 3 - OR	Avoidance Mod		1.2	3.4
4	Visual Resources	BLM Visual Resource Management Class 4 - OR	Avoidance Low		35.2	21.4
5	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		14.6	-
6	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	9.0	26.8
7	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	36.3	34.2
8	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		23.3	35.7
9	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		37.5	34.3
10	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		3.0	-
11	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low		14.2	-
12	Fish and Wildlife	Wild Horse and Burro Area (OR BLM)	Avoidance Low		4.4	-
13	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.5	0.3
14	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		0.7	6.3
15	Land Use	Grazing/Pasture - OR	Avoidance Low		61.1	48.9
16	Land Use	Forested Land: Private	Avoidance Mod		2.1	0.3
17	Land Use	Forested Land: Public	Avoidance Mod		1.6	-
18	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	Avoidance Low		3.0	-

Table D-11. West of Vale Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA2-MA4-MA5)	EAST ROUTE (BA2-MA1-MA2-MA5)
					Length in Miles	
				TOTAL LENGTH	**67.8**	**73.4**
19	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		22.2	0.9
20	Land Use	Proposed Wilderness Study Area (ONDA)	Avoidance Mod		22.2	9.4
21	Ownership	Bureau of Land Management	Avoidance Low	CC	36.4	24.8
22	Ownership	Bureau of Reclamation	Avoidance Low	CC	0.3	0.3
23	Ownership	Private	Avoidance Low	CC	25.6	47.6
24	Ownership	State Land	Avoidance Low	CC	1.7	-
25	Ownership	U.S. Forest Service	Avoidance Low	CC	4.0	0.8
26	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		0.1	2.6
27	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		0.3	3.0
28	Geological Resources	Within 500ft of Fault Line	Avoidance Low		1.1	4.5
29	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	0.3	3.7
30	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		-	0.6
31	Slope	Slope 0-15%	Opportunity		39.1	54.1
32	Slope	Slope 15-25%	Avoidance Low		16.7	12.7
33	Slope	Slope 25-35%	Avoidance Mod		8.0	4.7
34	Slope	Slope >35%	Avoidance High		4.1	1.9
35	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.1	0.5
36	Other Features	Vale District Utility Corridor	Opportunity		0.6	5.3
37	Other Features	Parallel to Existing Transmission Line	Opportunity		-	16.4

1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.

2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-12. Weatherby Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA11-BA12-BA13)	EAST ROUTE (BA11-BA13)
					Length in Miles	
				TOTAL LENGTH	**9.1**	**7.7**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		2.3	1.5
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		0.6	-
3	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		2.2	-
4	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	9.1	5.6
5	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	2.7	-
6	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		0.1	0.4
7	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		6.5	4.9
8	Land Use	Cropland/Irrigated Agriculture	Avoidance High		0.3	-
9	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		8.0	7.7
10	Land Use	Grazing/Pasture - OR	Avoidance Low		7.7	6.1
11	Land Use	Forested Land: Private	Avoidance Mod		-	-
12	Land Use	Forested Land: Public	Avoidance Mod		-	-
13	Ownership	Bureau of Land Management	Avoidance Low	CC	2.2	2.7
14	Ownership	Private	Avoidance Low	CC	6.9	5.0
15	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		-	1.9
16	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		2.9	2.9
17	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		6.2	2.9
18	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.2	0.4
19	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High		0.2	-
20	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	5.6	5.4
21	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		0.9	0.2
22	Slope	Slope 0-15%	Opportunity		2.8	2.2
23	Slope	Slope 15-25%	Avoidance Low		2.8	2.3
24	Slope	Slope 25-35%	Avoidance Mod		1.3	1.5
25	Slope	Slope >35%	Avoidance High		2.2	1.7

Table D-12. Weatherby Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA11-BA12-BA13)	EAST ROUTE (BA11-BA13)
					Length in Miles	
				TOTAL LENGTH	**9.1**	**7.7**
26	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.2	-
27	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		0.4	0.1
28	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.3	-
29	Other Features	West-wide Energy Corridor	Opportunity	CC	0.4	-
30	Other Features	Parallel to Existing Transmission Line	Opportunity		6.0	-

Notes:

1/ For explanation of Permitting Difficulty categories, see Section 3.1 Table 3.1-1.

2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-13. Lime Data Table

	Resource Group	Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	WEST ROUTE (BA14-BA16)	EAST ROUTE (BA14-BA15-BA16)
					Length in Miles	
				TOTAL LENGTH	**6.0**	**5.9**
1	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		-	1.6
2	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		-	0.4
3	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	-	3.1
4	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		-	4.9
5	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	6.0	4.9
6	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	6.0	5.5
7	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		5.3	3.2
8	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		6.0	5.1
9	Land Use	Grazing/Pasture - OR	Avoidance Low		5.3	4.1
10	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		5.7	5.8
11	Ownership	Bureau of Land Management	Avoidance Low	CC	0.7	1.2
12	Ownership	Private	Avoidance Low	CC	5.2	4.7
13	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		0.5	0.3
14	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		1.8	2.2
15	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		3.6	3.4
16	Geological Resources	Within 500ft of Fault Line	Avoidance Low		0.5	0.2
17	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	4.9	4.1
18	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		0.7	0.6
19	Slope	Slope 0-15%	Opportunity		1.3	0.7
20	Slope	Slope 15-25%	Avoidance Low		2.7	1.3
21	Slope	Slope 25-35%	Avoidance Mod		1.3	1.4
22	Slope	Slope >35%	Avoidance High		0.7	2.5
23	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	-	-
24	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.5	0.1
25	Other Features	Vale District Utility Corridor	Opportunity		1.6	1.7
26	Other Features	West-wide Energy Corridor	Opportunity	CC	0.0	1.2
27	Other Features	Parallel to Existing Transmission Line	Opportunity		6.0	1.8

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1, Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-14. Snake River Valley Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	B (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	D (BA13-WA1-PA1-OW1-OW2)	E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	F (BA13-WA1-PA1-PA2-OW2)
					Length in Miles					
				TOTAL LENGTH	**99.6**	**96.3**	**104.3**	**100.8**	**109.5**	**106**
1	Cultural Resources	Within 500ft of Cemetery	Avoidance Mod		0.2	-	-	-	-	-
2	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		4.5	5.9	2.1	1.0	3.1	1.9
3	Cultural Resources	Within .5mi National Register Historic Place Buffer	Avoidance High		0.8	-	-	-	-	-
4	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		2.3	2.3	-	-	-	-
5	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	0.5	3.0	1.2	1.2	3.0	3.0
6	Visual Resources	BLM Visual Resource Management Class 2	Avoidance High		-	-	7.2	8.0	13.3	14.1
7	Visual Resources	BLM Visual Resource Management Class 3	Avoidance Mod		3.3	29.0	15.3	25.9	24.9	35.5
8	Visual Resources	BLM Visual Resource Management Class 4	Avoidance Low		31.0	27.4	64.9	62.9	54.4	52.4
9	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		3.0	1.5	1.5	-	1.5	-
10	Fish and Wildlife	IDFG Focal Area	Avoidance Low		11.0	2.6	42.8	51.4	40.5	49.1
11	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	58.3	32.3	16.5	4.0	16.5	4.0
12	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	25.7	25.6	11.3	4.2	11.3	4.2
13	Fish and Wildlife	IDFG Big Game Crucial Winter Range	Avoidance Mod	CC	-	-	19.9	18.9	19.9	18.9
14	Fish and Wildlife	Pronghorn Antelope Habitat (Boise District, ID)	Avoidance Mod	CC	23.8	3.1	22.7	22.7	3.1	3.1

Table D-14. Snake River Valley Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	B (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	D (BA13-WA1-PA1-OW1-OW2)	E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	F (BA13-WA1-PA1-PA2-OW2)
					Length in Miles					
				TOTAL LENGTH	**99.6**	**96.3**	**104.3**	**100.8**	**109.5**	**106**
15	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		9.8	6.5	3.1	-	3.1	-
16	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		36.9	19.8	9.9	5.1	9.9	5.1
17	Fish and Wildlife	Sage-grouse Key Habitat Area (ID BLM)	Avoidance Mod	CC	-	-	4.4	10.9	4.4	10.9
18	Fish and Wildlife	Sage-grouse Restoration Habitat Type 1: Perennial Grasslands (ID BLM)	Avoidance Low	CC	-	-	1.5	2.5	1.5	2.5
19	Fish and Wildlife	Sage-grouse Restoration Habitat Type 2: Annual Grass Understories (ID BLM)	Avoidance Low		-	-	12.0	12.8	12.0	12.8
20	Fish and Wildlife	Within 2-mile Idaho Sage-grouse Lek Buffer (Unknown)	Exclusion		-	2.2	-	-	-	-
21	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC	-	-	0.1	0.1	0.1	0.1
22	Land Use	Cropland/Irrigated Agriculture	Avoidance High		23.6	36.8	29.5	28.4	33.8	32.7
23	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		37.4	21.2	16.9	6.6	16.9	6.6
24	Land Use	Grazing Allotment - ID	Avoidance Low		20.1	10.5	41.8	49.2	28.2	35.6
25	Land Use	Grazing/Pasture - OR	Avoidance Low		29.5	22.2	11.7	6.4	11.7	6.4

Table D-14. Snake River Valley Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	B (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	D (BA13-WA1-PA1-OW1-OW2)	E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	F (BA13-WA1-PA1-PA2-OW2)
					Length in Miles					
				TOTAL LENGTH	**99.6**	**96.3**	**104.3**	**100.8**	**109.5**	**106**
26	Land Use	City Impact Area - Idaho	Avoidance High		-	3.9	9.7	9.7	2.6	2.6
27	Land Use	Urban Growth Boundary - Oregon	Avoidance High	CC	-	2.3	-	-	-	-
28	Land Use	Urban Area	Avoidance High	CC	-	1.7	-	-	-	-
29	Land Use	Forested Land: Private	Avoidance Mod		-	-	-	0.1	-	0.1
30	Land Use	Forested Land: Public	Avoidance Mod		-	-	-	-	-	-
31	Land Use	Area of Critical Environmental Concern	Avoidance High		-	3.4	7.3	7.3	4.4	4.4
32	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	Avoidance Low		15.8	4.2	-	-	-	-
33	Land Use	Oregon State Park	Exclusion		-	0.3	-	-	-	-
34	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		38.8	21.0	34.8	30.0	28.5	23.8
35	*Ownership*	*Bureau of Land Management - OR*	*Avoidance Low*	*CC*	*15.2*	*7.5*	*4.0*	*4.8*	*4.0*	*4.8*
36	*Ownership*	*Bureau of Land Management - ID*	*Avoidance Low*	*CC*	*16.9*	*8.8*	*27.0*	*28.4*	*14.0*	*15.5*
37	Ownership	**Bureau of Land Management Total**			**32.1**	**16.3**	**31.0**	**33.2**	**18.1**	**20.2**
38	*Ownership*	*Bureau of Reclamation - OR*	*Avoidance Low*	*CC*	-	*0.3*	-	-	-	-
39	*Ownership*	*Bureau of Reclamation - ID*	*Avoidance Low*	*CC*	*0.1*	*0.1*	*0.2*	*0.2*	*0.1*	*0.1*
40	Ownership	**Bureau of Reclamation Total**			**0.1**	**0.5**	**0.2**	**0.2**	**0.1**	**0.1**
41	*Ownership*	*Private - OR*	*Avoidance Low*	*CC*	*60.5*	*34.7*	*12.8*	*1.7*	*12.8*	*1.7*

Table D-14. Snake River Valley Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	B (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	D (BA13-WA1-PA1-OW1-OW2)	E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	F (BA13-WA1-PA1-PA2-OW2)
					Length in Miles					
				TOTAL LENGTH	**99.6**	**96.3**	**104.3**	**100.8**	**109.5**	**106**
42	*Ownership*	*Private - ID*	*Avoidance Low*	*CC*	*3.8*	*43.3*	*59.6*	*65.0*	*76.1*	*81.4*
43	Ownership			**Private Land Total**	**64.3**	**78.0**	**72.4**	**66.7**	**88.9**	**83.1**
44	Ownership	Other Federal Land	Avoidance Low	CC	-	-	-	-	-	-
45	Ownership	State Land - ID	Avoidance Low	CC	3.0	0.6	0.6	0.6	2.0	2.0
46	Ownership	Water	Avoidance High		-	-	-	-	-	-
47	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		12.9	31.7	35.5	30.7	41.1	36.3
48	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		22.8	30.2	33.4	31.4	39.0	37.0
49	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		22.7	13.3	34.2	36.8	28.0	30.5
50	Geological Resources	Idaho Landslide Susceptibility: Moderate	Avoidance Mod		-	8.0	-	-	8.0	8.0
51	Geological Resources	Idaho Landslide Susceptibility: Low	Avoidance Low		23.8	45.1	87.5	94.3	84.7	91.5
52	Geological Resources	Within 500ft of Fault Line	Avoidance Low		2.2	0.5	2.1	1.5	1.4	0.9
53	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High		0.2	0.1	0.1	0.1	0.1	0.1
54	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	34.5	55.8	55.5	47.1	62.8	54.5
55	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		0.7	0.7	0.7	0.7	0.7	0.7

Table D-14. Snake River Valley Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	A (BA13-BA14-BA16-BA17-MA3-MA7-OW1-OW2)	B (BA13-BA14-BA16-BA17-MA3-PA2-OW2)	C (BA13-BA14-BA16-BA17-WA1-PA1-OW1-OW2)	D (BA13-WA1-PA1-OW1-OW2)	E (BA13-BA14-BA16-BA17-WA1-PA1-PA2-OW2)	F (BA13-WA1-PA1-PA2-OW2)
					Length in Miles					
				TOTAL LENGTH	**99.6**	**96.3**	**104.3**	**100.8**	**109.5**	**106**
56	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		-	-	-	0.6	-	0.6
57	Slope	Slope 0-15%	Opportunity		71.7	75.1	72.2	65.3	76.0	69.1
58	Slope	Slope 15-25%	Avoidance Low		17.0	11.8	17.7	15.1	17.3	14.7
59	Slope	Slope 25-35%	Avoidance Mod		6.6	5.2	8.0	10.9	8.8	11.7
60	Slope	Slope >35%	Avoidance High		4.3	4.2	6.5	9.6	7.5	10.6
61	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		-	16.1	47.3	54.1	53.8	60.6
62	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		-	0.4	2.0	2.0	2.3	2.3
63	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.7	2.9	1.3	1.3	1.4	1.4
64	Water and Wetlands	Snake River	Avoidance High		-	0.9	0.4	0.5	0.3	0.4
65	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	1.2	2.8	1.2	0.3	1.2	0.3
66	Other Features	Vale District Utility Corridor	Opportunity		24.7	35.5	7.5	-	7.5	-
67	Other Features	West-wide Energy Corridor	Opportunity	CC	16.2	6.1	10.5	7.9	2.6	-
68	Other Features	Parallel to Existing Transmission Line	Opportunity		50.4	33.3	25.0	14.8	34.0	23.8

Notes:
1 For explanation of Permitting Difficulty categories, see Section 3.1 Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

Table D-15. Western, Central, and Eastern Route Data Table

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	Western Route	Central Route	Eastern Route
					Length in Miles		
				TOTAL LENGTH	**275.1**	**281.9**	**298.8**
1	Cultural Resources	Burns District Archaeological Site	Avoidance High		0.1	-	-
2	Cultural Resources	Within 1200ft Historic Trail Buffer	Avoidance Mod		0.5	0.7	5.1
3	Cultural Resources	Within .5mi National Register Historic Place Buffer	Avoidance High		0.8	0.8	0.8
4	Cultural Resources	Intact Oregon Trail Segment (OR BLM)	Avoidance High		0.5	0.3	0.5
5	Cultural Resources	Oregon Trail Brochure - Trailrut	Avoidance High		-	-	0.5
6	Visual Resources	Viewshed Area (Baker County)	Avoidance High		-	-	4.9
7	Visual Resources	Within 1200ft Nationally Designated Scenic Byway	Avoidance Mod	CC	2.0	2.7	2.0
8	Visual Resources	National Forest Visual Quality Objective: Maximum Modification	Opportunity		5.3	-	-
9	Visual Resources	National Forest Visual Quality Objective: Modification	Avoidance Mod		-	7.7	0.4
10	Visual Resources	National Forest Visual Quality Objective: Partial Retention	Avoidance High		5.3	20.5	3.6
11	Visual Resources	National Forest Visual Quality Objective: Retention	Exclusion	CC	0.2	1.4	1.4
12	Visual Resources	BLM Visual Resource Management Class 2	Avoidance High	CC	3.6	3.6	3.6
13	Visual Resources	BLM Visual Resource Management Class 3	Avoidance Mod		4.9	4.7	4.7
14	Visual Resources	BLM Visual Resource Management Class 4	Avoidance Low		48.4	35.7	36.3
15	Fish and Wildlife	ODFW Conservation Opportunity Area	Avoidance Low		22.4	40.1	36.3
16	Fish and Wildlife	IDFG Focal Area	Avoidance Low		11.0	11.0	11.0
17	Fish and Wildlife	ODFW Big Game Deer Winter Range	Avoidance Mod	CC	104.9	101.9	114.7
18	Fish and Wildlife	ODFW Big Game Elk Winter Range	Avoidance Mod	CC	105.4	92.9	68.6
19	Fish and Wildlife	Pronghorn Antelope Habitat (Boise District, ID)	Avoidance Mod	CC	23.8	23.8	23.8
20	Fish and Wildlife	Prineville District Fish Restoration Area	Avoidance Mod		2.1	-	-

