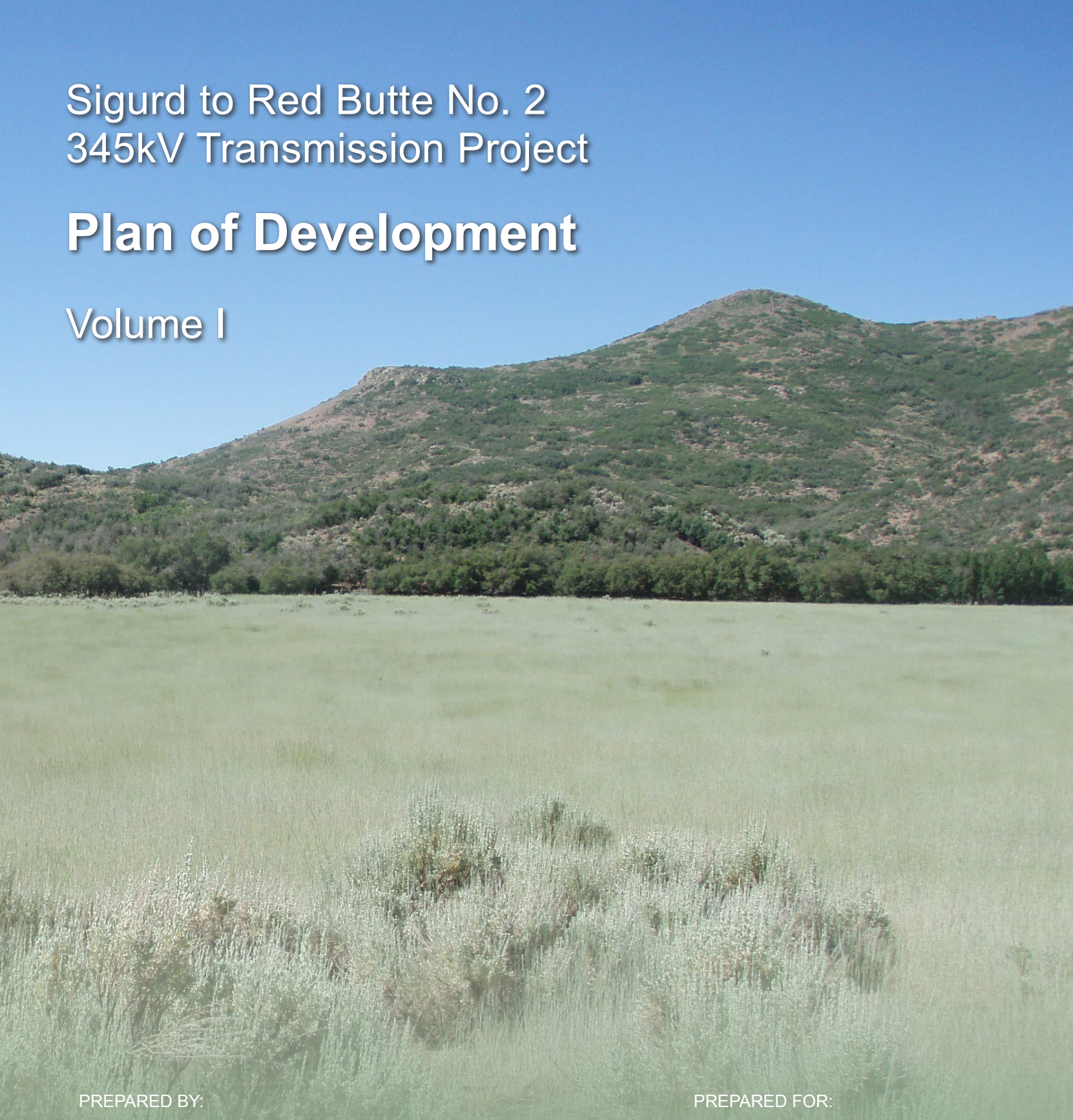
Sigurd to Red Butte No. 2 345kV Transmission Project

Plan of Development

Volume I



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Color Country District

FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Dixie National Forest
Fishlake National Forest

DECEMBER 2012

SIGURD TO RED BUTTE NO. 2
345KV TRANSMISSION PROJECT

PLAN OF DEVELOPMENT
VOLUME I

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Prepared for:
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and

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ACRONYMS

AC	Alternating current
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
AWMP	Adaptive Wildlife Management Plan
BLA	Blasting measures
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CIC	Compliance Inspection Contractor
CWA	Clean Water Act
DEQ	Department of Environmental Quality
ECMP	Environmental Compliance Management Plan
EDA	Erosion/dust/air protection measures
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FERC	Federal Energy and Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FMO	Fire Management Officer
FP	Fire protection measures
FSM	Forest Service Manual
FWS	United States Fish and Wildlife Service
GAP	Southwest Regional Gap Analysis Project
GBRI	Great Basin Restoration Initiative
GIS	Geographic Information System
HM	Hazardous materials measures
HMA	Herd Management Area
IRA	Inventoried roadless areas
kV	Kilovolt
LEI	Lead Environmental Inspector
MBTA	Migratory Bird Treaty Act
MSDS	Material Safety Data Sheets
MW	Megawatts
NACE	National Association of Corrosion Engineers
NEPA	National Environmental Policy Act
NERC	National Electric Reliability Council

NESC	National Electric Safety Code
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NRHP	National Register of Historic Places
NTP	Notice to Proceed
NW	Noxious weeds measures
NWP	Nationwide Permit
OHV	Off-highway Vehicle
OPGW	Optical Ground Wire
PA	Paleontology Actions
PFYC	Potential Fossil Yield Classification
P.L.	Public Law
POD	Plan of Development
Project	Sigurd to Red Butte No. 2 – 345-kilvolt Transmission Project
Proponent	PacifiCorp, doing business as Rocky Mountain Power
PRTP	Paleontological Resources Treatment Plan
PWC	Plant and wildlife species conservation measures
RL	Reclamation Levels
RMPs	Resource Management Plan
ROD	Record of Decision
SF_6	Sulfur hexafluoride
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
SPCC	Spill Prevention, Containment, and Countermeasures
SSURGO	Soil Survey Geographic database
SW	Stormwater measures
SWPPP	Stormwater Pollution Prevention Plan
SWWS	Streams, wetlands, wells, and springs measures
TR	Transportation-related measures
UAC	Utah Administrative Code
UC	Utah Code
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UPDES	Utah Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDI	United States Department of the Interior
USDOT	United States Department of Transportation
USFS	United States Forest Service
WECC	Western Electricity Coordinating Council
WSO	Work Stoppage Order

SECTION 1 – INTRODUCTION

1.1 Introduction

Section 1 of this Plan of Development (POD) provides an overview of the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) and explains the purpose of the POD, including the relationship of the POD to other documents prepared for the Project, and other relevant permits and approvals. Also, in this section, the organization of the POD is presented and each section is briefly outlined.

PacifiCorp, doing business as Rocky Mountain Power (Proponent), submitted an Application for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) for a right-of-way grant on lands administered by the BLM and a special-use authorization on lands administered by the USFS for construction, operation, and maintenance of a transmission line in central and southwestern Utah. The original application was submitted to the agencies on December 19, 2008, and revised on September 11, 2009, and July 5, 2011, to reflect changes in the Project description. The BLM and USFS are considering the application in accordance with Title 43 Code of Federal Regulations (CFR) 2800, *Rights-of-way under the Federal Land Management Policy Act (FLPMA)*, and the Energy Policy Act of 2005, and will decide whether to issue a right-of-way grant and special-use authorization, respectively, and, if so, under what terms and conditions. In doing so, the BLM is also coordinating the preparation of the POD to ensure compliance with applicable environmental laws in association with other relevant agencies.

The Proponent's original application filing included a preliminary POD. The POD described herein provides detailed information on the proposed Project facilities, procedures, and mitigation measures the Proponent will implement during construction, operation, and maintenance of the Project. Once approved, the POD and supporting plans will be incorporated into the Record of Decision (ROD) and BLM right-of-way grant and USFS special-use authorization.

1.2 Project Overview

The Proponent proposes to construct, operate, and maintain 169.6 miles of single-circuit alternating current (AC) 345kV transmission line from the existing Sigurd Substation in Sevier County, Utah, located approximately 6 miles northeast of the community of Richfield, Utah, to the existing Red Butte Substation, located west of State Route 18 and the community of Central in Washington County, Utah (Figure 1-1). The Project will require a right-of-way width of 150 feet.

The transmission line facilities will primarily consist of single-circuit steel-pole H-frame structures at tangent locations. Some H-frame or angle structures may include downguys for additional stability. Structures located at points where the line changes direction abruptly or terminates (angles/deadends) typically would be lattice steel or three-pole structures. Both the tangent and angle deadend structures typically would be between 80 to 140 feet above the ground. Spacing between structures typically would be between 800 and 1,200 feet apart. Permanent ancillary facilities (i.e., access roads, fiber optic – regeneration stations) will be located within or adjacent to the right-of-way to the extent possible. Temporary work areas to be used during the construction phase of the Project also will be located within the right-of-way to the extent possible, but may extend beyond the limits of the right-of-way in some

cases. Construction of the Project will take between 18 and 24 months to complete and will consist of the following permanent facilities:

- A single-circuit 345kV overhead transmission line (including structures, shield wires, conductors, and insulators) between the Sigurd Substation and Red Butte Substation
- Communication regeneration station associated with the transmission line
- Access roads to the 345kV transmission line structures where there is no existing access
- New substation equipment at terminus points to interconnect the Project with the existing Sigurd and Red Butte substations

Of the 169.6-mile-long transmission line, 112.4 miles (or 66.4 percent) will be located on federal lands. The remaining 57.2 miles will be located on privately owned and state lands. Table 1-1 describes land ownership by segment of the Project.

TABLE 1-1
LAND OWNERSHIP/JURISDICTION – MILES CROSSED BY THE SELECTED ROUTE

Route	Bureau of Land Management	U.S. Forest Service	State	Private
Sigurd to Red Butte	69.2	43.2	4.7	52.5

1.3 Purpose of the Plan of Development

This POD outlines the stipulations and mitigation measures identified in the Environmental Impact Statement (EIS) that must be followed during construction, operation, and maintenance of the Project. The BLM is the lead federal agency for this Project. Environmental inspectors and monitors will be employed during construction, as required, and stipulated by the POD and by the BLM and USFS. The POD also is intended to be used Project wide as (1) a summary of Project environmental requirements and protection measures, and (2) a description of the processes and procedures that will be used to ensure compliance (including the requirements of the U.S. Fish and Wildlife Service [FWS]; BLM; USFS; and other federal, state, and/or local agencies) as appropriate. On federal lands administered by BLM and USFS, the POD is an enforceable stipulation of the BLM right-of-way grant and USFS special-use authorization and pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. While BLM and USFS do not have the authority to enforce mitigation measures on state and private land, BLM and USFS expect selective mitigation measures and other specific stipulations and methods identified in the POD will be implemented over the entire length of the Project, regardless of jurisdiction. As such, all stipulations and mitigation measures identified as applicable in any of the POD volumes should be adhered to for the life of the BLM right-of-way grant and USFS special-use authorization.

1.4 Organization of the Plan of Development

The POD is organized into two major volumes. Volume I contains Sections 1 through 6 and the appendices. Volume II includes engineering, mitigation, and environmental mapping, which support information presented in Volume I. Following is an overview of the information contained in these two volumes.

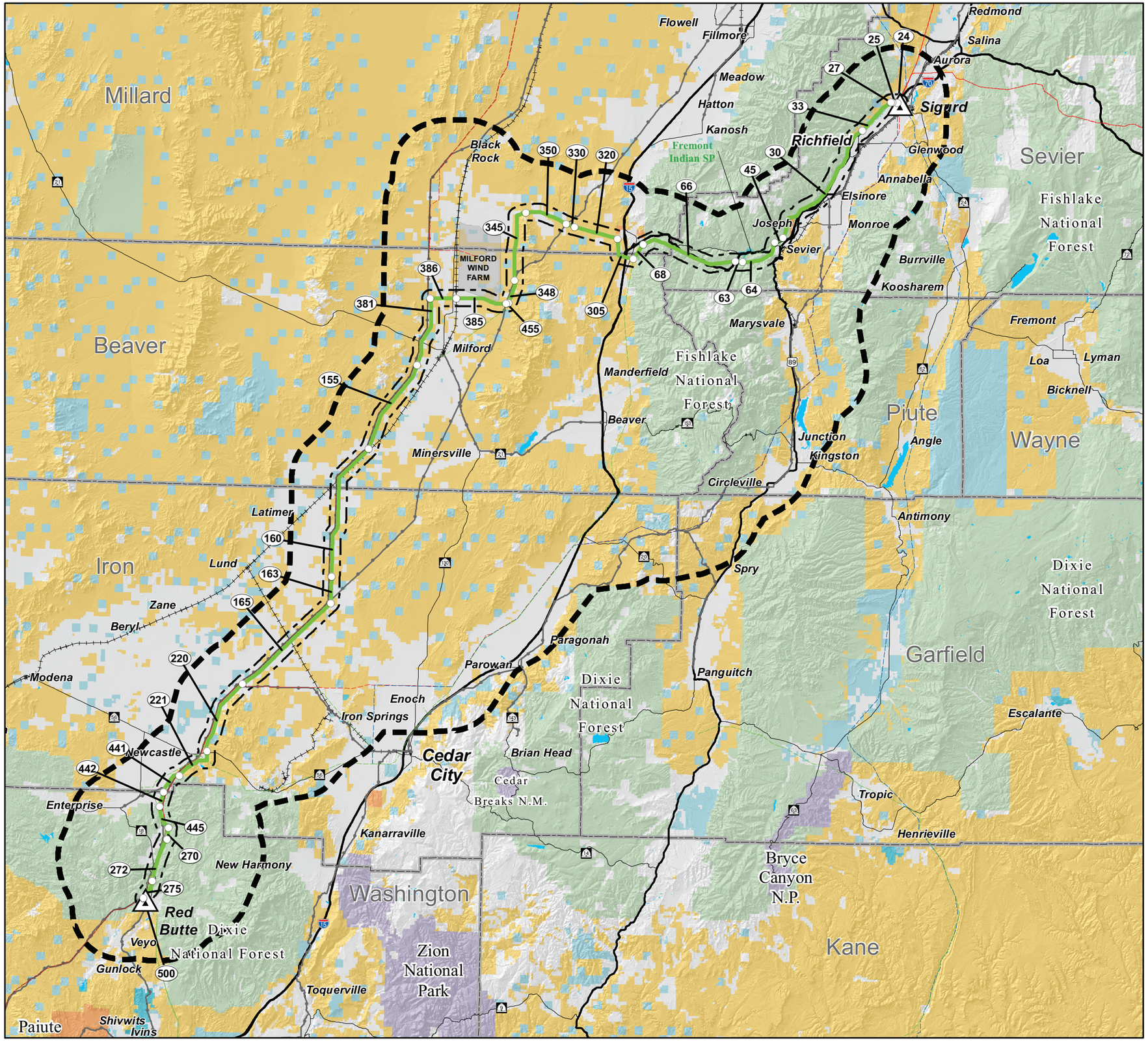

FIGURE 1-1
PROJECT STUDY AREA

LAND OWNERSHIP

- Bureau of Land Management
- Indian Reservation
- National Park Service
- Private Land
- State of Utah Trust Lands
- State Park
- U.S. Forest Service

PROJECT FEATURES

- Transmission Centerline
- Existing Substation
- Link Node
- Project Study Area
- Study Corridor

GENERAL REFERENCE FEATURES

- 500kV +/- Direct Current Transmission Line
- 345kV Transmission Line
- 230 to 287kV Transmission Line
- 115kV to 161kV Transmission Line
- Pipeline
- County Boundary
- Interstate & US Highway
- State Highway
- Railroad
- Lake, Pond, or Reservoir

SOURCES:

Transportation: Streetmap 50K to 250K, 2008
Land Jurisdiction: BLM State Office Utah, 2008
POWERmap, powermap.platts.com
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NOTES:

Substation locations are schematic and do not necessarily represent precise locations.

0 6 12 24 Miles

SIGURD TO RED BUTTE NO. 2 345kV TRANSMISSION PROJECT

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1.4.1 Volume I

Volume I of the POD is intended to provide the reader with a general overview (executive summary) of the Project and key elements of the POD (Sections 1 through 6) and detailed information regarding the required mitigation measures, protocols, and procedures for the construction, operation, and maintenance of the transmission line and ancillary facilities (Appendices). While Sections 1 through 6 provide general information, the Appendices, along with the mapping materials in Volume II, are more detailed and have been designed to serve as stand-alone documents that may be readily updated and refined. Following is an outline summary of the information and materials presented in Sections 1 through 6, the appendices, and Volume II of the POD.

1.4.1.1 Sections 1 through 6

Sections 1 through 6 include the following information:

Section 1 – Introduction**:** Section 1 introduces the Project; discusses the purpose and organization of the POD; explains the POD's relationship to other documents; and lists required authorizations, permits, and approvals required for construction

Section 2 – Roles and Responsibilities**:** Section 2 introduces the roles and responsibilities of the Project team and discusses Project communications and notification procedures.

Section 3 – Project Description**:** Section 3 describes the Project facilities (structures, foundations, conductors, access roads, substations, etc.), land requirements, construction disturbance, and rights-of-way.

Section 4 – Operation and Maintenance**:** Section 4 provides information related to the maintenance and operation of the Project once construction is complete, including public and environmental protection and vegetation management.

Section 5 – Environmental Mitigation Measures**:** Section 5 includes a brief overview and introduction of the key environmental concerns associated with the construction of the Project and relevant mitigation measures to be applied to avoid or minimize potential effects.

Section 6 – Literature Cited**:** Section 6 provides the references and literature cited in preparing the POD.