Table D-15. Western, Central, and Eastern Route Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	Western Route	Central Route	Eastern Route
					Length in Miles		
				TOTAL LENGTH	**275.1**	**281.9**	**298.8**
21	Fish and Wildlife	Prineville District Wildlife Habitat Seasonal Closure Area	Avoidance Mod		49.0	-	-
22	Fish and Wildlife	Sage-grouse Core Area 1: Sagebrush Habitat (Oregon)	Avoidance Mod		28.2	37.1	56.9
23	Fish and Wildlife	Sage-grouse Core Area 2: Potential Habitat (Oregon)	Avoidance Low		117.6	105.6	148.9
24	Fish and Wildlife	Sage-grouse Core Area 3: Non-Sagebrush Shrublands and Grasslands (Oregon)	Avoidance Low		65.6	59.2	17.8
25	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Occupied but Permittable)	Avoidance Mod	CC	-	-	10.0
26	Fish and Wildlife	Within 2-mile Oregon Sage-grouse Lek Buffer (Unoccupied)	Avoidance Low		-	-	5.4
27	Fish and Wildlife	Within 300ft Special Status Stream: Bull Trout	Avoidance Mod	CC	0.4 (3 crossings)	1.0 (8 crossings)	0.1 (1 crossing)
28	Fish and Wildlife	Within 300ft Special Status Stream: Chinook Salmon	Avoidance Mod	CC	0.2 (2 crossings)	0.1 (1 crossing)	0.1 (1 crossing)
29	Fish and Wildlife	Within 300ft Special Status Stream: Coho Salmon	Avoidance Mod	CC	-	0.1 (1 crossing)	0.1 (1 crossing)
30	Fish and Wildlife	Within 300ft Special Status Stream: Cutthroat Trout	Avoidance Mod	CC	0.5 (4 crossings)	-	-
31	Fish and Wildlife	Within 300ft Special Status Stream: Red Band Trout	Avoidance Mod	CC	2.5 (19 crossings)	-	-
32	Fish and Wildlife	Within 300ft Special Status Stream: Steelhead	Avoidance Mod	CC	2.4 (18 crossings)	0.4 (3 crossings)	0.6 (5 crossings)
33	Fish and Wildlife	Wild Horse and Burro Area (OR BLM)	Avoidance Low		5.3	-	-
34	Land Use	Cropland/Irrigated Agriculture	Avoidance High		9.8	9.2	17.8
35	Land Use	Exclusive Farm Use Zone/Multiple Use Range Zone	Avoidance High		105.5	103.3	162.9
36	Land Use	Grazing Allotment - ID	Avoidance Low		20.1	20.1	20.1
37	Land Use	Grazing/Pasture - OR	Avoidance Low		92.5	90.7	114.3
38	Land Use	Naval Weapons System Training Facility	Avoidance Mod	CC	-	-	9.1
39	Land Use	Forested Land: Private	Avoidance Mod		19.5	29.3	17.9
40	Land Use	Forested Land: Public	Avoidance Mod		38.4	28.9	4.3

Table D-15. Western, Central, and Eastern Route Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	Western Route	Central Route	Eastern Route
					Length in Miles		
				TOTAL LENGTH	**275.1**	**281.9**	**298.8**
41	Land Use	National Forest Old Growth Forest Stand	Exclusion	CC	2.7	-	-
42	Land Use	Area of Critical Environmental Concern	Avoidance High		3.7	3.7	3.7
43	Land Use	Prineville District Lands Proposed for Acquisition by the BLM	Avoidance Low		12.5	-	-
44	Land Use	Prineville District Noxious Weeds	Avoidance Low		2.7	-	-
45	Land Use	Prineville District Off-Highway Vehicle: Limited Use	Avoidance Low		3.2	-	-
46	Land Use	Vale District Off-Highway Vehicle: Limited to Designated Routes	Avoidance Low		5.4	5.4	5.4
47	Land Use	Vale District Off-Highway Vehicle: Limited to Existing Routes	Avoidance Low		11.6	8.6	8.6
48	Land Use	Oregon State Park	Exclusion		-	0.2	0.2
49	Land Use	Morrow County Park	Exclusion		0.5	-	-
50	Land Use	Virtue Flat OHV Park	Avoidance Mod		-	-	0.1
51	Land Use	Special Recreation Management Area (Malheur RA, Vale District, OR)	Avoidance Mod	CC	3.7	3.7	3.7
52	Land Use	Prineville District Special Recreation Management Area	Avoidance Mod		4.9	-	-
53	Land Use	The Nature Conservancy: Portfolio	Avoidance Mod		75.5	83.6	86.1
54	Land Use	Wind Farm Boundary	Avoidance High		1.3	1.3	-
55	Land Use	Wind Turbine 1200ft Buffer Zone			0.3	0.3	-
56	Land Use	Proposed Wilderness Study Area (ONDA)	Avoidance Mod		45.4	15.0	15.0
57	Land Use	Lands with Wilderness Characteristics (OR BLM)	Avoidance Mod		5.0	-	-
58	Ownership	Bureau of Land Management	Avoidance Low	CC	67.6	54.3	63.6
59	Ownership	Bureau of Reclamation	Avoidance Low	CC	0.3	0.3	0.3
60	Ownership	Military Land	Avoidance Low	CC	-	-	8.1
61	Ownership	Private	Avoidance Low	CC	137.6	173.6	197.6
62	Ownership	State Land	Avoidance Low	CC	2.2	-	0.1
63	Ownership	U.S. Forest Service	Avoidance Low	CC	43.5	29.9	5.4
64	Geological Resources	Erosion Hazard: High (Prineville District, OR)	Avoidance Mod		24.4	-	-
65	Geological Resources	Erosion Hazard: High (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		31.9	53.4	39.3

Table D-15. Western, Central, and Eastern Route Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	Western Route	Central Route	Eastern Route
					Length in Miles		
				TOTAL LENGTH	**275.1**	**281.9**	**298.8**
66	Geological Resources	Erosion Hazard: Moderate (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Mod		22.9	39.3	88.9
67	Geological Resources	Erosion Hazard: Low (NRCS Soil Data - Grant Co, OR data n/a)	Avoidance Low		37.6	41.7	75.2
68	Geological Resources	Idaho Landslide Susceptibility: Low	Avoidance Low		23.8	23.8	23.8
69	Geological Resources	Within 500ft of Fault Line	Avoidance Low		13.6	11.5	13.6
70	Geological Resources	U.S. Geological Survey Active Mining Area	Avoidance High		0.2	-	0.1
71	Geological Resources	Prime Farmland/Arable Land: Soils Class 1-4	Avoidance Mod	CC	62.7	125.9	155.7
72	Geological Resources	Oregon Landslide Feature: Fan	Avoidance Mod		-	5.3	-
73	Geological Resources	Oregon Landslide Feature: Landslide	Avoidance Mod		11.4	5.7	4.2
74	Geological Resources	Oregon Landslide Feature: Talus-Colluvium	Avoidance Mod		5.5	3.2	1.4
75	Slope	Slope 0-15%	Opportunity		152.3	177.0	215.7
76	Slope	Slope 15-25%	Avoidance Low		63.8	48.8	48.3
77	Slope	Slope 25-35%	Avoidance Mod		35.4	28.1	19.8
78	Slope	Slope >35%	Avoidance High		23.5	28.0	14.9
79	Water and Wetlands	Floodplain: Area Not Mapped	Avoidance Low		3.6	41.5	54.0
80	Water and Wetlands	Floodplain: Not in Flood Zone	Avoidance Low		60.6	82.3	83.2
81	Water and Wetlands	Floodplain: Zone A	Avoidance Mod		0.7	1.2	0.3
82	Water and Wetlands	National Wetland Inventory	Avoidance Mod	CC	0.4	0.7	0.7
83	Water and Wetlands	Oregon Watershed Restoration Inventory Project (within 500ft Buffer of linear feature)	Avoidance Mod		0.5	-	-
84	Water and Wetlands	Oregon Watershed Restoration Inventory Project Area	Avoidance Low		3.0	-	2.2
85	Other Features	Within 200ft of Existing Pipeline	Opportunity	CC	0.1	1.2	1.7

Table D-15. Western, Central, and Eastern Route Data Table (continued)

Resource Group		Regulatory Criteria Description	Permitting Difficulty[1/]	Community Criteria[2/]	Western Route	Central Route	Eastern Route
					Length in Miles		
				TOTAL LENGTH	**275.1**	**281.9**	**298.8**
86	Other Features	Vale District Utility Corridor	Opportunity		3.1	5.9	3.4
87	Other Features	West-wide Energy Corridor	Opportunity	CC	19.9	19.9	19.9
88	Other Features	National Forest Utility Corridor	Opportunity	CC	-	5.4	5.4
89	Other Features	Parallel to Existing Transmission Line	Opportunity		46.3	58.4	105.0

Notes:
1/ For explanation of Permitting Difficulty categories, see Section 3.1 Table 3.1-1.
2/ Rows designated with "CC" indicate Community Criteria. These are the criteria the PATs wanted to be considered in the analysis.

APPENDIX E

1:24,000 Topographic Maps

Boardman
Bombing Range
Approach Zone

Tower Rd

Sixmile Canyon

POVERTY RIDGE

Tower Rd

T3N R24E

PRIVATE

230kV

500kV

GRASSLAND
SUBSTATION

MORROW
COUNTY

Industrial Waste Ponds

Boeing Well

Carty West Dam

Powerplant

Substa

CONVEYOR

Pumping Sta

CARTY RESERVOIR

4WD

T2N R24E

BOARDMAN CONSERVATION AREA

Canyon

Boardman
Bombing Range
Approach Zone

1

2

3

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 1 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 1
Morrow County

BOARDMAN CONSERVATION AREA

8

7

6

5

4

3

T4N R24E

T3N R24E

MORROW COUNTY

Tower Rd

Tower Rd

230kV

Canyon

Boardman Bombing Range Approach Zone

BOARDMAN CONSERVATION AREA

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 2 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 2
Morrow County

14
13
12
11
10
9
8
T4N R25E
T3N R25E
T4N R24E
T3N R24E
Boardman Bombing Range
MORROW COUNTY
BOARDMAN CONSERVATION AREA
Peters Rd
Tower Rd
Robinson Ln
Skoubo Ln
Paul Smith Rd
Faler Rd
Hilltop Dr
Olive Ln
Oasis Dr
Slate Dr
Kinkade Rd
Willow Fork Dr
Mobile Home Park
Kunze Rd
Wilson Rd
Airport Rd
Ridgecrest Rd
Boardman Canal
West Extension Irrigation Canal
RESTRICTED
WEAPONS SYSTEMS TRAINING FACILITY
NAVAL
500kV
230kV
84

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

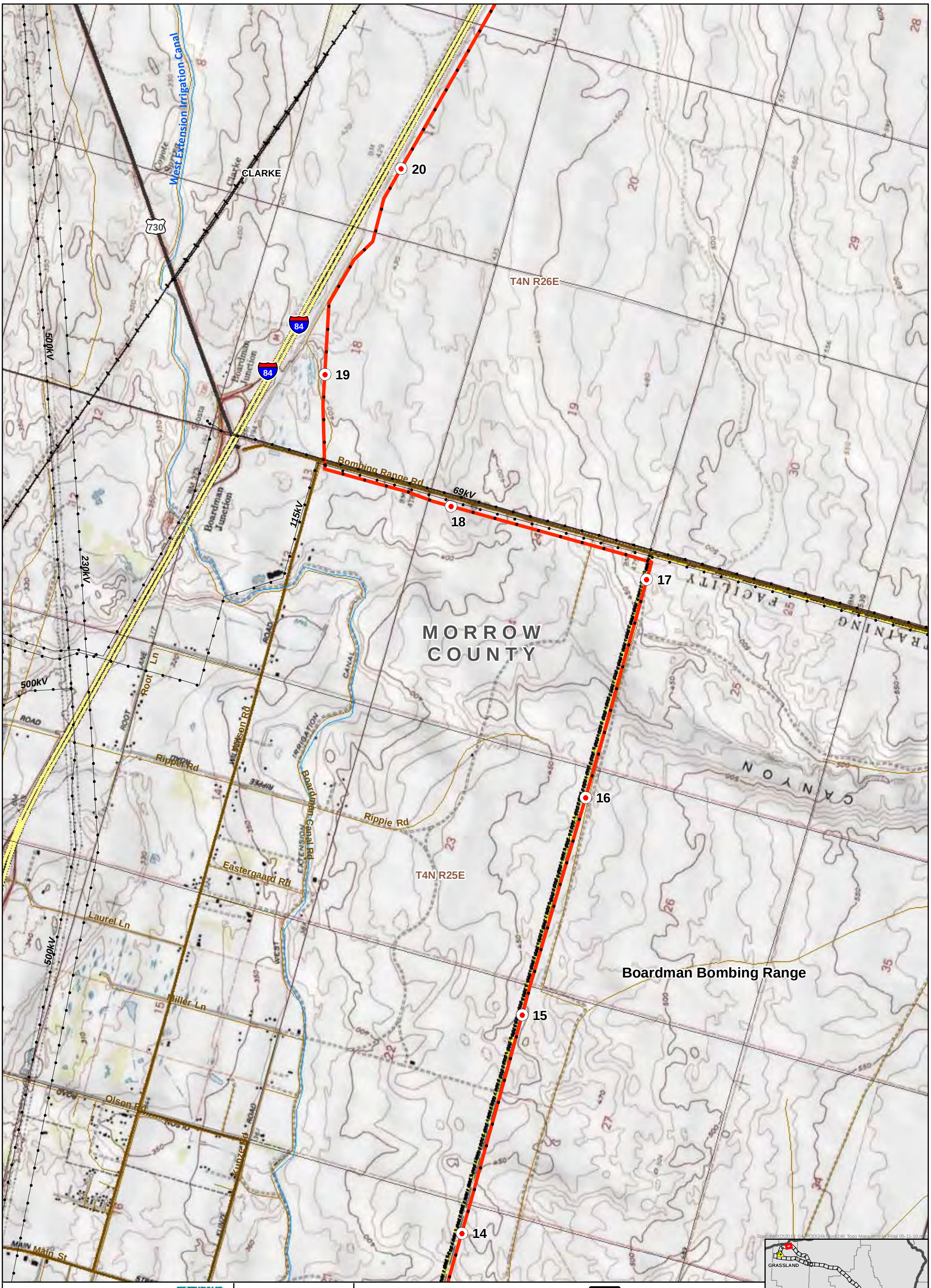
APPENDIX E
MAP 3 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 3
Morrow County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

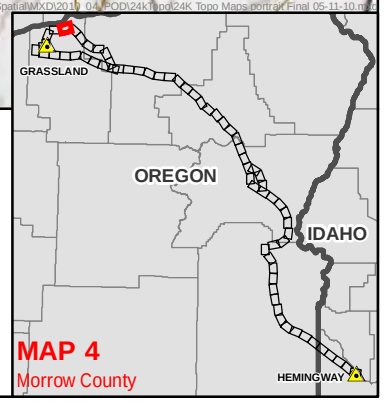
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 4 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 4
Morrow County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 5 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

MAP 5
Morrow County

T4N R26E
27
28
T4N R27E
T3N R26E
Homestead Rd
29
30
MORROW COUNTY
31
T3N R27E
32
33
UMATILLA COUNTY
34

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

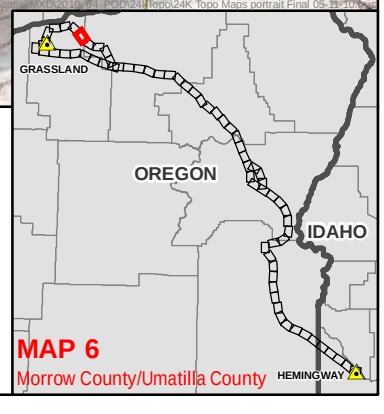
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 6 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 6
Morrow County/Umatilla County

MORROW COUNTY

UMATILLA COUNTY

34
35
36
37
38
39
40
41

T3N R27E
T2N R27E
T2N R28E
T3N R28E

Oregon National Historic Trail
Madison Saylor Rd
Co 1356 Rd
Co 1358 Rd
Co 1353 Rd
Co 1352 Rd
Butter Creek
Butter Creek
207
Lexington-Echo Hwy
PIPELINE
Ward
Landing Strip
Water Tank

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 7 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

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GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 7
Morrow County/Umatilla County

41
42
43
44
45
46
Co 1352 Rd
Co 1351 Rd
Co 1349 Rd
Co 1348 Rd
Co 1343 Rd
69kV
T3N R28E
T2N R28E
T2N R29E
T3N R29E
UMATILLA COUNTY
SERVICE BUTTES
Service Springs
Very Spring
Spikes
Gulch
Spring
Spikes