1.4.1.2 Appendices

The appendices are organized into four sections (A through D) as presented below:

Appendix A: Construction Considerations – This appendix provides detailed information about the specifics of construction, including the following:

A1 – Flagging, Fencing, and Signage Plan
A2 – Geotechnical Investigation
A3 – Project Construction
A4 – Special Construction Techniques
A5 – Construction Workforce
A6 – Environmental Compliance Management Plan (ECMP)

Appendix B: Environmental Protection Plans – This appendix includes the following:

B1 – Traffic and Transportation Management Plan
B2 – Stormwater Pollution Prevention Plan (SWPPP) Framework
B3 – Spill Prevention, Containment, and Countermeasures (SPCC) Plan Framework
B4 – Historic Properties Treatment Plan (HPTP)
B5 – Blasting Plan Framework
B6 – Plant and Wildlife Species Conservation Measures Plan
B7 – Erosion, Dust Control, and Air Quality Plan
B8 – Hazardous Materials Management Plan Framework
B9 – Emergency Preparedness and Response Plan Framework
B10 – Noxious Weed Management Plan
B11 – Fire Protection Plan
B12 – Stream, Wetland, Well, and Spring Protection Plan
B13 – Paleontological Resources Treatment Plan (PRTP)
B14 – Reclamation, Revegetation, and Monitoring Framework Plan

Appendix C: PacifiCorp's Transmission Construction and Vegetation Management Standards – This appendix includes the following:

C1 – PacifiCorp's Transmission Construction Standards
C2 – PacifiCorp's Transmission and Distribution Vegetation Management Program Specification Manual

Appendix D: Land Description of Selected Route Across Federal Land – This appendix provides a legal description of the Project facilities across federal land.

1.4.2 Volume II

Three map sets are included in Volume II of this POD. These maps contain regional to detailed information, including site-specific instructions to guide the construction of the transmission line and associated facilities as described below.

1.4.2.1 Map Set 1 – 1:24,000 Scale Topographic Project Maps

The maps (U.S. Geological Survey 7.5-minute topographic quadrangles, scale of 1:24,000) in Map Set 1 include panels that illustrate the location of facilities at a large scale for the entire alignment, including the location of tower sites, pulling and tensioning sites, multi-use construction yards, and access routes (including all approved potential ingress and egress points to the right-of-way). This information is intended for use by the BLM and USFS, Compliance Inspection Contractor (CIC), the Proponent, and Construction Contractor(s).

1.4.2.2 Map Set 2 – 1:400 Scale Aerial Project Maps

The maps (aerial maps, scale of 1:400 [1 inch = 33 feet]) in Map Set 2 include panels that show (1) the right-of-way in detail, including the specific location of facilities (e.g., structures, pulling and tensioning sites, and access roads), and sensitive environmental resource areas in the immediate vicinity and (2) key mitigation measures to be implemented during the design, construction, and operation of the transmission

line. Each of these detailed panel maps is numbered and indexed on the 1:24,000-scale maps for Map Set 1.

1.4.2.3 Map Set 3 – 1:400 Scale Aerial Road Maps

Map Set 3 includes aerial panels (aerial maps, scale of 1:400 [1 inch = 33 feet]) that depict temporary and permanent access roads along the Project alignment from the Sigurd Substation to the Red Butte Substation.

1.5 Relationship with Other Environmental Documents

This POD includes measures for avoidance, minimization, and mitigation of environmental impacts resulting from the implementation of this Project as identified in the EIS and approved in the BLM and USFS RODs. This POD incorporates the various regulatory approvals, permits, and other authorizations that contain environmental requirements including those measures stipulated in Resource Management Plans (RMP) for the BLM Cedar City, St. George, Fillmore, and Richfield Field Offices and Land and Resource Management Plans for the Fishlake and Dixie National Forests. The relevant approved and proposed management plans (and plan amendments) include the following:

- Cedar/Beaver/Garfield/Antimony Resource Area Resource Management Plan, as amended (BLM 1986)—BLM Cedar City Field Office
- Warm Springs Resource Area: The Resource Management Plan, ROD Rangeland Program Summary (BLM 1987)—BLM Fillmore Field Office
- Pinyon Management Framework Plan (BLM 1983)—BLM Cedar City Field Office
- Richfield Field Office ROD and Approved Resource Management Plan (RFORMP) (BLM 2008a)—BLM Richfield Field Office
- St. George Field Office ROD and Resource Management Plan (SGFORMP) (BLM 1999)
- Dixie National Forest Land and Resource Management Plan (USFS 1986a)
- Fishlake National Forest Land and Resource Management Plan (USFS 1986b)

The POD has been developed for the selected route and will be an enforceable stipulation of the ROD, the BLM right-of-way grant, and the USFS special-use permit. In addition to the mitigation measures, stipulations, and procedural methods included in the POD, the POD will identify and depict site-specific construction actions and Project facilities, including structure locations, access roads, temporary work areas, fiber optic regeneration stations, construction yards, and batch plants.

Additions and/or amendments to the appendices and Volume II – POD Map Sets 1, 2, and 3 are anticipated as a part of detailed design, preconstruction resource surveys (refer to Appendix A3 – Project Construction), and/or construction. These additions or amendments will typically be initiated by Construction Contractor(s) and reviewed and approved by the Proponent, BLM, and USFS prior to implementation as needed. After commencement of construction, variances or deviations will be reviewed and approved by the BLM, USFS, and/or CIC pursuant to the procedures in Appendix A6 – Environmental Compliance Management Plan of this POD.

1.6 Federal, State, and Local Permits

Table 1-2 presents a list of the major federal, state, and local permits and approvals that could be required for the duration of the Project. Other Construction Contractor(s)-related permits (i.e., SWPPP, dust permits, etc.), will be addressed prior to construction by the Construction Contractor(s).

TABLE 1-2
SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Federal				
Right-of-way across land under federal management	Preconstruction surveys; construction, operation, maintenance, and abandonment	BLM	Right-of-way grant and temporary use permit	FLPMA of 1976 (Public Law [P.L.] 94-579); 43 United States Code (U.S.C.) 1761-1771; 43 CFR 2800
	Preconstruction surveys; construction, operation, maintenance, and termination	USFS	Special-use authorization	FLPMA, as amended
	Use of National Forest System roads	USFS	Road use permit	National Forest Roads and Trails Act, Section 4 and 6 ; 16 U.S.C. 535 and 537
	"Conversion of use" for a use other than recreation on lands reserved with Land and Water Conservation Fund Act monies	National Park Service	Review of transmission line corridor to identify conflicts with recreational area	Land and Water Conservation Fund Act, P.L. 88-578, Section 6(f)(3)
	Construction, operation, maintenance, and abandonment of transmission line across, or within highway rights-of-way	Federal Highway Administration	Permits to cross Federal Aid Highway	Department of Transportation Act (23 CFR 1.23 and 1.27; 23 U.S.C. 109 and 315); 23 CFR 645; 23 CFR 771
Biological resources	Grant right-of-way by federal land-management agency	FWS	Endangered Species Act compliance by federal land-management agency	Endangered Species Act, as amended (16 U.S.C. 1531 et seq.)
	Protection of migratory birds	FWS	Compliance	Migratory Bird Treaty Act (16 U.S.C. 703-712); 50 CFR 1

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
Biological resources	Protection of bald and golden eagles	FWS	Compliance	Bald and Golden Eagle Protection Act of 1972 (16 U.S.C. 668); including the Final Eagle Permit Rule, or implement regulations of September 11, 2009, (50 CFR 13 and 22)
	Protection of special status species	BLM and USFS	Compliance	BLM Policy Manual 6840; Forest Service Manual 2670
Ground disturbance and water quality degradation	Construction sites with greater than 1 acre of land disturbed	U.S. Environmental Protection Agency (EPA) (In Utah, Administered by Utah Department of Environmental Quality [DEQ])	Section 402 National Pollutant Discharge Elimination System General Permit for Storm Water Discharges from Construction Activities (in Utah, Utah Pollutant Discharge Elimination System)	Clean Water Act (CWA) (33 U.S.C. 1342)
	Construction across water resources	U.S. Army Corps of Engineers (USACE)	General easement	10 U.S.C. 2668 to 2669
	Crossing 100-year floodplain, streams, and rivers	USACE	Floodplain use permits	40 U.S.C. 961
	Construction in, or modification of, floodplains	Federal lead agency	Compliance	42 U.S.C. 4321 Executive Order No. 11988 Floodplains
	Construction in, or modification of, wetlands	Federal lead agency	Compliance	42 U.S.C. 4321 Executive Order No. 11990 Wetlands
	Potential discharge into waters of the state (including wetlands and washes)	USACE (In Utah, Administered by Utah DEQ)	Section 401 permit	CWA (33 U.S.C. 1344)
	Discharge of dredge or fill material into waters of the United States	USACE	404 Permit (individual or nationwide)	CWA (33 U.S.C. 1344)
	Placement of structures and construction work in navigable waters of the United States	USACE	Section 10 permit	Rivers and Harbors Act of 1899 (33 U.S.C. 403)

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
Ground disturbance and water quality degradation	Protection of all rivers included in the National Wild and Scenic Rivers Systems	Affected land-management agencies	Review by permitting agencies	Wild and Scenic Rivers Act of 1968 (P.L. 90-542); 16 U.S.C. 1271-1287
	Potential pollutant discharge during construction, operation, and maintenance	EPA	Spill Prevention, Containment, and Countermeasures Plan for substations	Oil Pollution Act of 1990 (40 CFR 112)
Cultural resources	Disturbance of historic properties	Federal lead agency, State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation	Section 106 consultation	National Historic Preservation Act (NHPA) (16 U.S.C. 470) (36 CFR 800)
	Excavation of archaeological resources	Federal land-management agency	Permits to excavate	Archaeological Resources Protection Act (16 U.S.C. 470aa to 470ee)
	Potential conflicts with freedom to practice traditional American Indian religions	Federal lead agency, federal land-management agency	Consultation with affected American Indians	American Indian Religious Freedom Act (42 U.S.C. 1996)
	Disturbance of graves, associated funerary objects, sacred objects, and items of cultural patrimony	Federal land-management agency	Consultation with affected Native American groups regarding treatment of remains and objects	Native American Graves Protection and Repartition Act (25 U.S.C. 3001-3002)
	Investigation of cultural resources	Affected land-management agency	Permit for study of historical and archaeological resources	American Antiquities Act of 1906 (16 U.S.C. 432-433)
	Investigation of cultural resources	Affected land-management agency	Permits to excavate and remove archaeological resources on federal land; American Indian tribes with interests in resources must be consulted prior to issuance of permits	Archaeological Resources Protection Act (16 U.S.C. 470aa to 470ee) (43 CFR 7)

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
Cultural resources	Protection of segments, sites, and features related to national trails	Affected land-management agency	National Trails System Act compliance	National Trails System Act of 1968 (P.L. 90-543); 16 U.S.C. 1241 to 1249
Paleontological resources	Ground disturbance on federal land or federal aid project	BLM and USFS	Compliance with BLM and USFS mitigation and planning standards for paleontological resources of public lands	FLPMA (43 U.S.C. 1701-1771); American Antiquities Act of 1906 (16 U.S.C. 431-433)
	Collection of paleontological resources from federal land	BLM and USFS	Permit to collect paleontological resources from federal land	Omnibus Public Lands Management Act – Paleontological Resources Preservation. P.L. 111-11, Title VI, Subtitle D, Sections 6301-6312, 123 Stat. 1172, 16 U.S.C. 470aaa.
Air traffic	Location of towers and spans in relation to airport facilities and airspace	Federal Aviation Administration (FAA)	A "No-hazard Declaration" required if structure is more than 200 feet in height	FAA Act of 1958 (P.L. 85-726); 14 CFR 77
			Section 1101 Air Space Permit for air space construction clearance	FAA Act of 1958 (P.L. 85-726) (14 CFR 77)
Rate regulation	Sales for resale and transmission services	Federal Energy Regulatory Commission (FERC)	Federal Power Act compliance by power seller	Federal Power Act of 1935 (16 U.S.C. 792)
Pesticide use	Application of chemical herbicide	BLM	Pesticide Use Permit	BLM Management Policy (Final Vegetation Treatment using Herbicides Programmatic EIS [BLM 2007])
	Application of chemical herbicide	USFS	Pesticide Use Permit	USFS Manual 2150

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
State of Utah				
Permitting process	Proposed transmission line facility	Resource Development Coordinating Committee	Expedites review of permitting process for all state agencies	Utah Administrative Code (UAC) Sections 63J-4-501 and 63J-4-504
Right-of-way encroachment	Encroachment on, through, or over state lands	Division of Forestry, Fire and State Lands and State Institutional Trust Lands Administration (SITLA)	Application approval	UAC Title 65A
Project need	Project construction	Public Service Commission	Certificate of Public Convenience and Necessity	UAC Sections 54-4-25 and R 746-401
Ground surface disturbance	Project construction	Public Service Commission	Certificate of Public Convenience and Necessity; approve construction contracts	UAC 54-4-25, R 746-401
	Crossing state lands	Division of Forestry, Fire, and State Lands and SITLA	Easement onto state lands; bond may be required	UAC Sections 65A-7-8 and 652-40
Cultural, paleontological, and biological resources	Disturbance of historical properties	State Historic Preservation Office, Utah Division of State History	State historic preservation officer will comment on state-funded undertakings	UAC Section 9-8-404
	Discovery of graves, associated funerary objects, sacred objects, and items of cultural patrimony on nonfederal-, nonstate-owned land	Antiquities Section, Utah Division of State History	Consultation with state agency regarding treatment of human remains and funerary objects	UAC Section 9-8-309
Paleontological resources	Excavation and collection of paleontological resources from state lands	Utah Geological Survey, Utah Museum of Natural History, SITLA	Permit to excavate and collect paleontological resources from state land	U.S.C. 63-73-11 through 63-73-19
Historical and cultural review	Impact on historical sites	Division of State History	Notification of planning stage and before construction	UAC Section 9-8-306

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
Archaeological resources	Survey or excavation of archaeological resources on lands owned or controlled by the state	Utah Governor's Public Land Policy Coordination Office	Permit to survey or excavate	UAC Sections 9-8-305 and R 694-1
Encroachment on state park lands	Utility easement on state park lands	Division of Parks and Recreation	Agreement for granting and maintenance of easements or rights-of-way across park lands	UAC Section 63-11-10.3
Air quality	Construction and operation	Air Quality Board	Notice of Construction	UAC Section 19-2-108
Ground disturbance and water quality degradation	Construction and operation	Utah DEQ	Discharge permit, spills (Utah Pollutant Discharge Elimination System)	UAC Section 19-5-101 et. seq.
	Potential discharge into waters of the state (including wetlands and washes)	Utah DEQ	Section 401 permit	UAC R-317
Wildlife	Modification of habitat	Utah Division of Wildlife Resources (UDWR)	Easement for use of state wildlife resource lands	UAC Title 23
Local				
Land Use	Construction and operation of transmission lines	Beaver County	Conditional Use Permit	County Rules and Regulations
	Construction and operation of transmission lines	Elsinore	Conditional Use Permit	Town Rules and Regulations
	Construction and operation of transmission lines	Enterprise	Conditional Use Permit	City Rules and Regulations
	Construction and operation of transmission lines	Iron County	Conditional Use Permit	County Rules and Regulations
	Construction and operation of transmission lines	Milford	Conditional Use Permit	City Rules and Regulations
	Construction and operation of transmission lines	Millard County	Condition Use Permit, General Plan Amendment	County Rules and Regulations

TABLE 1-2 SUMMARY OF POTENTIAL MAJOR FEDERAL, STATE, AND LOCAL PERMITS OR LICENSES REQUIRED, AND OTHER ENVIRONMENTAL REVIEW REQUIREMENTS FOR TRANSMISSION LINE CONSTRUCTION AND OPERATION				
Issue	**Action Requiring Permit, Approval, or Review**	**Agency**	**Permit, License, Compliance, or Review**	**Relevant Laws and Regulations**
Land Use	Construction and operation of transmission lines	Minersville	Conditional Use Permit	City Rules and Regulations
	Construction and operation of transmission lines	Richfield City	Conditional Use Permit	City Rules and Regulations
	Construction and operation of transmission lines	Sevier County	Conditional Use Permit	County Rules and Regulations
	Construction and operation of transmission lines	Washington County	Conditional Use Permit	County Rules and Regulations

SECTION 2 – ROLES AND RESPONSIBILITIES

2.1 Roles and Responsibilities

The various parties involved with the construction, operation, and maintenance of the Project include the Proponent, BLM, USFS, BLM's third-party CIC, and all of the Proponent's Construction Contractor(s). Other subcontractors may be engaged, as needed.

2.1.1 The Proponent

The Proponent is responsible for the administration of the right-of-way and coordination between the Project engineer and Construction Contractor(s). The Proponent and their Construction Contractor(s) will be responsible for all activities associated with the construction, operation, and maintenance of the transmission line and ancillary facilities in a manner that complies with the conditions outlined in the BLM right-of-way grant, the USFS special-use authorization, and other required permits listed in Table 1-2.

The Proponent will be the ultimate authority for their contractors; however, for execution purposes of this document, it will refer specifically to the Construction Contractor(s) when needed to define their activities.

To help ensure construction activities are conducted in a manner that complies with all federal, state, and local regulations, the Construction Contractor(s) will contract a team of environmental inspectors (e.g., biological, cultural, and paleontological resources and dust [where applicable]) to work jointly and cooperatively with the CIC (Section 2.1.2.1 – Compliance Inspection Contractor and Appendix A6 – Environmental Compliance Management Plan). Each of the Construction Contractor's environmental inspectors will complete daily inspection reports and provide copies to the CIC as described in Appendix A6 – Environmental Compliance Management Plan.

2.1.2 Bureau of Land Management and U.S. Forest Service

There are 112.4 miles of the transmission line route that cross federal land administered by either the BLM (69.2 miles) and/or the USFS (43.2 miles). Each agency has designated an Authorized Officer who will provide oversight for the Project on the lands they administer, respectively. The Authorized Officer for the BLM, the lead agency, is the Color Country District Manager. The Authorized Officer for the USFS is the Forest Supervisor of the Fishlake National Forest. Each of the Authorized Officers may designate certain responsibilities to their appropriate personnel, such as BLM or USFS Project Managers and Resource Specialists.