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

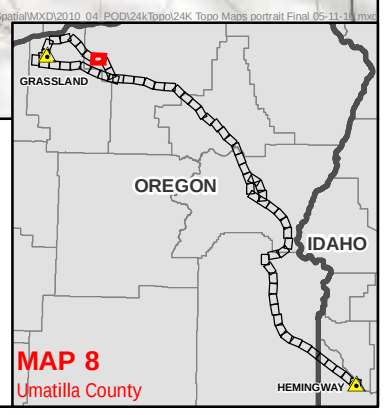
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 8 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 8
Umatilla County

46
47
48
49
50
51
52
Co 1348 Rd
Co 1347 Rd
Co 1343 Rd
Co 1362 Rd
T2N R28E
T2N R29E
T1N R29E
UMATILLA COUNTY
Gulch
Spikes
Canyon
Spring

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 9 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 9
Umatilla County

52
53
54
55
56
57
58
51
52
T2N R29E
T1N R29E
T1N R30E
UMATILLA COUNTY
Alkali
Canyon
Spikes
Gulch
Slusher
Gulch
Spikes
Canyon
Gulch
Co 1363 Rd
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DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

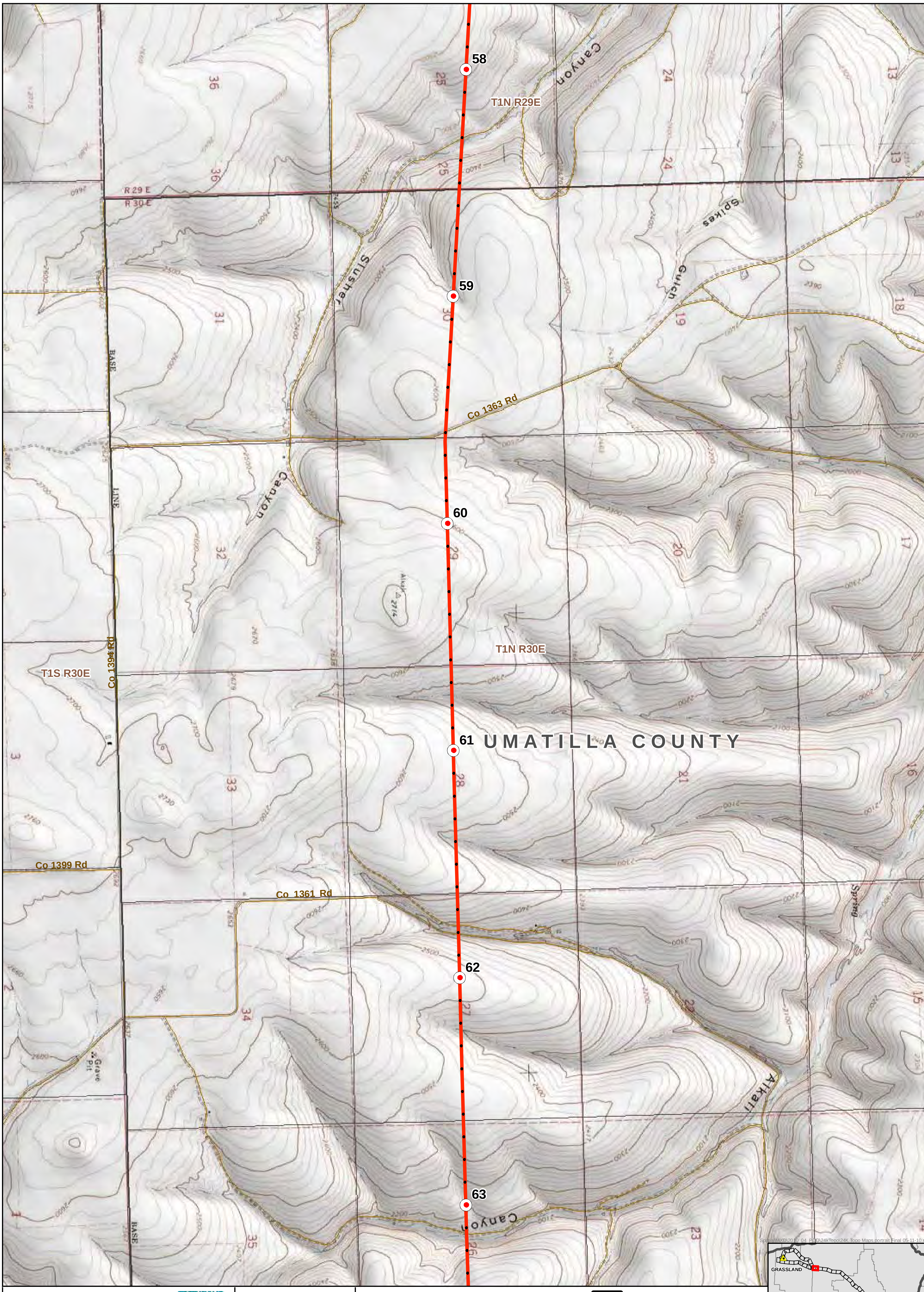
APPENDIX E
MAP 10 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 10
Umatilla County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

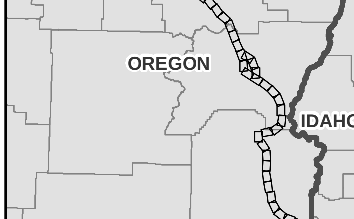
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 11 OF 68

0 2,000
Feet

Substation
Existing Transmission Line
Mile Marker
Tenth Mile Marker
Proposed Route
Alternative Route
State Boundary
County Boundary
River/Stream
Township/Range Boundary
Section Line
County Road



MAP 11
Umatilla County

63
64
65
66
67
68
T1S R30E
T1S R30 1/2E
T1N R30E
T1N R31E
T1S R31E
UMATILLA COUNTY
Co 1361 Rd
Rea Ranch Rd
Co 1382 Rd
Coombs Canyon
BASE LINE

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 12 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 12
Umatilla County

69
70
71
72
73
74
Co 1381 Rd
T1N R31E
T1S R31E
Co 1386 Rd
Co 1382 Rd
Co 1389 Rd
Co 1377 Rd
Co 1374 Rd
UMATILLA COUNTY
Co 1383 Rd
69kV
T1N R32E
Co 1373 Rd
T1S R32E
Industrial Waste Pond
Birch Creek
395
George

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 13 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 13
Umatilla County

74
75
76
77
78
79
80
69kV
Co 1374 Rd
Co 1376 Rd
Co 1069 Rd
Co 1075 Rd
Co 1150 Rd
Co 1061 Rd
Co 1052 Rd
Co 1058 Rd
395
Birch Creek
Stewart Creek
Ray Creek
McKay Creek
Little McKay Creek
T1N R32E
T1S R32E
T1N R33E
T1S R33E
UMATILLA COUNTY
UMATILLA INDIAN RESERVATION
BOUNDARY

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 14 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 14
Umatilla County

80
81
82
83
84
85
T1S R33E
T1N R33E
T1S R34E
T1N R34E
UMATILLA INDIAN RESERVATION
UMATILLA COUNTY
MCKAY
Co 1062Rd
Co 1058 Rd
Co 1050 Rd
Co 1049 Rd
Co 1046 Rd
Stewart Creek
Little McKay Creek
McDonald Canyon
McKay Creek
North Fork McKay Creek
Sevenmile Creek
Timene Canyon
Spring
4WD
JEEP
TRAIL
BOUNDARY

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 15 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 15
Umatilla County

85
86
87
88
89
90
Co 1046 Rd
T1N R34E
T1S R34E
Calamity Creek
Little Rail Creek
McKay Creek
Co 1050 Rd
Sevenmile Creek
Bell Cow Creek
UMATILLA COUNTY

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

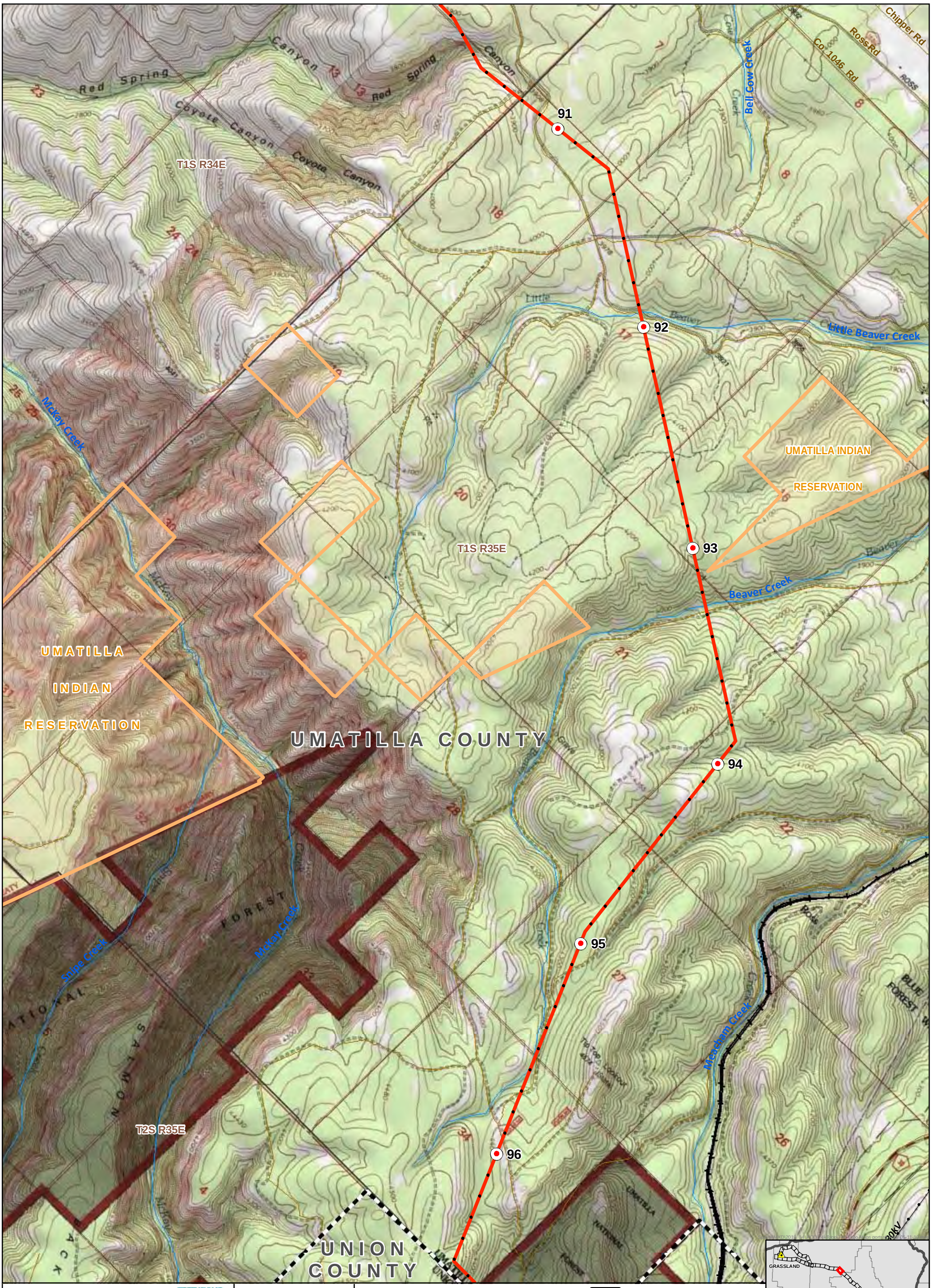
APPENDIX E
MAP 16 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 16
Umatilla County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 17 OF 68

UMATILLA COUNTY

UNION COUNTY

97

98

99

100

101

102

T1S R35E

T2S R35E

T1S R36E

T2S R36E

Meacham Creek

Butcher Creek

McKay Creek

Dark Canyon Creek

Spring Creek

Dark Canyon Rd

Summit Rd

Nad Forest Develop Road 400

Oregon National Historic Trail

230kV

NATIONAL FOREST UTILITY CORRIDOR

BLUE MOUNTAIN WAYSIDE

WALLOWA WHITMAN NATIONAL FOREST

Dry Creek

Railroad

84

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 18 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 18
Union County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

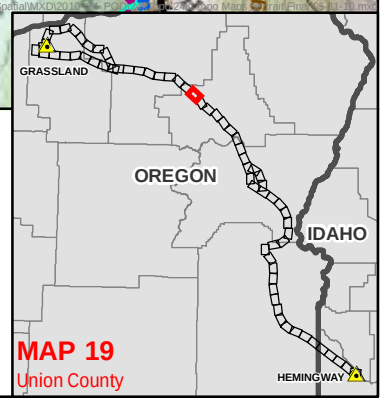
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

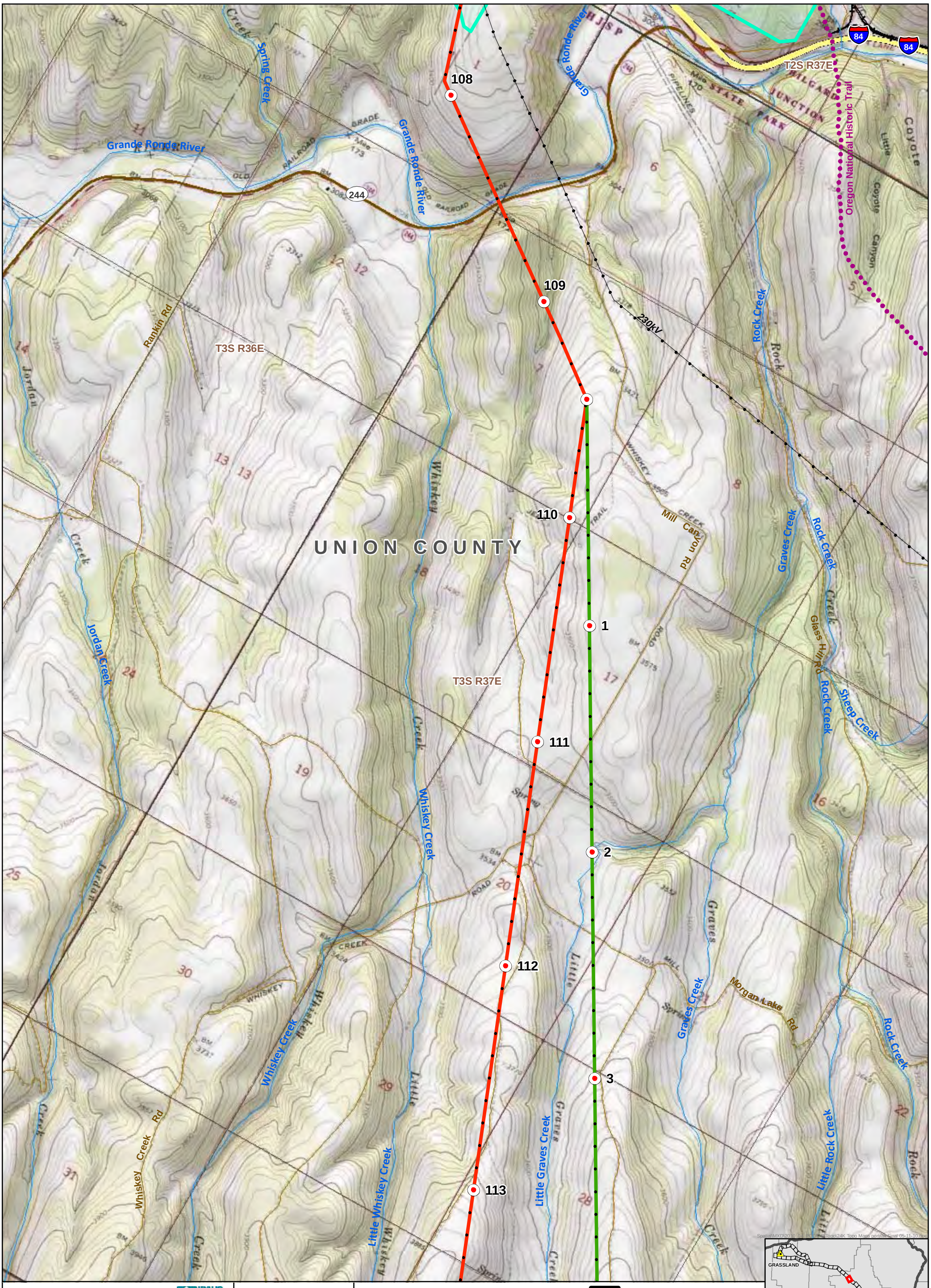
APPENDIX E
MAP 19 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 19
Union County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route & Glass Hill Alternative

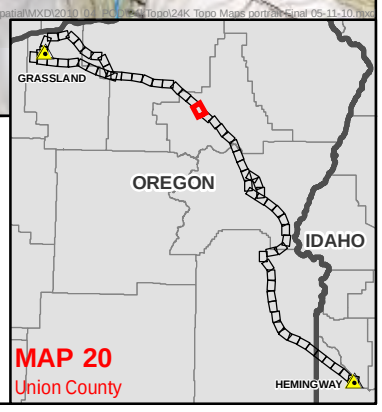
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 20 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 20
Union County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route & Glass Hill Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