Each Authorized Officer will be responsible for administering and enforcing right-of-way grant and/or special-use authorization provisions for their respective agencies. Each Authorized Officer also will ensure stipulations and mitigation measures included in the POD are adhered to during Project construction, operation, and maintenance. The Authorized Officer also will be responsible for written stop- and resume-work orders, as applicable, and resolving any conflicts that arise relating to the Project on the lands they administer. Compliance will be monitored by the appropriate designees of the Authorized Officers and resource specialists (as needed), for their respective lands, in conjunction with the CIC. The process by which the BLM, USFS, and Proponent's Construction Contractor(s) conduct

environmental monitoring, compliance, and reporting is outlined in Appendix A6 – Environmental Compliance Management Plan of this POD.

Although the BLM and USFS do not have authority to enforce all mitigation measures contained in the POD on state and private lands, the agencies expect that the provisions in the POD will be applied to state and private lands, unless otherwise indicated by the state and private landowners and documentation provided to the CIC. The BLM and USFS have an obligation to enforce the requirements of the NHPA and Endangered Species Act to protect historically significant sites and threatened and endangered species, respectively, regardless of land ownership.

2.1.2.1 Compliance Inspection Contractor

The CIC will represent the BLM and USFS during the construction and reclamation phases of the Project to ensure (1) compliance with the BLM right-of-way grant and USFS special-use authorization and (2) environmental impacts associated with Project do not exceed estimates disclosed in the EIS and approved by the BLM and USFS in their RODs.

The CIC shall work under the direct supervision and control of the BLM, the lead federal agency, specifically the BLM Authorized Officer or his/her designated representative. The CIC shall not take any direction with respect to the manner of conducting monitoring from the Proponent or its Construction Contractor(s). The CIC's primary role is to observe work activities; verify, document, and monitor compliance; and bring noncompliant situations to the attention of the appropriate party and offer recommendations on how to prevent non-compliance prior to commencement of work. The responsibilities of the CIC are outlined in detail in Appendix A6 – Environmental Compliance Management Plan (Section A6.3.2.3 – Compliance Inspection Contractor Project Manager).

However, the CIC and the Proponent's Project Manager or designated representative, shall work together to support the Project's timely and effective construction. All efforts shall be made to coordinate closely with the Proponent's Project Manager and its Construction Contractor(s) to report and document non-compliance concerns not otherwise identified by these parties, giving the Proponent's Project Manager, Construction Contractor(s), and CIC the opportunity to resolve the concerns. Through this collaboration, every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not otherwise, at any time or way, authorized to direct work undertaken by the Construction Contractor(s), with the exception of stop work orders. The role of the CIC is not to direct the work of either the Proponent or the Construction Contractor(s).

Prior to construction, the CIC will develop a Project Compliance Plan. This plan will describe how the Proponent will uphold, document, and manage environmental compliance with the terms specified in the BLM right-of-way grant and USFS special-use authorization; the POD; landowner agreements; and all federal, state, and local permits. The Project Compliance Plan will include, but is not limited to, the following elements:

- The roles and responsibilities of participants necessary to facilitate environmental compliance with the terms and conditions of the right-of-way grant/special-use authorization and the POD in the field during construction
- A comprehensive inspection and monitoring program
- Corrective procedures in the event of noncompliance
- A standard protocol for variance requests
- A communication plan describing primary channels of routine communication between parties for Project updates and compliance related issues

- A reporting process that includes forms and reports completed on a regular basis during the course of construction
- A comprehensive Project-specific environmental compliance training program, which may include sections prepared by specific resource specialists

The CIC will report directly to the BLM, who will coordinate with other agencies with jurisdiction, where appropriate. The duties of the CIC in support of the Project will include, but are not limited to, the following:

- Preparation of a Project Compliance Plan
- Coordination of notice-to-proceed meeting(s)
- Preparation and maintenance of a Project key contacts list
- Periodic meetings with the BLM and USFS Authorized Officers and/or designated representatives
- Daily field inspection
- Coordination with biological, paleontological, cultural resource, dust control, and other environmental resource specialists/monitors
- Completion of a daily compliance inspection report and submittal of a weekly summary report to the BLM and Proponent
- Attendance at weekly construction meetings
- Review of variance requests
- Completion of an End-of-Construction Project Report
- Post-construction reclamation monitoring

The Project has the potential to affect sensitive resources, thus required stipulations and mitigation measures have been developed to minimize potential impacts to these resources. These stipulations and mitigation measures are specified in the POD. The proactive implementation of these terms and requirements will facilitate timely and efficient construction of the Project while protecting sensitive resources. The CIC shall be completely knowledgeable of the POD, its associated plans, and all environmental requirements.

2.1.3 Construction Contractor(s)

The Proponent will retain two or more construction contractors who will be responsible for the final engineering design, procurement, construction, testing, and reclamation of the Project. The Construction Contractor(s) will construct the 345kV transmission line and ancillary facilities, including construction of new or improved roads (as authorized), communication system, and temporary work areas associated with construction activities and communication facilities, and other Construction Contractor(s) will improve the substations to accommodate the transmission line. The Construction Contractor(s) also will be responsible for addressing reclamation activities, as well as addressing all environmental protection stipulations. The construction workforce may include, but is not limited to, the following:

- General Construction Contractor, specializing in transmission line construction
- Substation Construction Contractor
- Survey Crews
- Vegetation Management Crews
- Road Construction Crews
- Foundation Installation Crews
- Structure Steel Haul Crews
- Structure Assembly and Erection Crews

- Wire Installation Crews
- Clean-Up Crews
- Restoration Crews
- Quality Assurance Inspectors
- Drilling and Blasting Crews
- Environmental Inspectors
- Restoration/Reseeding Subcontractor

The Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the stipulations and mitigation measures set forth in the POD. The relationship of roles and responsibilities of the various parties involved in the construction, operation, and maintenance of the Project is summarized in Table 2-1. The selected Construction Contractor(s) will attend a preconstruction meeting with the BLM, USFS, CIC, and the Proponent following the award of the construction contract.

TABLE 2-1
RELATIONSHIP OF ROLES AND RESPONSIBILITIES OF VARIOUS PARTIES

Role	Responsibilities
BLM/USFS	Authorizing agencies: Compliance with the provisions of the right-of-way grant and special-use authorization
CIC	On-site compliance inspection and monitoring for the authorizing agencies
Proponent	The Proponent through its contractors will uphold, document, and manage environmental compliance with the terms specified in the BLM right-of-way grant and USFS special-use authorization; the POD; landowner agreements; and all federal, state, and local permits
Construction Contractor(s)	Implementation and compliance of the POD

2.1.4 Communication Procedures and Notification Protocols

Timely, clear, and effective communication between all parties mentioned above is a critical component to the success of the Project. Communication protocols related to environmental compliance monitoring, reporting requirements, and Project variance requests are described further in Appendix A6 – Environmental Compliance Management Plan. Additional details regarding emergency agency notification (e.g., in case of wildfire, unanticipated discoveries of cultural resources, hazardous material spill, etc.) are presented in the various plans included as appendices to the POD.

The CIC will develop a project contact directory that will be updated by all parties regularly to provide a convenient reference. This contact list will include the name, agency, office phone number, cell phone number, and email address of those individuals working on the Project; the contact list will be provided to the BLM and USFS and updated regularly.

The BLM right-of-way grant will include Notice(s) to Proceed (NTP). (Note: Receipt of the USFS special-use authorization will be permission for work to begin on USFS-administered land.) The NTPs will identify any special stipulations that must be met and authorized by the issuance of a work authorization by the BLM Authorized Officer. A work authorization will be issued when any special stipulation(s) included in a NTP has been satisfied. Should compliance or environmental issues or other problems be encountered during authorized activities, the CIC will notify the BLM Authorized Officer or his/her designated representative, who may amend or rescind the work authorizations previously issued.

Should an issue of compliance with the BLM right-of-way grant that is not associated with a NTP occur, the CIC will notify the BLM Authorized Officer, or their designated representatives, who may issue a stop-work order.

The Construction Contractor(s) will be responsible for maintaining a list of all emergency notification contacts and numbers (refer to Appendix B9 – Emergency Preparedness and Response Plan Framework). The Proponent will be responsible for notifying private landowners and county and city officials of upcoming construction activities. After construction, the Proponent will be responsible for maintaining the contacts list and for all notifications required during the operation and maintenance of the Project.

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SECTION 3 – PROJECT DESCRIPTION

3.1 Introduction

This section describes the Project and associated facilities, including transmission, substation, and ancillary facilities. Specifically, this section includes descriptions of the transmission route and facility design, including tower and pole structures, foundations, hardware, communication facilities, other electrical and non-electrical hardware, substation equipment, and access roads. Also included in this section is information regarding induced currents on adjacent facilities, land requirements, and construction disturbance.

3.2 Proposed Facilities

This section describes the typical characteristics of the Project facilities, including the overhead 345kV transmission line and associated facilities, substation improvements, and ancillary facilities (e.g., access roads). The typical design characteristics of the 345kV transmission line Project are summarized in Table 3-1.

The design, construction, operation, and maintenance of the Project will meet or exceed the requirements of the National Electrical Safety Code (NESC) and U.S. Department of Labor, Occupational Safety and Health Standards. PacifiCorp's standards for grounding of metal fences, metal structures, and other metal objects are included in Sections 3.2.3.4 – Grounding and 3.3 – Induced Currents on Adjacent Facilities.

TABLE 3-1
TYPICAL DESIGN CHARACTERISTICS OF THE 345KV TRANSMISSION LINE

Feature	Description
Line length (approximate miles)	160 to 170
Types of structures	Tangent, steel-pole H-frame structures; angle/deadend, four-legged, steel-lattice structures; three-pole structures (typical)
Structure height	Typically 80 to 140 feet
Span length	Typically 800 to 1,200 feet
Structures per mile	5 to 7
Right-of-way width	150 feet
Land Temporarily Disturbed	
Structure work area (tangent structure)	150 x 200 feet per structure (excluding lattice)
Structure work area (angle structures)	250 by 250 feet per structure
Structure work area (temporary guard structures)	75 by 150 feet per structure; approximately one structure per 0.7 mile
Wire-pulling sites	150 x 750 feet per 2 to 4 miles
Wire-tensioning sites	150 x 750 feet per 2 to 4 miles
Wire-splicing sites	100 x 100 feet per 2 miles
Multi-use construction yards	Five approximately 20-acre sites spaced or located approximately every 35 to 50 miles on private and/or public land (locations to be determined)
Staging areas	Five 5-acre sites on private and/or public land (locations to be determined)
Helicopter refueling sites	Two 10-acre sites[1]
Weed wash stations	1 acre

TABLE 3-1 TYPICAL DESIGN CHARACTERISTICS OF THE 345KV TRANSMISSION LINE	
Feature	**Description**
Access roads (improved existing, spur, and new)	Improved existing, spur, and new roads will have a standard 14-foot-wide travel surface, except in specific circumstances, as defined in PacifiCorp's Transmission Construction Standards (refer to Appendix C1) where, in steeper terrain, the travel surface width could be a maximum of 22 feet for radius for curves, plus disturbance for grading and drainage features (refer to Appendix B1 – Traffic and Transportation Management Plan)
Land Permanently Required[2]	
Structure foundations	Refer to Table 3-2 and Table 3-3
Communication regeneration station	100-foot x 100-foot plot with a 75-foot x 75-foot fenced area and a 12-foot x 32-foot building (one station every 55 miles); three station locations have been designated; two stations are adjacent to existing substations; the third site is undeveloped
Access Roads (improve existing, spur, and new)	Improved existing, spur, and new roads will have a standard 14-foot-wide travel surface, except in specific circumstances, as defined in PacifiCorp's Transmission Construction Standards (refer to Appendix C1) where, in steeper terrain, the travel surface width could be a maximum of 22 feet for radius for curves, plus disturbance for grading and drainage features (refer to Appendix B1 – Traffic and Transportation Management Plan)
Electrical Properties	
Nominal voltage	345kV alternating current line-to-line
Capacity	600 megawatts
Circuit configuration	Single-circuit with three phases per structure, two subconductors per phase
Minimum ground clearance of conductor	30 feet minimum per PacifiCorp's standard practice

NOTE:
[1]Refueling areas will be provided at the multi-use construction yards described in the table. However, additional dedicated space for refueling helicopters used to transport materials during construction will be required. Because the helicopter refueling site identified near Structure 147 is located within 100 meters of Mill Creek, additional mitigation, approved by the BLM or USFS Authorized Officer or his/her designated representative, will be required prior to use of the site. An alternative site location may be required by the agencies.
[2]For the terms of the BLM right-of-way grant or USFS special-use authorization

3.2.1 Transmission Structures

The transmission line circuit will be supported predominantly by single-circuit, steel-pole H-frame structures at tangent locations. Some H-frame or angle structures may include down guys for additional stability. Structures located at points where the line terminates or changes direction abruptly (angles/deadends) will be lattice steel or three-pole structures. H-frame and three-pole structures will be made out of self-weathering, galvanized, or dull galvanized steel, while lattice structures will be either galvanized or dull galvanized steel. Both the tangent and angle/deadend structures (Figures 3-1 through 3-3) typically will be 80 to 140 feet in height aboveground. Spacing between structures will be designed to allow for the longest spans practical for this type of construction, but typically will be between 800 and 1,200 feet (or five to seven structures per mile). In some situations (e.g., steep terrain, canyon, highway; or trail crossings, sensitive environmental features to be spanned; etc.), taller structures or longer spans could be required.

In some cases, some alternative structure types will be used in response to specific design needs (refer to Figures 3-4 through 3-12). Alternative structure types have been identified for the Project where typical structures (described above) may not be sufficient to respond to specific site conditions and engineering design needs. Alternative structure types or modifications to proposed structure types also may be prescribed as mitigation for environmental impacts. For example, perch deterrents and guy wire flight diverters will be used to reduce potential effects of the transmission line on sage-grouse (refer to Attachment D of Appendix B6 – Plant and Wildlife Species Conservation Measures Plan). The exact height and foundation requirements for each structure are dependent on terrain conditions and safety requirements for conductor clearance (refer to Section 3.2.3.1 – Conductors).

Alternative single-circuit structures include an H-frame deadend structure, H-frame running angle and deadend structures with down guys, three-pole running angle and deadend structures with down guys, and mono-pole tangent and deadend structures. Alternative structures also have been identified for conditions requiring double-circuiting and include double-circuit mono-pole tangent and deadend structures. The various alternative single- and double-circuit structures that may be used for the Project are illustrated in Figures 3-4 through 3-12.

3.2.1.1 Transposition Structure

To help minimize electrical losses for the Project, it will be necessary to install transposition structures at certain locations along the transmission line. A transposition structure transposes each of the three phases in the transmission circuit so each phase occupies the same physical position on the structure for approximately equal distances along the line segment between substations. The need to install a transposition structure in a particular line segment depends on the electrical characteristics, length of the line, and the need to balance the electrical impedance of the transmission line between substations. There will be a minimum of two transpositions installed at intermediate points along the segment. The need for and location of transposition structures in a particular line segment will be determined during final Project design. Transposition structures have the same access and ground disturbance requirements as a typical three-pole structure and are similar in appearance and have the same footprint as a guyed three-pole structure.

3.2.2 Typical Structure Foundations

Depending on soil and structure type, three-pole tubular steel structures and lattice towers will typically be supported by cast-in-place drilled concrete pier foundations. If soils are adequate, tubular steel H-frame tangents will be directly imbedded and compacted using acceptable spoils or engineered backfill. In rocky areas, foundation holes may be excavated by drilling or blasting methods, or installing special rock anchor or micro-pile type foundations. The rock anchoring or micro-pile system will be used in areas where site access is limited or adjacent structures could be damaged as a result of blasting or rock hauling activities.

Each structure location will be evaluated individually during final engineering design to determine the recommended foundation dimensions and types. Anticipated foundation disturbance identified during final engineering will be accounted for in the POD. Typical foundation dimensions for primary structures are given below in Tables 3-2 and 3-3.