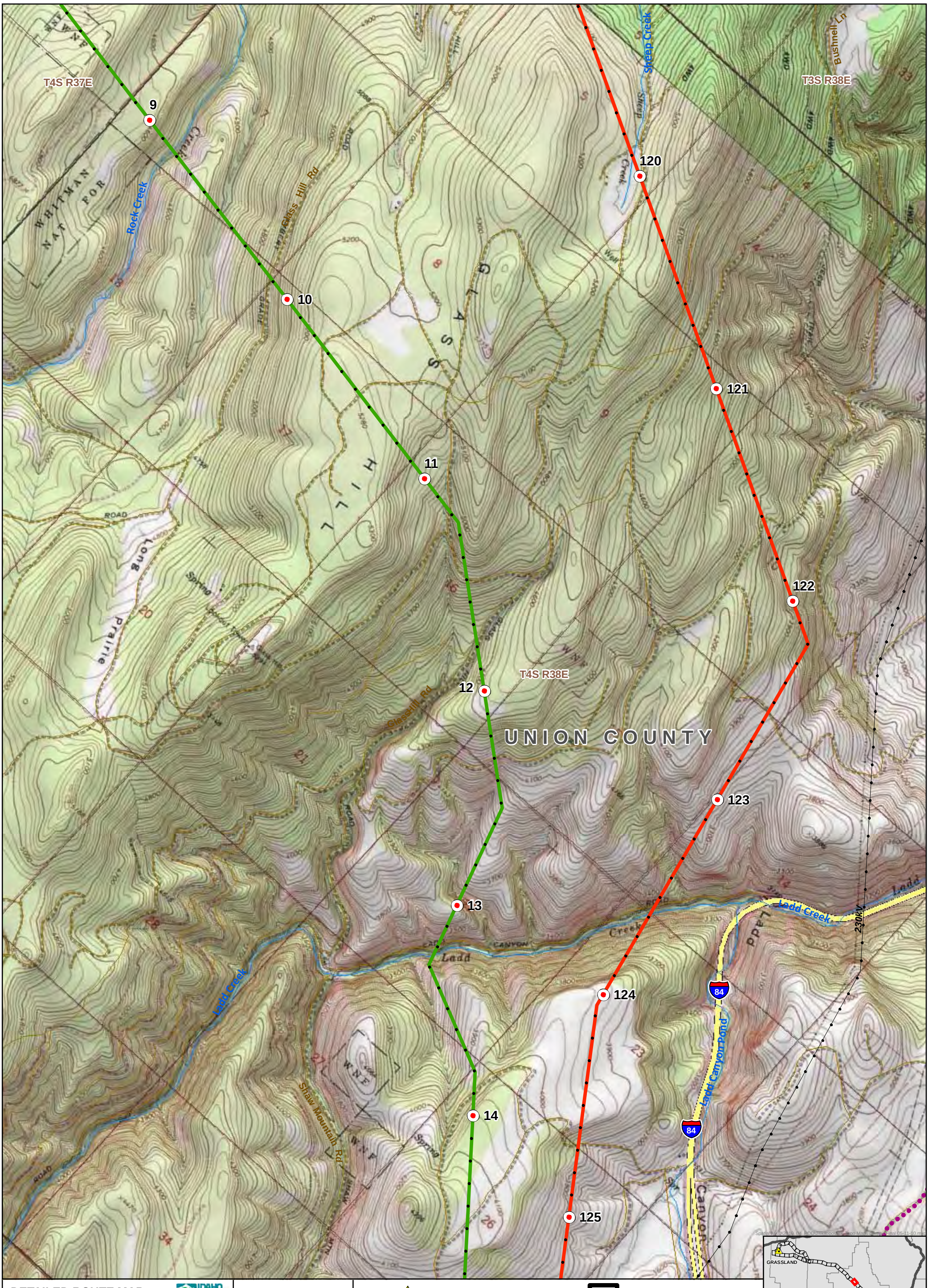
APPENDIX E
MAP 21 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 21
Union County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route & Glass Hill Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

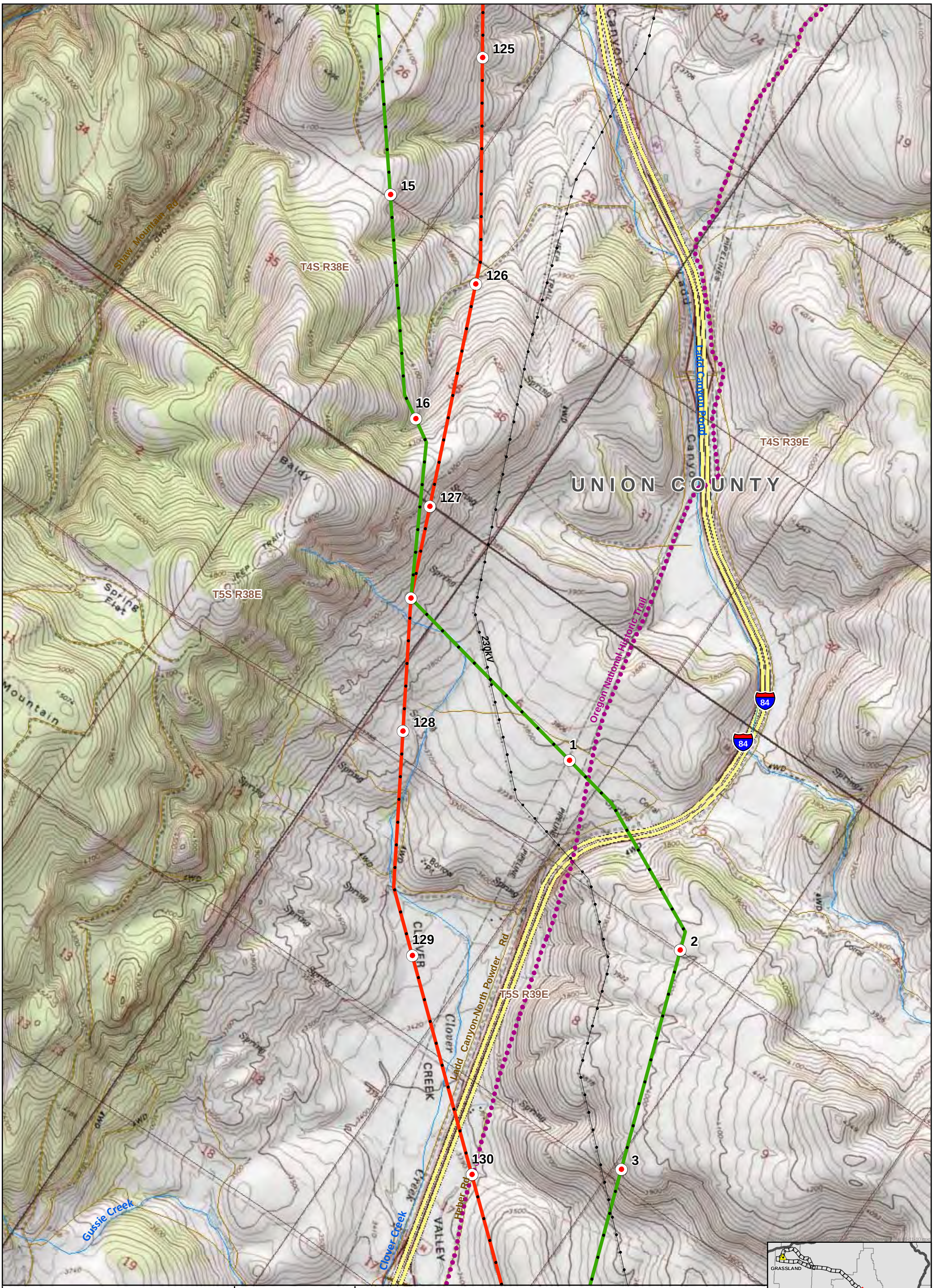
AUGUST 2010

APPENDIX E
MAP 22 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

MAP 22
Union County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route,
Glass Hill & Clover Creek Valley Alternative

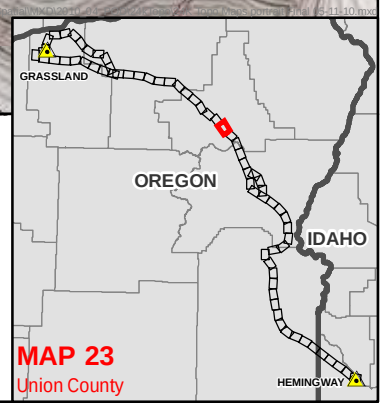
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

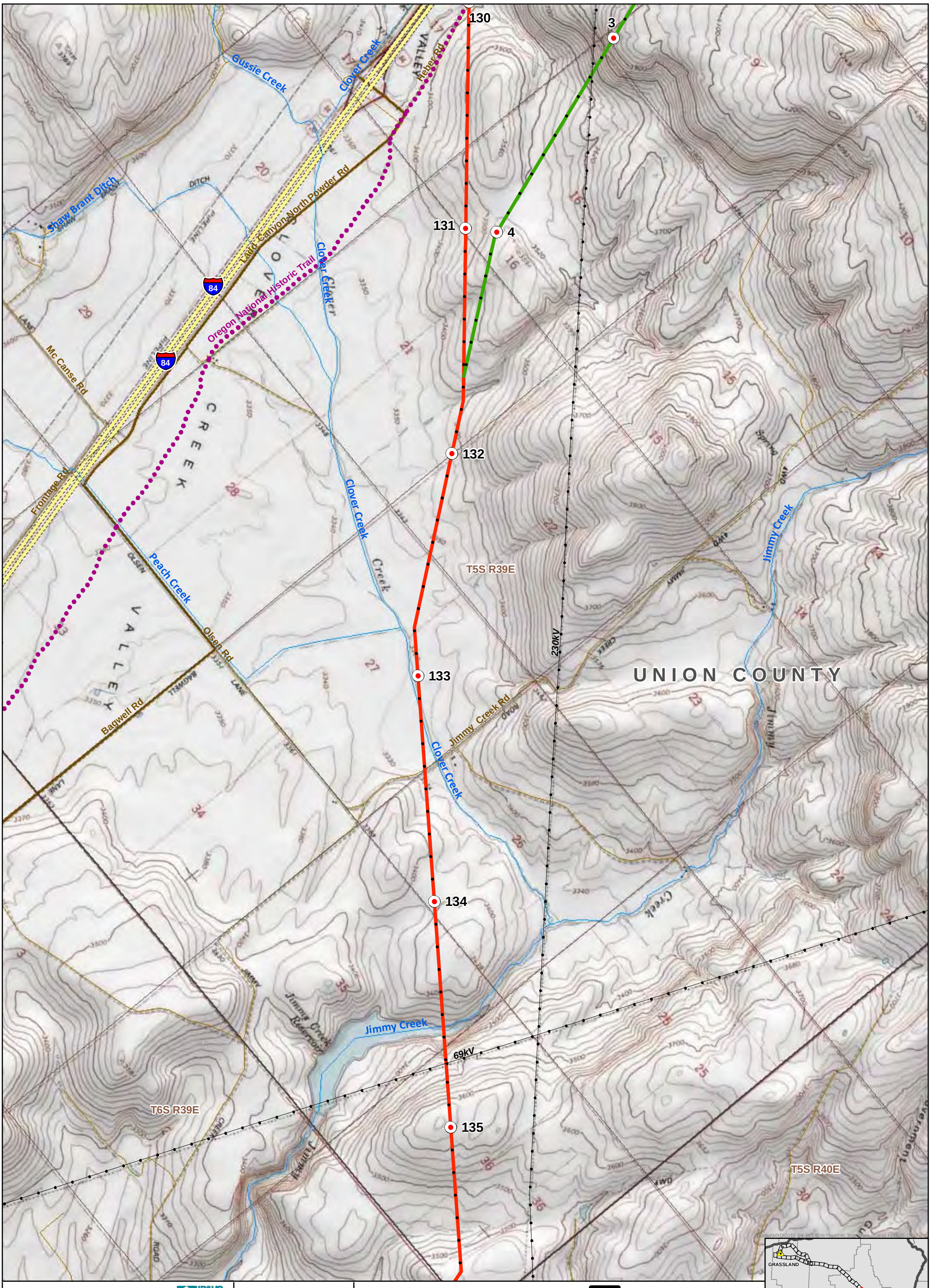
APPENDIX E
MAP 23 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 23
Union County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route &
Clover Creek Valley Alternative

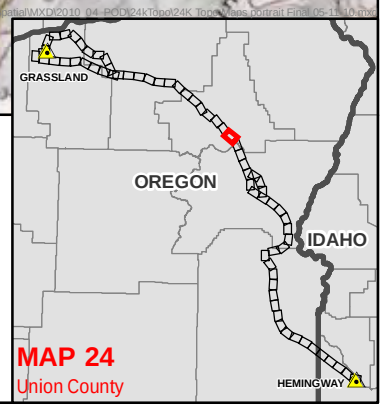
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

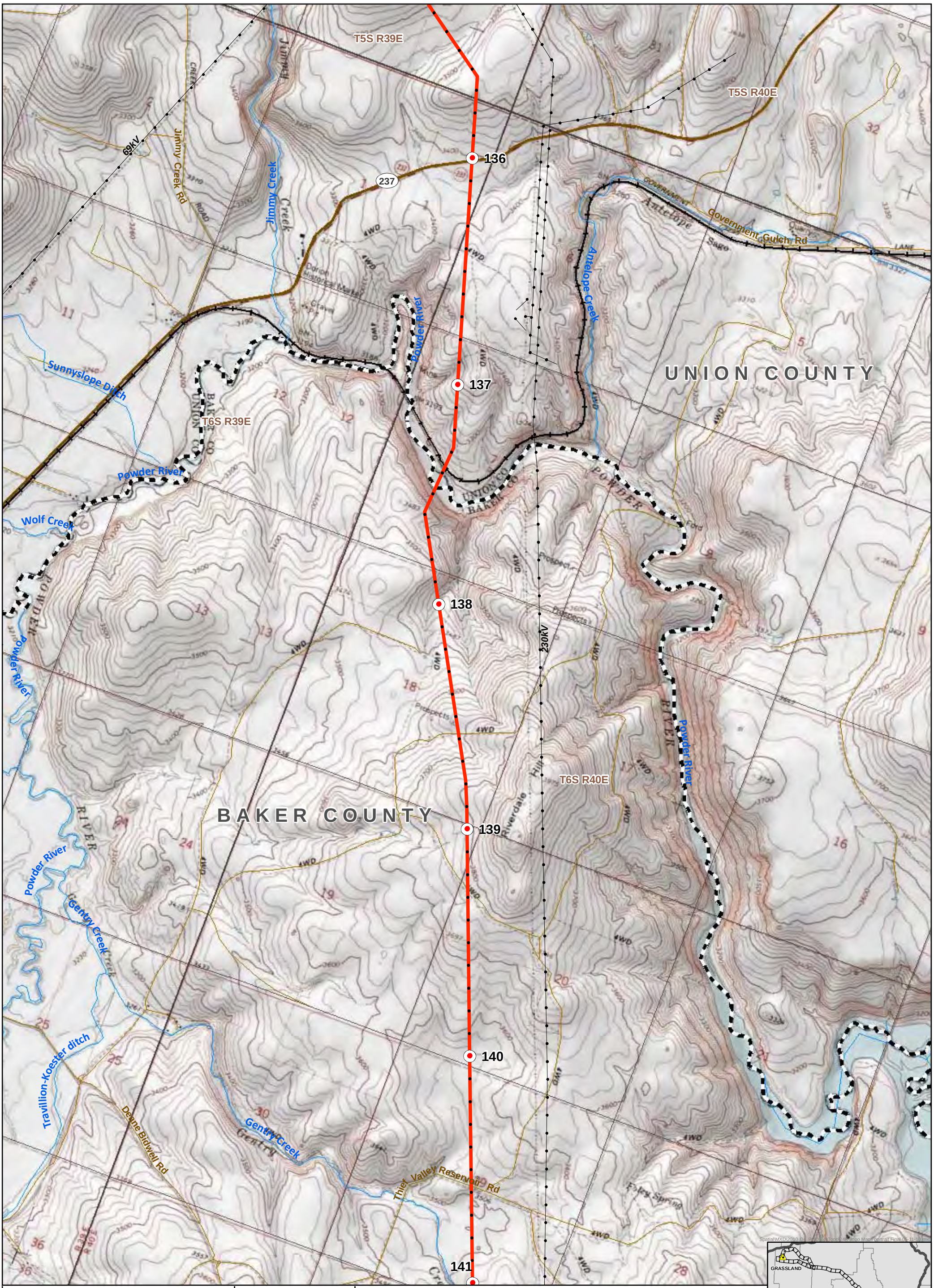
APPENDIX E
MAP 24 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 24
Union County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

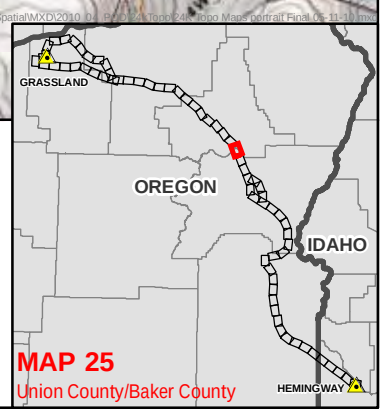
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 25 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 25
Union County/Baker County

T6S R39E

T6S R40E

T7S R40E

BAKER COUNTY

141

142

143

144

145

146

230kV

Thief Valley Reservoir Rd

Deane Bidwell Rd

Chas Green Rd

Magpie Peak Rd

Gentry Creek

Creek

Spring

Prospects

Mines

Glass Spring

Entry Spring

Magpie Peak

84

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 26 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 26
Baker County

146
147
148
149
150
151
84
84
Rest Areas
Quarry
Culley Ln
LILLEY
DITCH
Still Rd
Schetky Rd
Schetky Rd
Schetky Rd
Baldock Slough
Slough
Baldock
203
Maggie Creek
Deane Bidwell Rd
4WD
Salt Creek
230kV
T7S R40E
T7S R41E
T8S R40E
T8S R41E
BAKER COUNTY

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

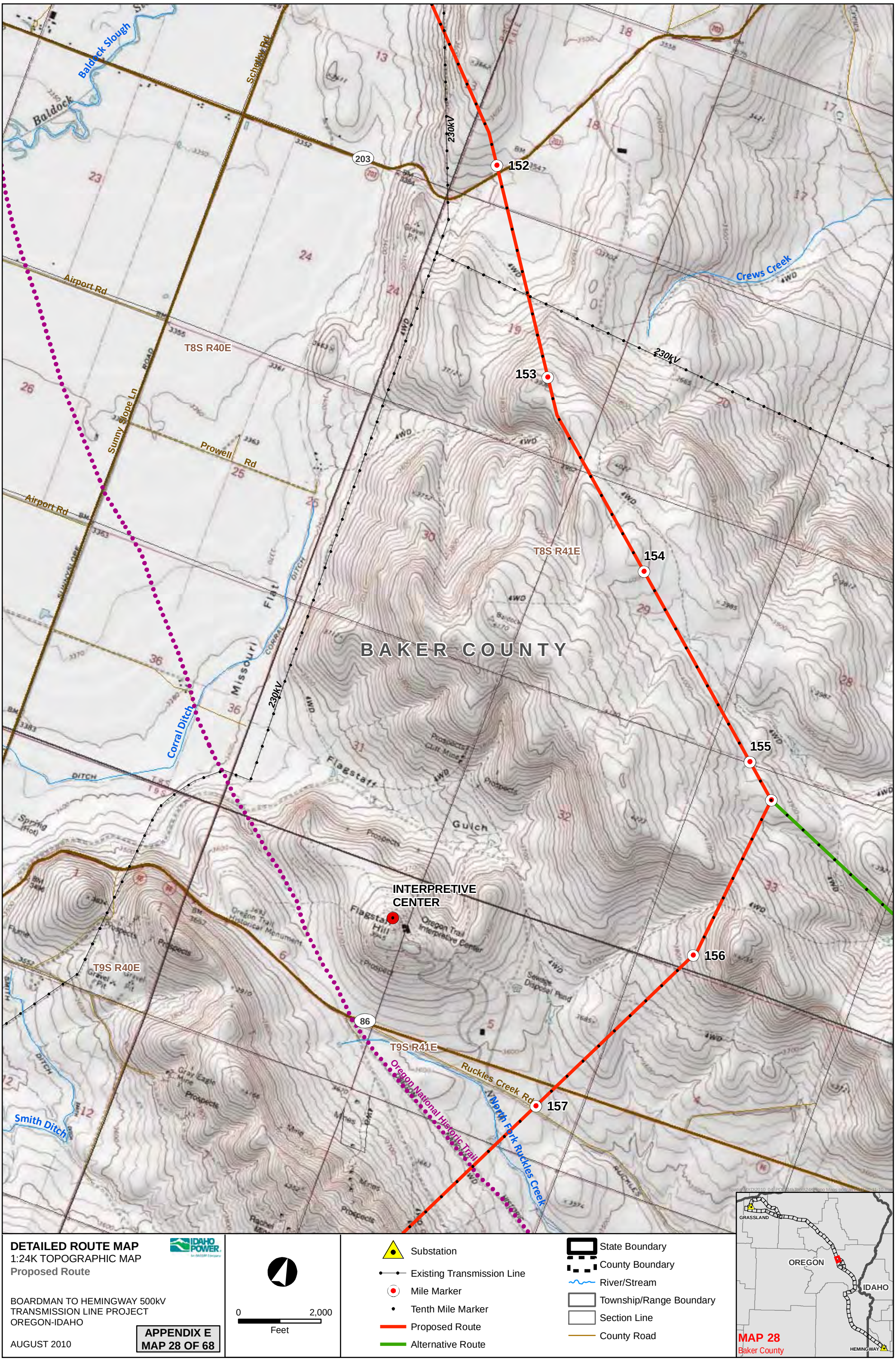
APPENDIX E
MAP 27 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 27
Baker County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

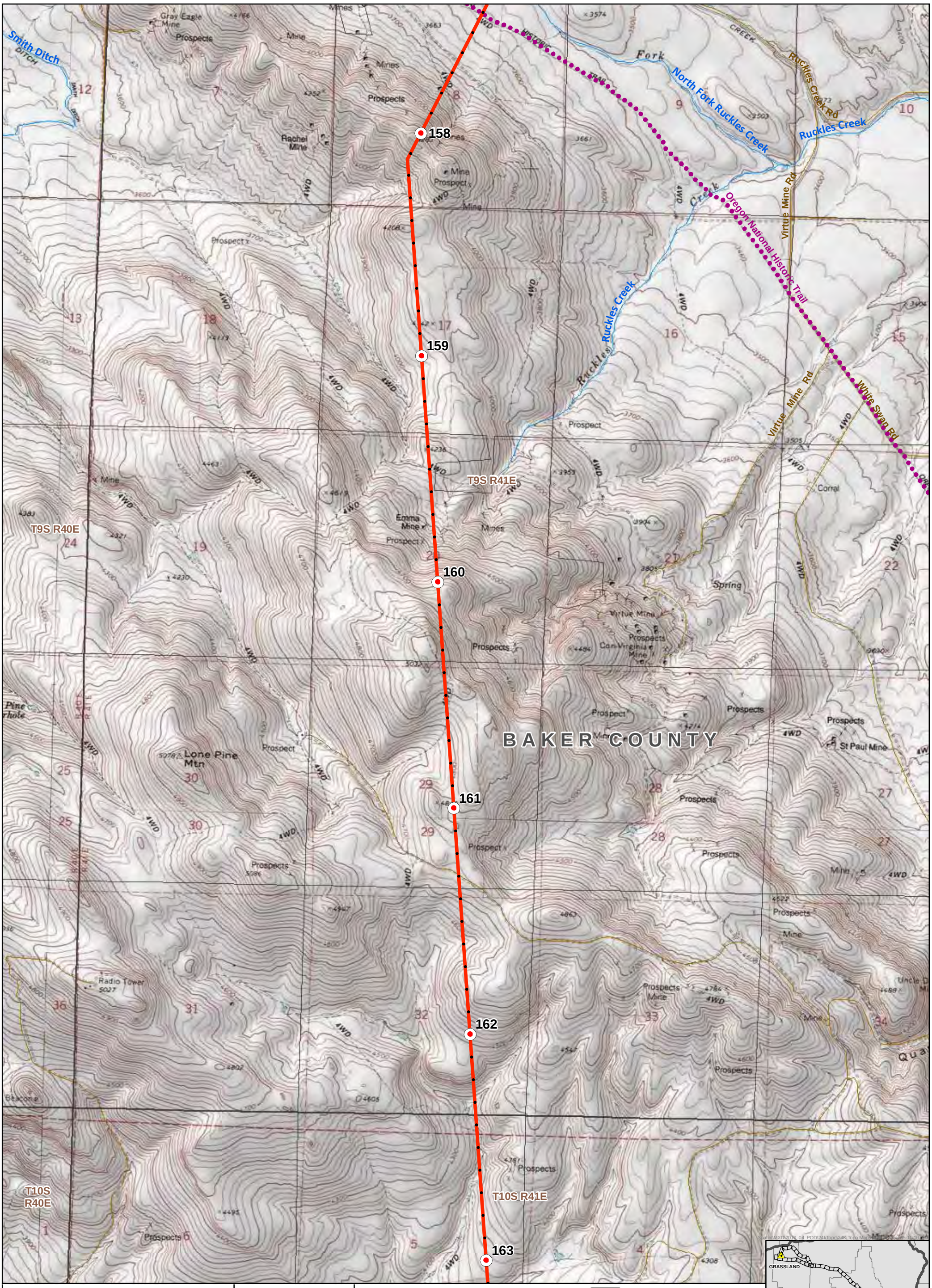
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 28 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

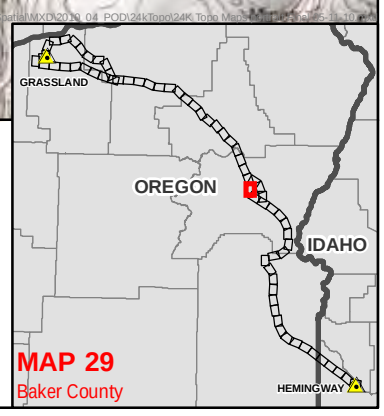
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

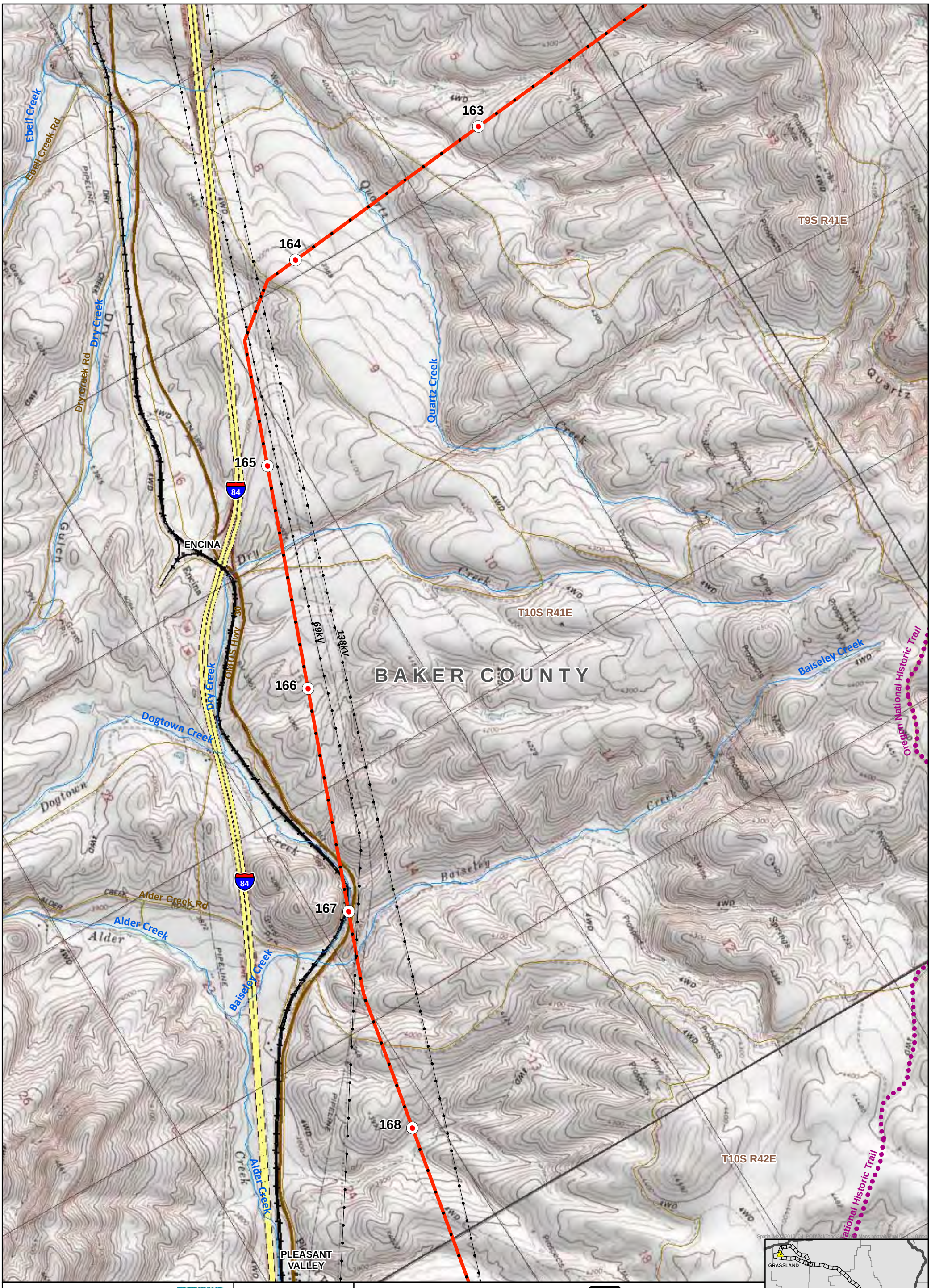
APPENDIX E
MAP 29 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 29
Baker County


163
164
165
166
167
168
T9S R41E
T10S R41E
T10S R42E
BAKER COUNTY
ENCINA
PLEASANT VALLEY
69kV
138kV
Ebell Creek
Ebell Creek Rd
Dry Creek
Dry Creek Rd
Quartz Creek
Dogtown Creek
Alder Creek
Alder Creek Rd
Baiseley Creek
Oregon National Historic Trail
Old US Hwy 30
84
DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO
AUGUST 2010
APPENDIX E
MAP 30 OF 68
0
2,000
Feet
Substation
Existing Transmission Line
Mile Marker
Tenth Mile Marker
Proposed Route
Alternative Route
State Boundary
County Boundary
River/Stream
Township/Range Boundary
Section Line
County Road
GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 30
Baker County

PLEASANT VALLEY

T10S R41E

169

170

171

172

173

174

12

13

Hixon Rd

Alder Creek

Pleasant Valley

Straw Ranch Creek

84

Old US HWY 30

69kV

138kV

BAKER COUNTY

Kitchen Creek

Low Creek

T10S R42E

Kitchen Creek Rd

Hill Creek

Oregon National Historic Trail

Holman Creek

Unity Creek

T11S R42E

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 31 OF 68

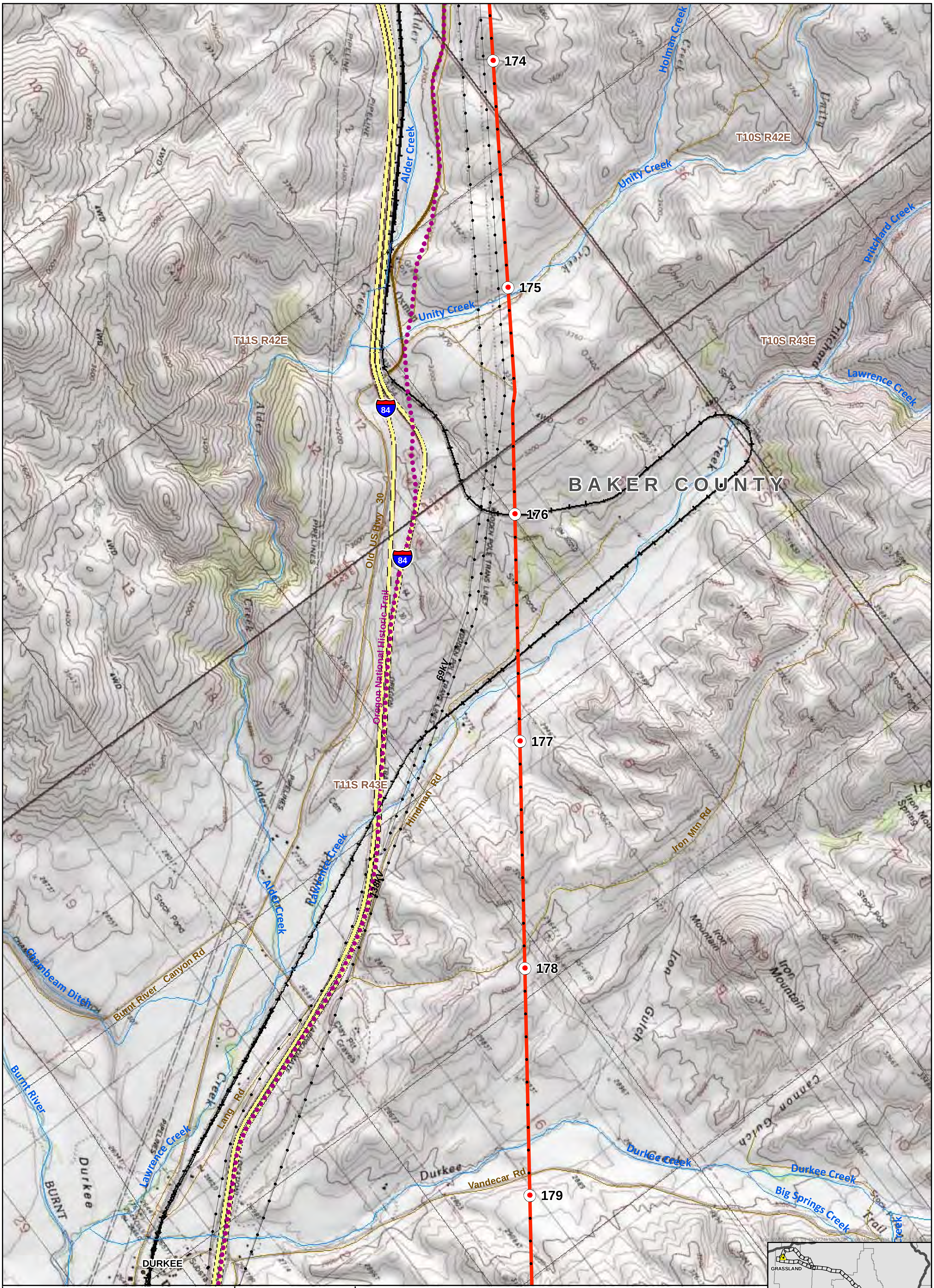
0 2,000
Feet

Substation
Existing Transmission Line
Mile Marker
Tenth Mile Marker
Proposed Route
Alternative Route