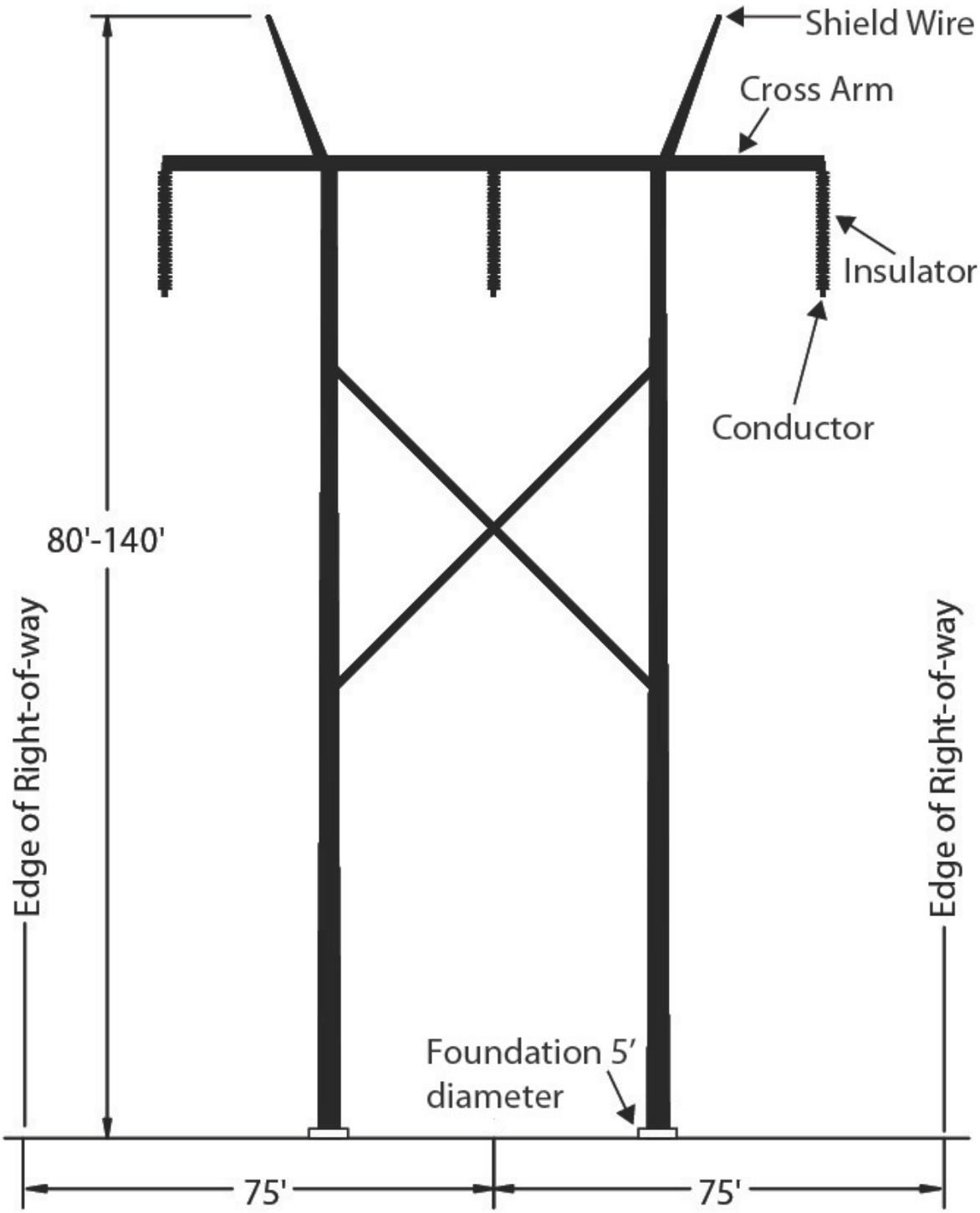


Figure 3-1 Typical Structure 1 – Single-circuit H-frame Tangent Structure (for angles 0 to 3 degrees)

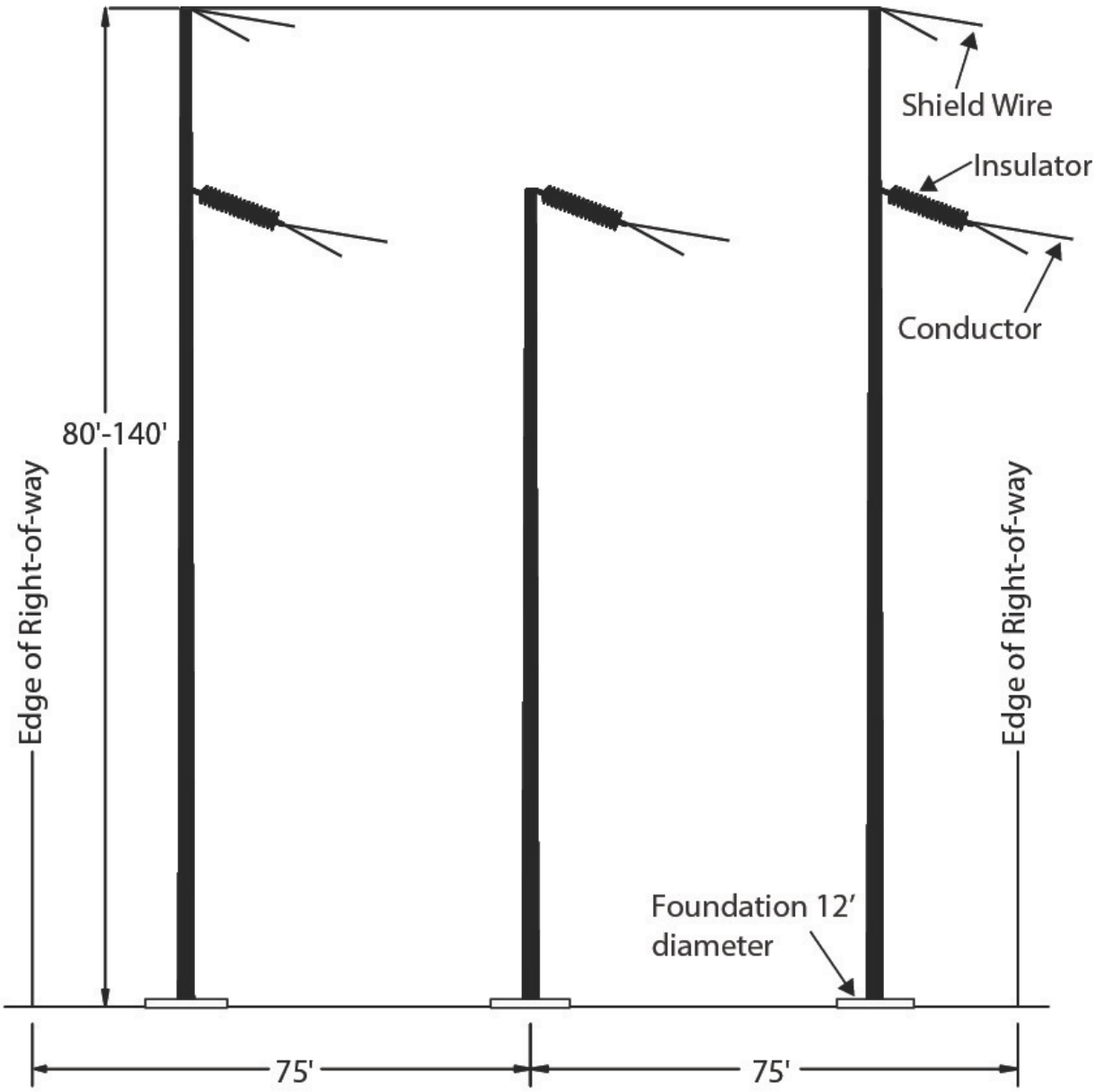


Figure 3-2 Typical Structure 3 – Single-circuit Three-pole Running-angle Structure (for angles 3 to 10 degrees)

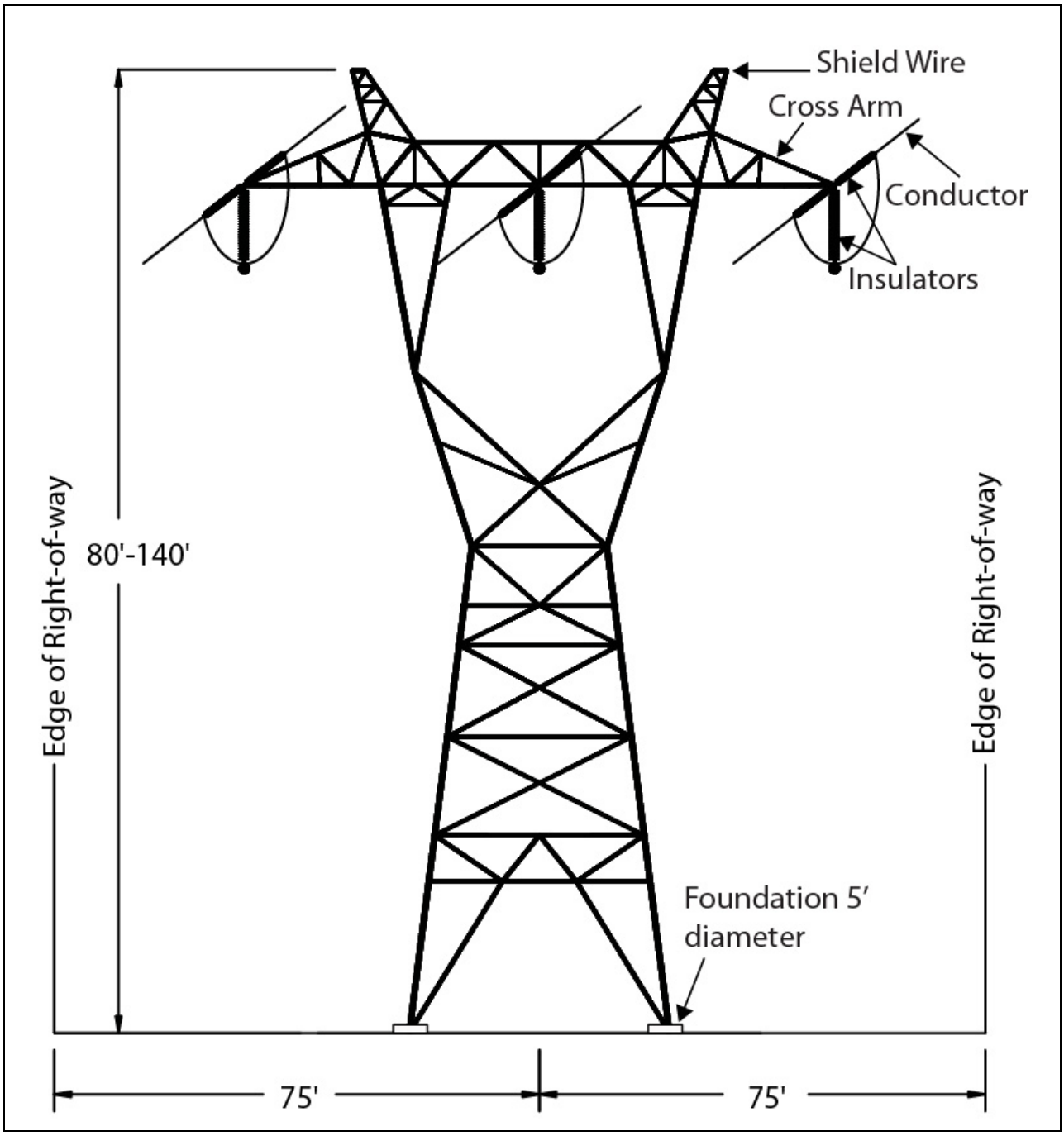


Figure 3-3 Typical Structure 2 – Single-circuit Steel-lattice Deadend Structure (for angles 10 to 90 degrees)