State Boundary
County Boundary
River/Stream
Township/Range Boundary
Section Line
County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 31
Baker County


174
175
176
177
178
179
Holman Creek
Unity Creek
T10S R42E
Pritchard Creek
T10S R43E
Lawrence Creek
Alder Creek
T11S R42E
BAKER COUNTY
84
Old US Hwy 30
Oregon National Historic Trail
69kV
T11S R43E
Hindman Rd
Lawrence Creek
Alder Creek
138kV
Iron Mtn Rd
Chambeam Ditch
Burnt River Canyon Rd
Burnt River
Lang Rd
Durkee Creek
Vandecar Rd
Big Springs Creek
DURKEE
GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 32
Baker County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

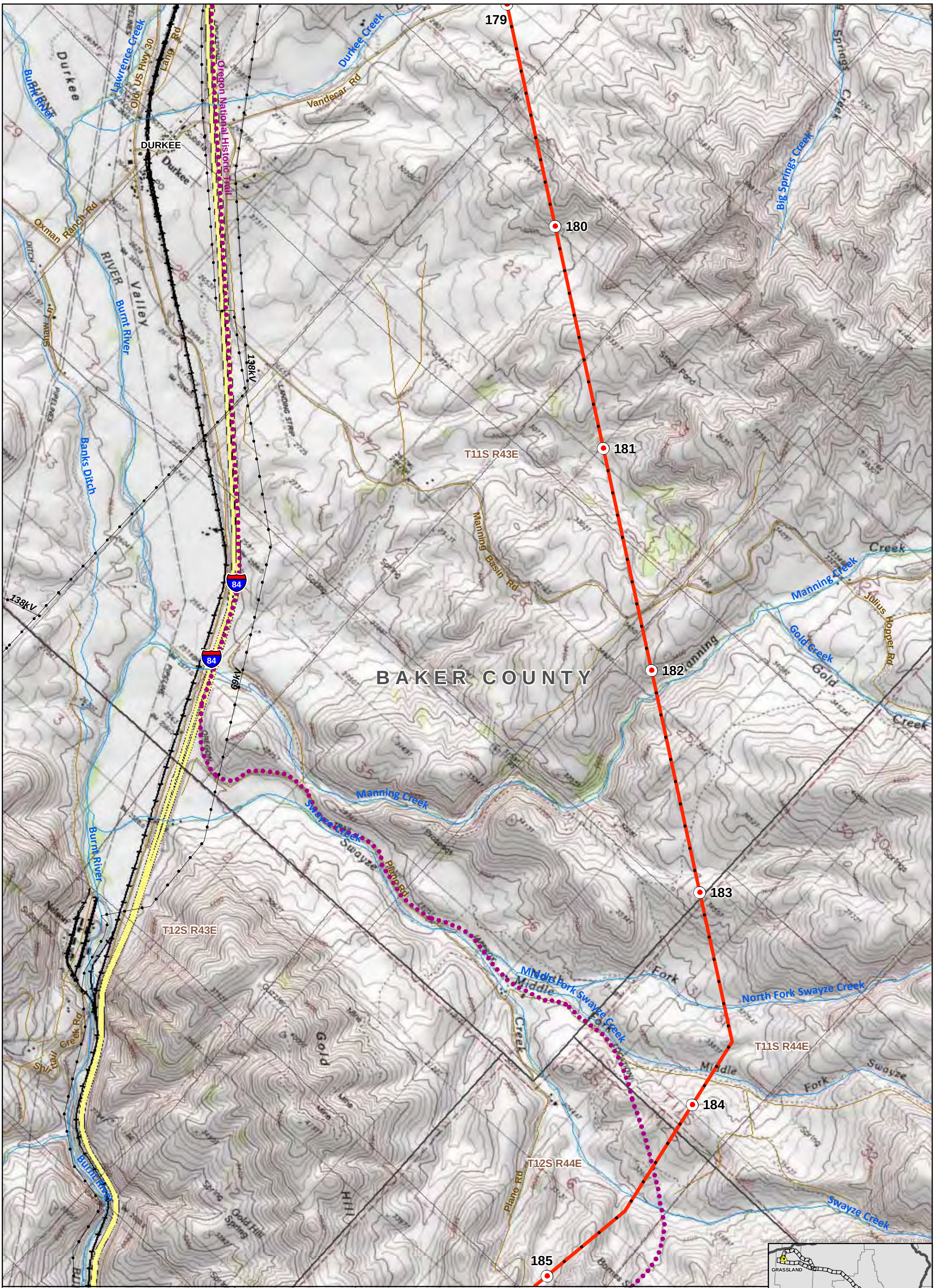
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 32 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

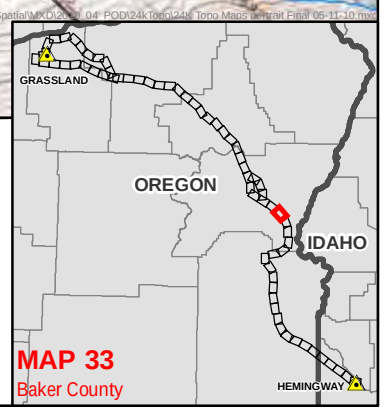
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

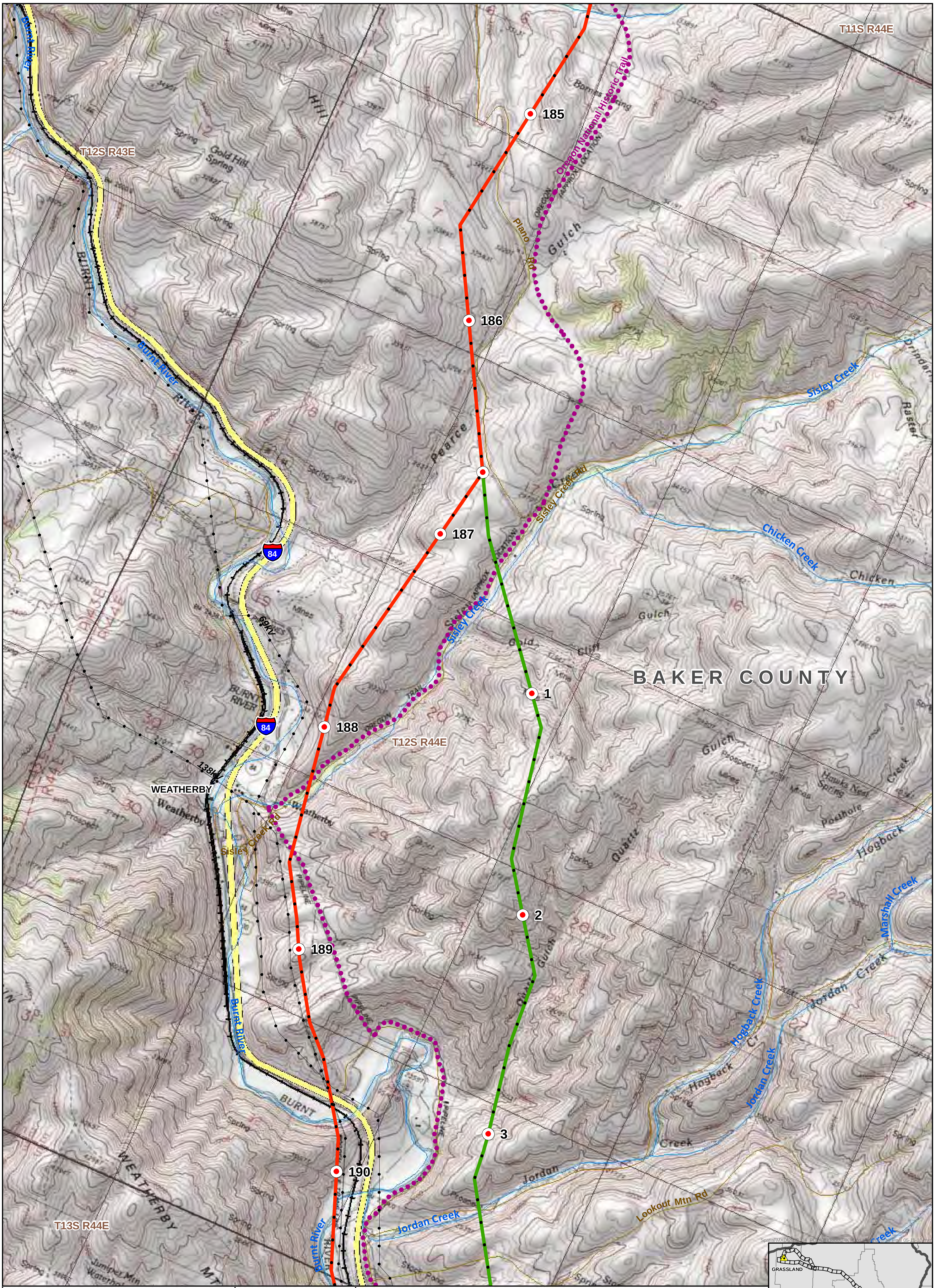
APPENDIX E
MAP 33 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 33
Baker County



T11S R44E
T12S R43E
T12S R44E
T13S R44E
185
186
187
188
189
190
1
2
3
Oregon National Historic Trail
Burnt River
Plano Rd
Gulch
Pearce
Sisley Creek Rd
Sisley Creek
Chicken Creek
Chicken
BAKER COUNTY
Gold Hill Spring
Spring
Gulch
Posthole
Hogback
Marshall Creek
Hogback Creek
Jordan Creek
Jordan
Creek
Lookout Mtn Rd
84
69kV
138kV
WEATHERBY
Weatherby
Sisley Creek Rd
BURNT RIVER
WEATHERBY MT
Quartz
Raster
Hawks Nest Spring
Prospects
Mines

DETAILED ROUTE MAP

1:24K TOPOGRAPHIC MAP

Proposed Route & Weatherby Alternative

IDAHO POWER

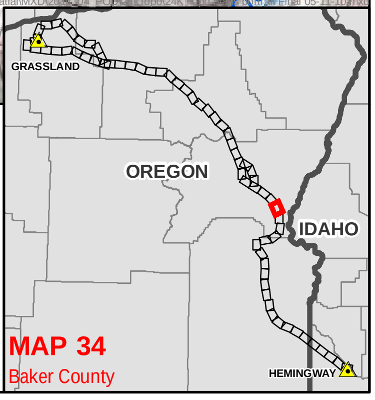
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 34 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route & Weatherby Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

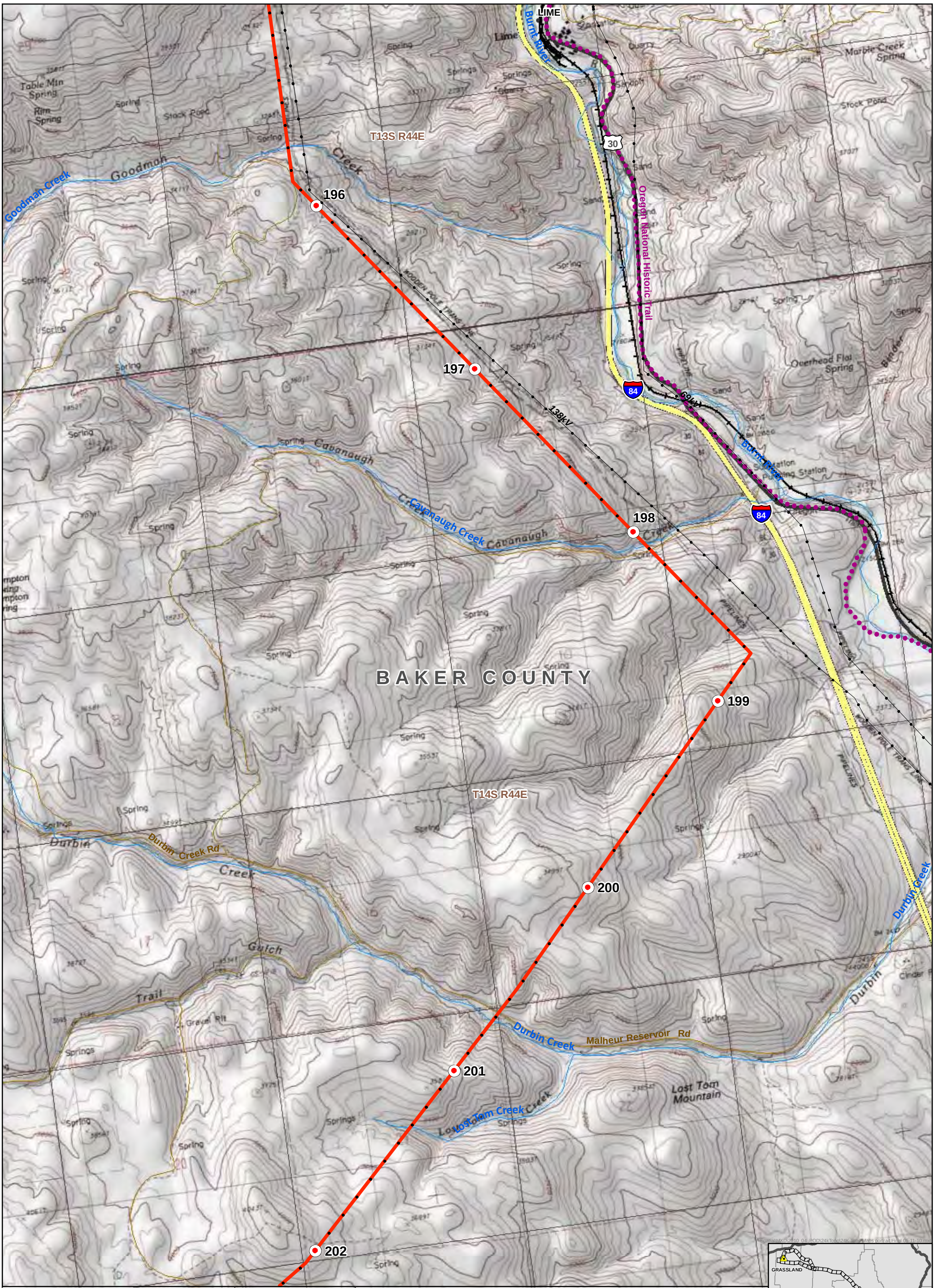
AUGUST 2010

APPENDIX E
MAP 35 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

MAP 35
Baker County


LIME
Burnt River
Lime
Quarry
Marble Creek Spring
Table Mtn Spring
Rim Spring
Stock Pond
T13S R44E
30
Goodman Creek
Goodman
Creek
196
Oregon National Historic Trail
WOODEN POLE TRANS LINE
197
138kV
69kV
84
Overhead Flat Spring
Binder
Sand
Burnt River
Cavanaugh
Cavanaugh Creek
198
BAKER COUNTY
199
T14S R44E
Durbin
Durbin Creek Rd
Creek
200
Gulch
Trail
Gravel Pit
Durbin Creek
Malheur Reservoir Rd
201
Lost Tom Mountain
Lost Tom Creek
202
DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO
AUGUST 2010
APPENDIX E
MAP 36 OF 68
0
2,000
Feet
Substation
Existing Transmission Line
Mile Marker
Tenth Mile Marker
Proposed Route
Alternative Route
State Boundary
County Boundary
River/Stream
Township/Range Boundary
Section Line
County Road
GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 36
Baker County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

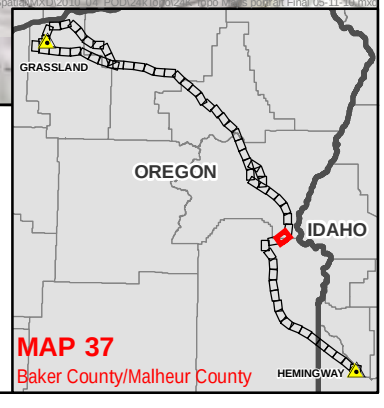
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 37 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 37
Baker County/Malheur County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

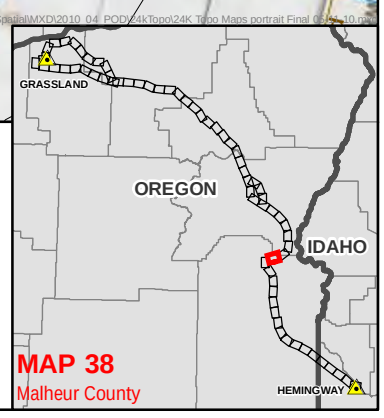
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

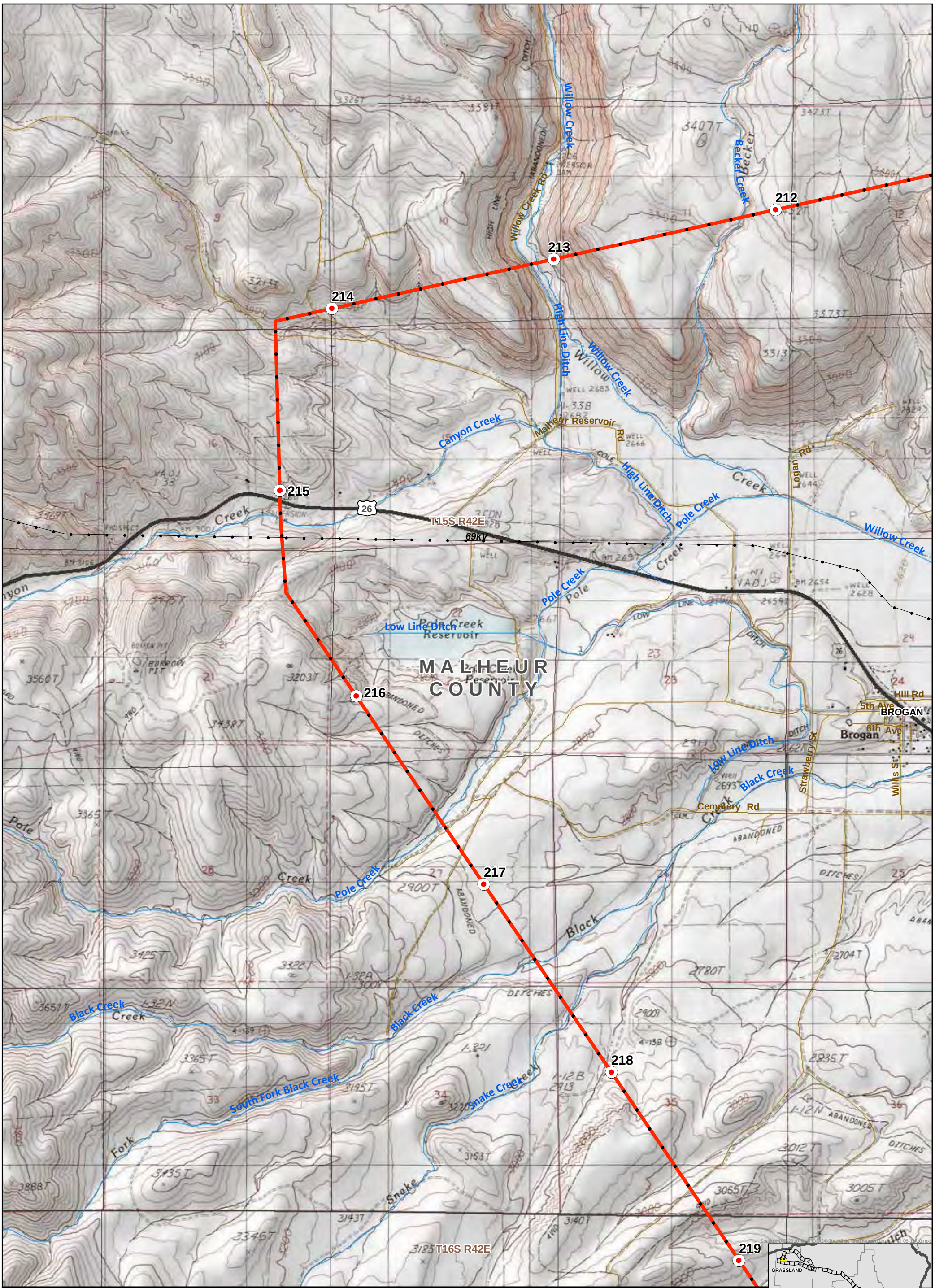
APPENDIX E
MAP 38 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 38
Malheur County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

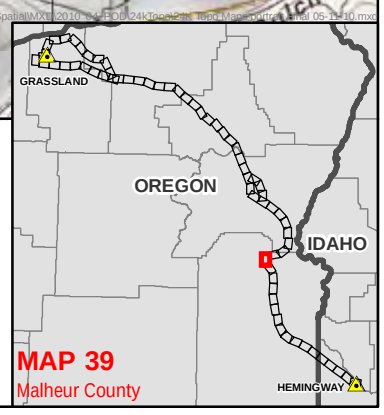
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 39 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 39
Malheur County

219
220
221
222
223
224
T15S R42E
T15S R43E
T16S R42E
T16S R43E
MALHEUR COUNTY
Gum Creek
Dry Gulch
Dry Creek
Lick Creek
Sheep Corral Creek
Poison Creek
Turner Creek
Poison Creek Creek
Gum Creek
14th Ave
13th Ave
Road L
26

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

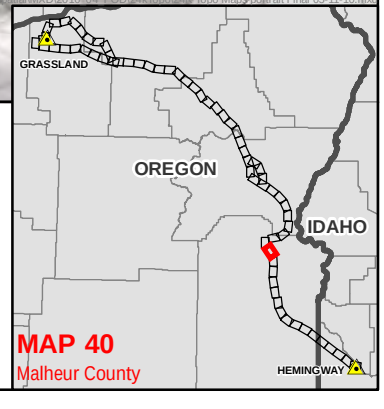
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 40 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 40
Malheur County

224
225
226
227
228
229
T16S R42E
T16S R43E
T17S R42E
T17S R43E
Turner Creek
North Fork Little Willow Creek
Little Willow Creek
South Fork Little Willow Creek
Mud Creek
Kern Creek
Willow Creek
Hope Flat
MALHEUR COUNTY
South Fork Little Willow Creek
Morrison Reservoir
Stock Pond
Lower Kern Spring
Prospect

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 41 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 41
Malheur County

229
230
231
232
233
234
T17S R43E
T17S R42E
T18S R43E
T18S R42E
MALHEUR COUNTY
Sugarloaf Butte
Hope Butte
Lower Hope Butte Reservoir
Willow Creek Reservoir No
Rock Cabin Creek
Cottonwood Creek
Bully Creek
Bully Creek Rd
ABANDONED CANAL
Stock Pond
Springs
Hot Springs

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

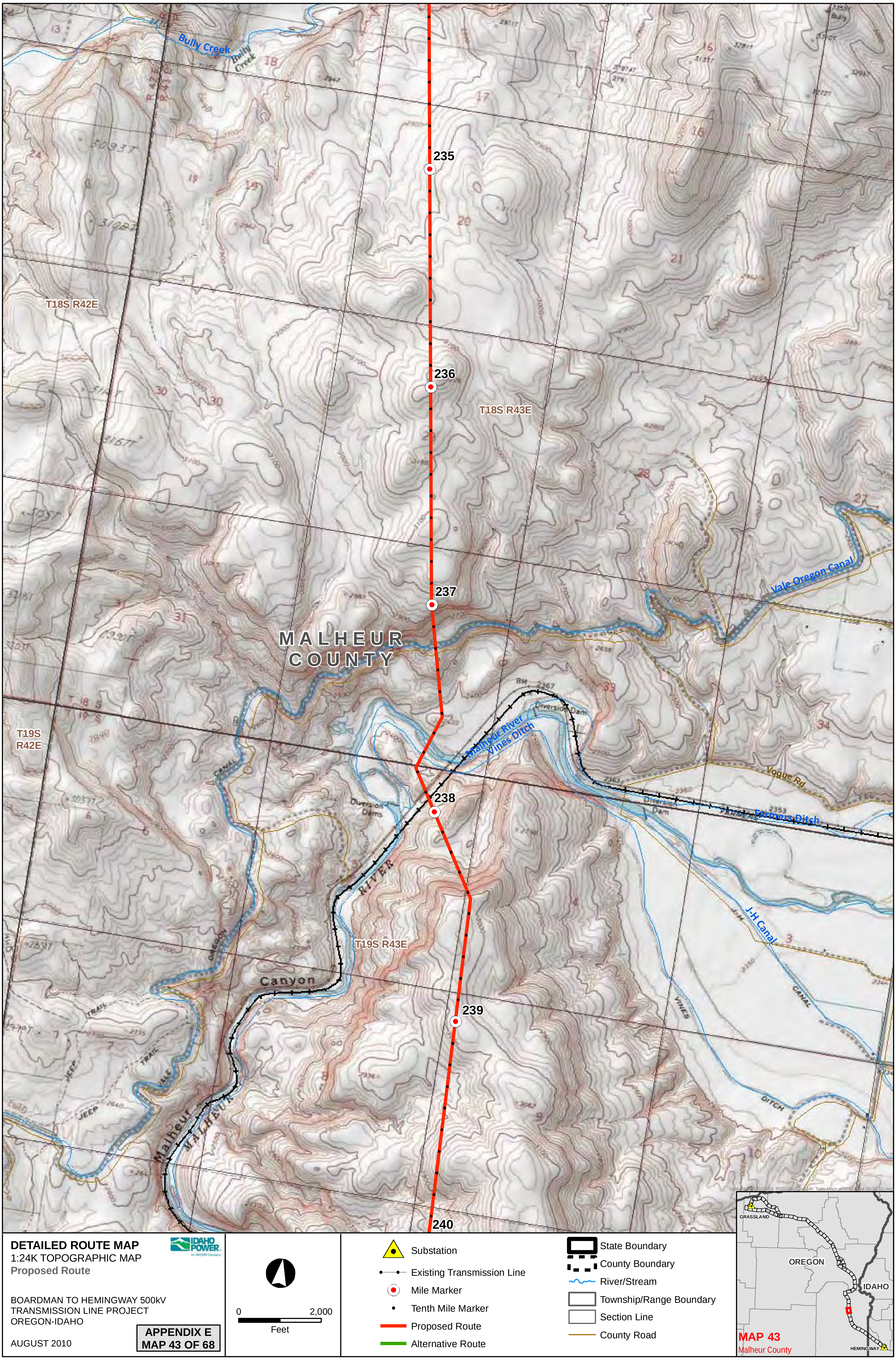
APPENDIX E
MAP 42 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 42
Malheur County


Bully Creek
235
236
237
238
239
240
T18S R42E
T18S R43E
T19S R42E
T19S R43E
MALHEUR COUNTY
Vale Oregon Canal
Malheur River Vines Ditch
Diversion Dam
Vogue Rd
Farmers Ditch
J-H Canal
Canyon
Malheur
RIVER
DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route
IDAHO POWER
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO
AUGUST 2010
APPENDIX E
MAP 43 OF 68
0
2,000
Feet
Substation
Existing Transmission Line
Mile Marker
Tenth Mile Marker
Proposed Route
Alternative Route
State Boundary
County Boundary
River/Stream
Township/Range Boundary
Section Line
County Road
GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 43
Malheur County

240
241
242
243
244
245
T19S R43E
T20S R43E
MALHEUR COUNTY
Malheur River
Little Valley Lateral
Little Valley Rd
Brooks Ln
Frontage Rd
Vines Hill
Water Tank
Well
69kV
20
UNION PACIFIC

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 44 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 44
Malheur County

245
246
247
248
249
250
T20S R43E
MALHEUR COUNTY
T20S R44E
T21S R43E
Rock Spring
Sand
Whiskey Spring No 2
Hollow
Sponge Spring
Gulch
Kane Spring Reservoir
Trail
Spring
Creek
Hoodoo
Canyon
Rock Canyon Rd

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 45 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 45
Malheur County

250
251
252
253
254
255
T20S R43E
T20S R44E
T21S R43E
T21S R44E
MALHEUR
COUNTY
Sand
Creek
Canyon
Hanging Rock Spring
Hoodoo
Hoodoo Creek
Negro
Rock
Rock Canyon Rd
Spring
Red Rim Spring
Wildcat Canyon Reservoir
Canyon
Poison Spring
Gulch

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 46 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 46
Malheur County

T21S R43E

T22S R43E

T21S R44E

T22S R44E

Rock Canyon Rd

Twin Springs Rd

Lowe Res

Lowe Spring

Grassy Mtn Reservoir

Government Corral Spring

Stagebrush Spring

Schreiber Reservoir

Sand Hollow Creek

North Grassy Mtn Res

QT Spring

Jeep Trail

Mendiola Spring

Kern Basin

MALHEUR COUNTY

MOUNTAIN

500kV

255

256

257

258

259

260

1

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route &
Owyhee River Below Dam Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

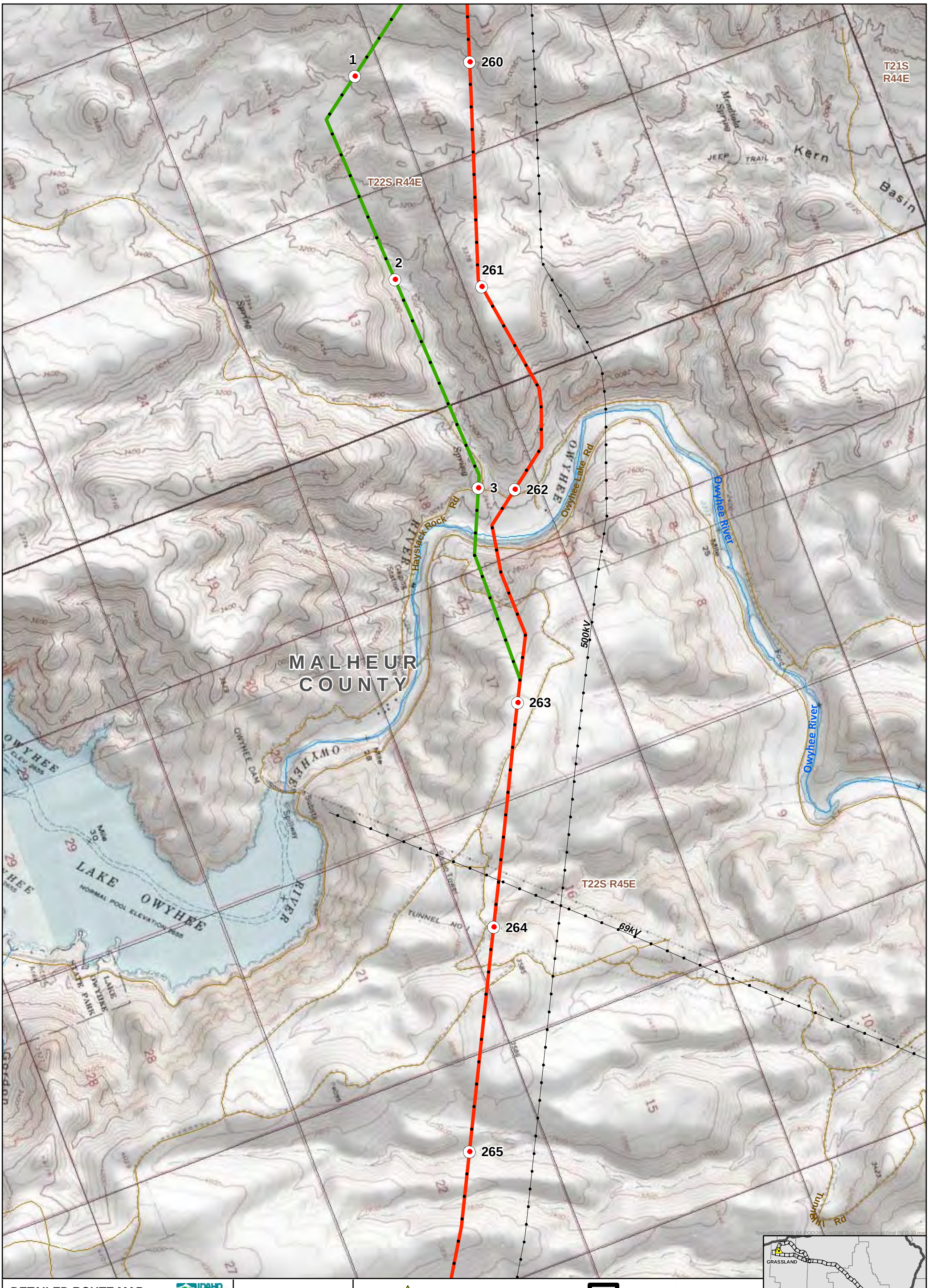
APPENDIX E
MAP 47 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 47
Malheur County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route &
Owyhee River Below Dam Alternative

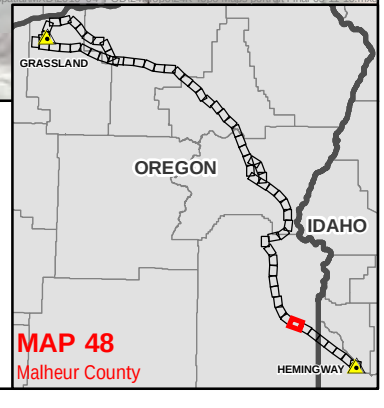
BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 48 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road



MAP 48
Malheur County

266
267
268
269
270
T22S R45E
T23S R45E
T22S R46E
T23S R46E
MALHEUR COUNTY
Upper Tunnel Rd
Fisherman Rd
Succor Creek Rd
Draw
Long Draw
Alkali Creek
North Alkali Creek
South Alkali Creek
Coyote Gulch
Coyote Gulch Siphon
500kV
JEEP TRAIL

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

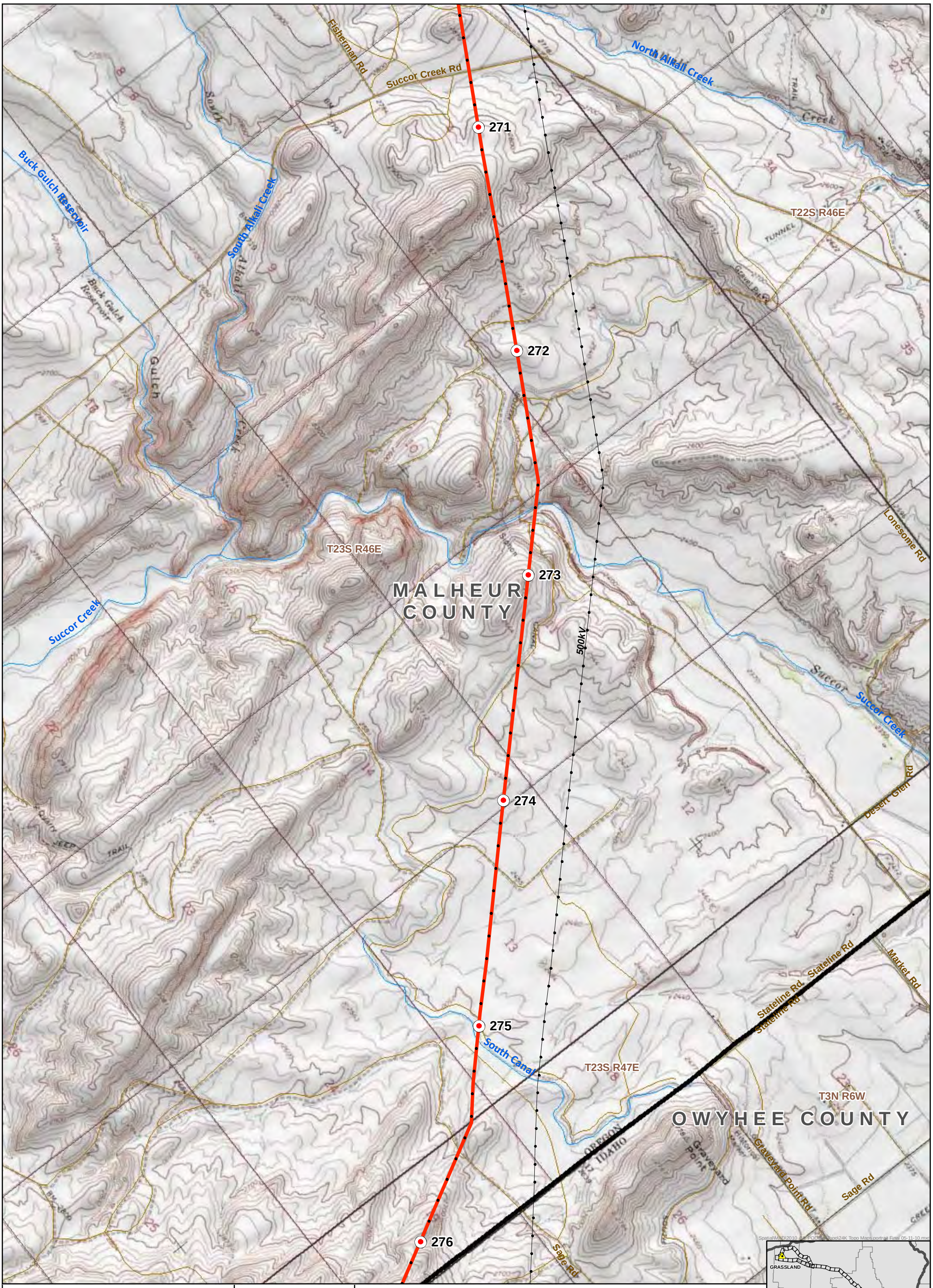
APPENDIX E
MAP 49 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 49
Malheur County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 50 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

276
277
278
279
280
281
T23S R46E
MALHEUR COUNTY
T23S R47E
OREGON
IDAHO
T2N R6W
T3N R6W
T2N R5W
T3N R5W
OWYHEE COUNTY
OWYHEE MOUNTAINS
Sage Rd
Graveyard Point Rd
Sage Creek Pl
Neilsen Ln
Nelson Ln
Sage Creek
Rattlesnake Butte
West Thompson Rd
Walker Ln
Sage
Basin
500kV
Cemetery Rd
A Line Canal
Mulesprings Rd
Johnstone Rd
Sands Basin Rd
South Canal
CANAL
SPOIL BANK
ROAD
JOHNSTONE

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 51 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 51
Owyhee County

282
283
284
285
286
OWYHEE COUNTY
T2N R5W
T1N R5W
T2N R4W
T1N R4W
Poison Creek
South Canal
Flat Top Butte
Poison Creek Rd
Jump Creek
Jump Creek Rd
South Jump Creek Rd
Jump Canyon
Jump Creek Falls
Wildcat Spring
A Line Canal
Burman Rd
Hogg Rd
500kV
95

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 52 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 52
Owyhee County

T1N R5W

T2N R4W

T1N R4W

T1N R3W

287

288

289

290

291

292

95

69kV

500kV

South Canal

Squaw Creek

Elephant Butte

United States Highway 95

Alkali Spring

Sommer Camp Rd

Opalene Rd

Clark Rd

Coyote Grade Rd

Hardtrigger Rd

Nest Gulch

OWYHEE COUNTY

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 53 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 53
Owyhee County

292
293
294
295
296
297
T1N R4W
T1N R3W
T1S R4W
T1S R3W
Hardtrigger Rd
Campbell Rd
Hardtrigger Creek
Opalene Ditch
Marsing Murphy Rd
Wilson Creek
500kV
78
OWYHEE COUNTY
GIVENS H SPRIN
Hot Springs

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 54 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 54
Owyhee County

297

298

299

HEMINGWAY SUBSTATION

WILSON

OWYHEE COUNTY

CANYON COUNTY

T1N R3W

T1S R3W

T1S R2W

T1N R2W

500kV

Wilson Creek

Pigeon Rd

Wilson Creek Rd

Reynolds

Cemetery Ln

Reynolds Creek

Bernard Ditch

China Ditch Rd

Rocky Top Ln

Cut Back Ln

Johnston Ln

Marsing Murphy Rd

Canal Rd

Upper Reynolds Creek Rd

Owyhee Hwy

Snake River

78

45

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Proposed Route

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 55 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 55
Owyhee County

Boardman
Bombing Range
Approach Zone

GRASSLAND
SUBSTATION

230kV

500kV

MORROW
COUNTY

BOARDMAN
CONSERVATION AREA

T3N R24E

T2N R24E

T3N R23E

T2N R23E

1

2

3

4

Industrial Waste Ponds

Powerplant

Substa

Pumping Sta

Boardman Well

CONVEYOR

CARTY RESERVOIR

Canyon

Carty West Dam

PRIVATE

Tower Rd

4WD

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 56 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 56
Morrow County

T3N R23E

500kV

T2N R23E

MORROW COUNTY

BOARDMAN CONSERVATION AREA

5

6

7

8

9

10

11

12

13

Ewing Rd

Ewing Rd

UNION PACIFIC

Creek

Willow Creek

Willow Creek

Schoolhouse

Canyon

Cecil Rd

Fourmile Rd

Oregon Trl

IMMIGRANT

Ella Rd

ROAD

Schoolhouse

Oregon National Historic Trail

CECIL

74

Storage Bins

BM 545

BM 586

Well

Spatial\MXD\2010_04_POD\24kTopo\24K Topo Maps portrait Page 5-11-10.mxd

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 57 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 57
Morrow County

13
14
15
16
17
18
Ella Rd
T2N R23E
T1N R23E
T2N R24E
T1N R24E
MORROW COUNTY
BOARDMAN CONSERVATION AREA
Boardman Bombing Range Approach Zone
Immigrant Rd
Baker Rd
Dave Reitmann Rd
Fourmile
Canyon
Sixmile
ELLA
Oregon National Historic Trail

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 58 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY
MAP 58
Morrow County

18
19
20
21
22
23
BOARDMAN CONSERVATION AREA
MORROW COUNTY
Boardman Bombing Range
Well
Baker Rd
T1N R24E
T2N R24E
Ione-Boardman Rd
Proudfoot Rd
Juniper Rd
Wells Springs Rd
Ione Rd
Oregon National Historic Trail
T2N R25E
T1N R25E
R 24 E
R 25 E
Storage Bin
Well Spring
FLOOD WELL ROAD

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 59 OF 68

0 2,000
Feet

- Substation
- Existing Transmission Line
- Mile Marker
- Tenth Mile Marker
- Proposed Route
- Alternative Route
- State Boundary
- County Boundary
- River/Stream
- Township/Range Boundary
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 59
Morrow County

24
25
26
27
28
29
Juniper Canyon Rd
Juniper Canyon
115kV
T1N R25E
T2N R25E
T1N R26E
T2N R26E
Boardman Bombing Range
MORROW COUNTY
Barak Martin Rd
Juniper Rd
Grieb-Wood Rd
Bombing Range Rd
Klinger-Doherty Rd
Alpine-Nelson Rd
PIPELINE
R 25 E
R 26 E

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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MAP 60 OF 68

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GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 60
Morrow County

35
34
33
32
31
30
29
T2N R27E
T1N R27E
T2N R26E
T1N-R26E
MORROW COUNTY
207
Lower Sand Hollow Rd
Alpine Rd
Alpine-Nelson Rd
Klinger-Doherty Rd
Sand Ranch Well
Alpine
Sand Hollow
PIPELINE

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 61
Morrow County

MORROW COUNTY

UMATILLA COUNTY

35

36

37

38

39

40

Campbell Rd

Co 1400 Rd

Co 1353 Rd

BigButter Creek Rd

Pine City Rd

Butter Creek

Little Butter Creek

Butter Creek

207

PINE CITY

T2N R27E

T1N R27E

T2N R28E

T1N R28E

MORROW CO
UMATILLA CO

UMATILLA CO
MORROW CO

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DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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MAP 62 OF 68

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GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 62
Morrow County/Umatilla County

T2N R27E

UMATILLA COUNTY

T1N R27E

41

42

43

MORROW COUNTY

44

T1N R28E

T2N R28E

45

46

Co 1351 Rd

Co 1349 Rd

Big Butter Creek Rd

Butter Creek

Canyon

Hollow

Mule

Service

Spring Station

Butter

DETAILED ROUTE MAP

1:24K TOPOGRAPHIC MAP

Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

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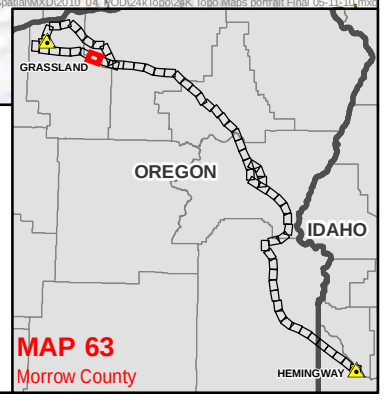

MAP 63
Morrow County

MORROW COUNTY

UMATILLA COUNTY

T1N R28E

T1N R29E

Big Butter Creek Rd

Natl Forest Develop Road 768 Rd

Natl Forest Develop Road 825 Rd

Co 1400 Rd

Butter Creek

Slusher

Canyon

Gulch

Spikes

46

47

48

49

50

51

55

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 64 OF 68

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- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 64
Morrow County/Umatilla County

51
52
55
56
57
58
59
60
61
UMATILLA COUNTY
T1N R29E
T1S R29E
T1S R30E
T1N R30E
R29 E
R30 E
Co 1363 Rd
Co 1394 Rd
Spikes Gulch
Slusher Canyon
Canyon
Slusher
BASE LINE

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Bombing Range South Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 65 OF 68

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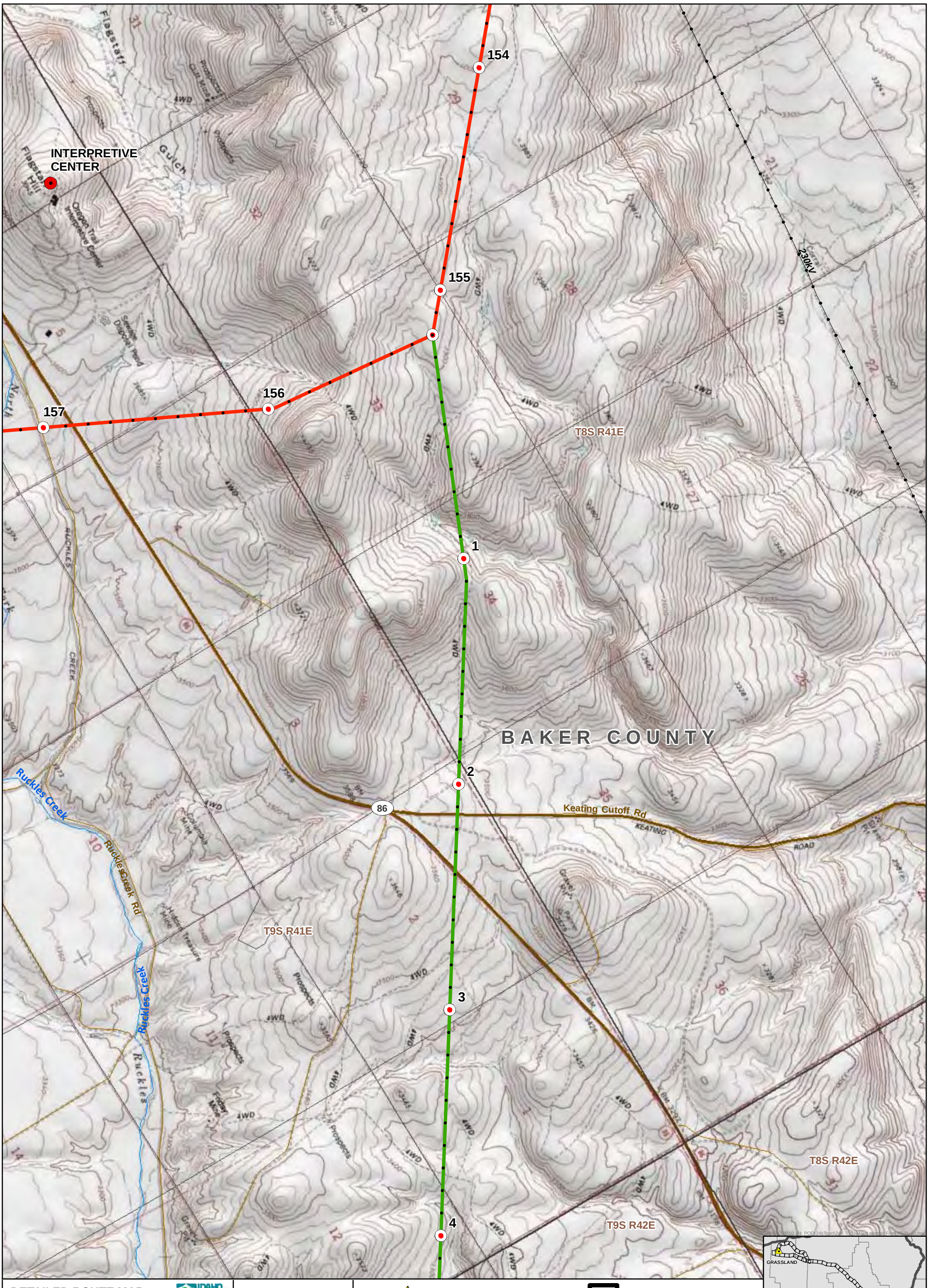
- Section Line
- County Road

GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 65
Umatilla County



DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Virtue Flat Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 66 OF 68

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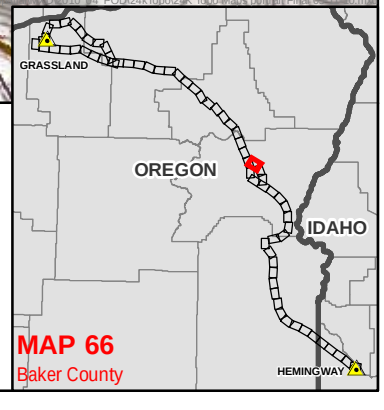

MAP 66
Baker County

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Virtue Flat Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 67 OF 68

0 2,000
Feet

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- County Road

MAP 67
Baker County

8
9
10
11
12
13
169
170
171
T9S R41E
T9S R42E
T10S R41E
T10S R42E
BAKER COUNTY
PLEASANT VALLEY
Boulder Creek
First Creek
Second Creek
Pritchard Creek
Straw Ranch Creek
Low Creek
Hixon Rd
Oregon National Historic Trail
Old US Hwy 30
Alder Creek
138kV
69kV
Prospects
Spring
Mine
Gravel Pit
Corral

DETAILED ROUTE MAP
1:24K TOPOGRAPHIC MAP
Virtue Flat Alternative

BOARDMAN TO HEMINGWAY 500kV
TRANSMISSION LINE PROJECT
OREGON-IDAHO

AUGUST 2010

APPENDIX E
MAP 68 OF 68

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GRASSLAND
OREGON
IDAHO
HEMINGWAY

MAP 68
Baker County