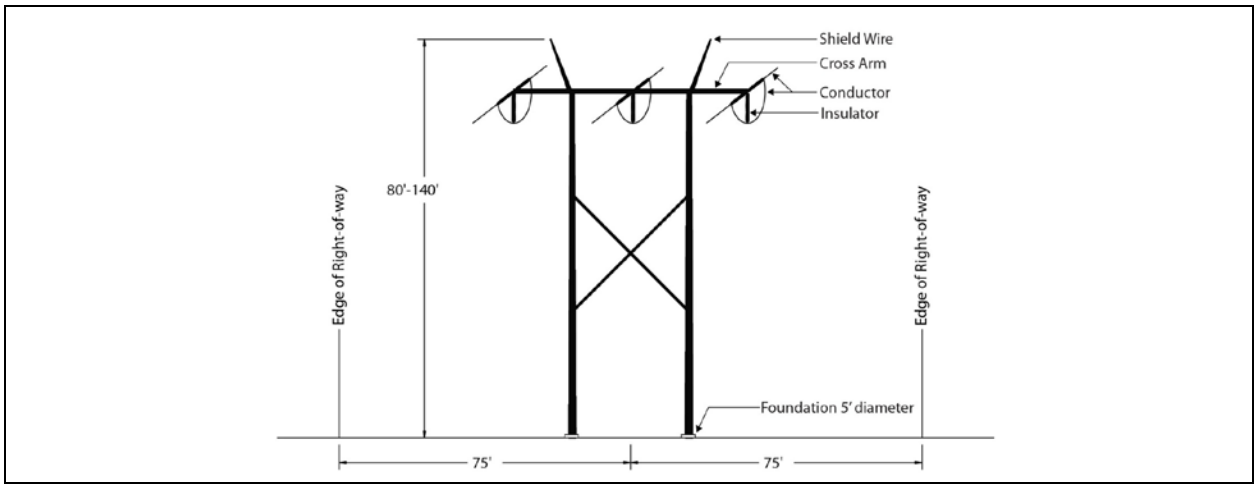


Figure 3-4 Single-circuit H-frame Deadend Structure (for angles 0 15 degrees)

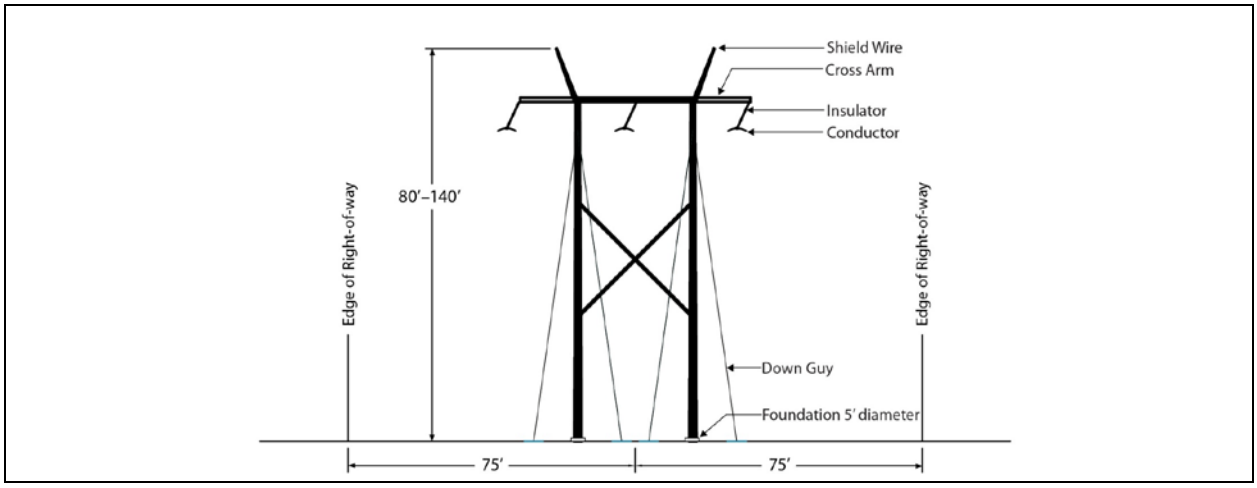


Figure 3-5 Single-circuit H-frame Running-angle Structure with Down Guys (for angles 0 to 15 degrees)

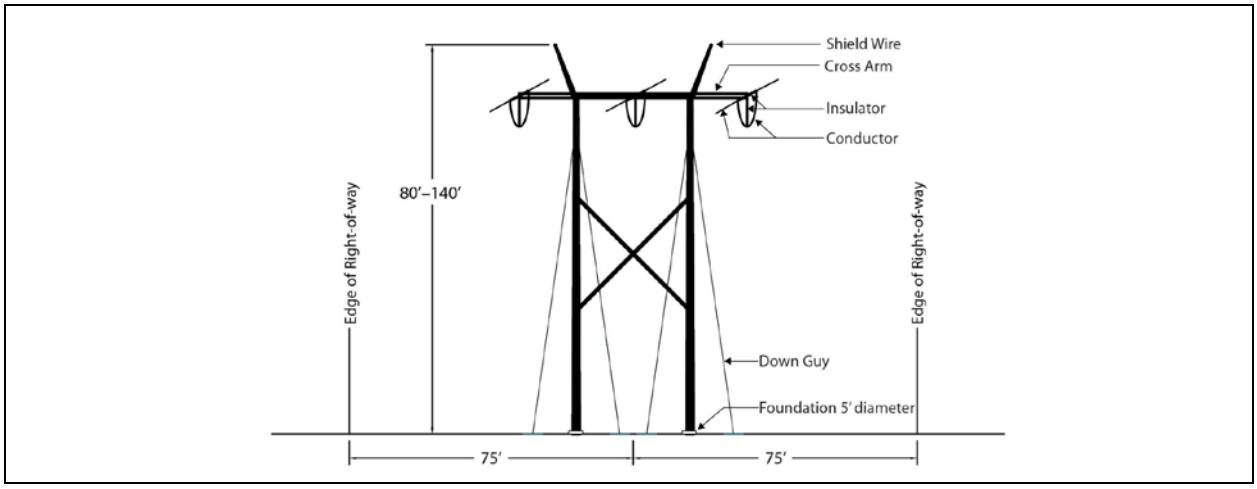


Figure 3-6 Single-circuit H-frame Deadend Structure with Down Guys (for angles 5 to 15 degrees)

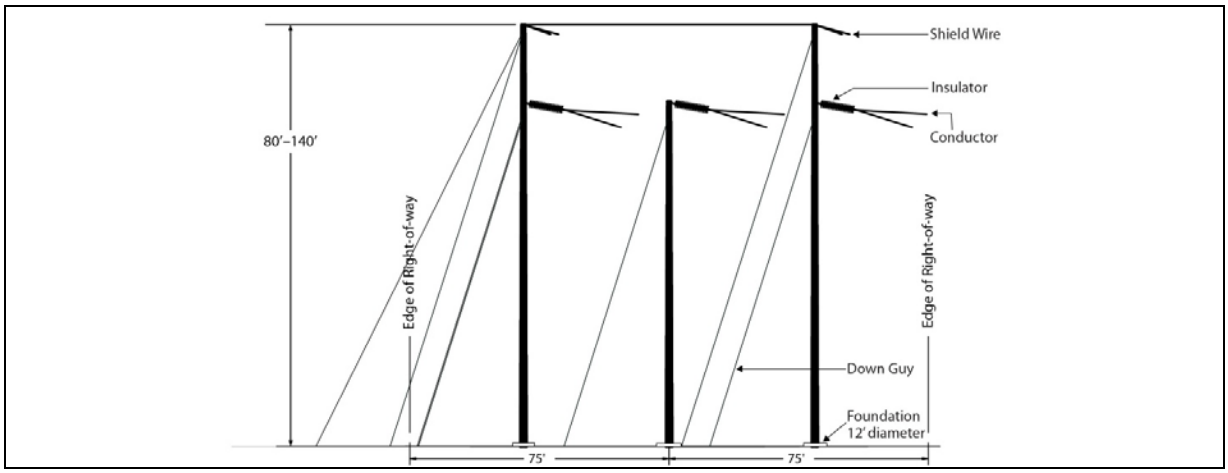


Figure 3-7 Alternative Structure 4 – Single-circuit Three-pole Running-angle Structure with Down Guys (for angles 3 to 10 degrees)

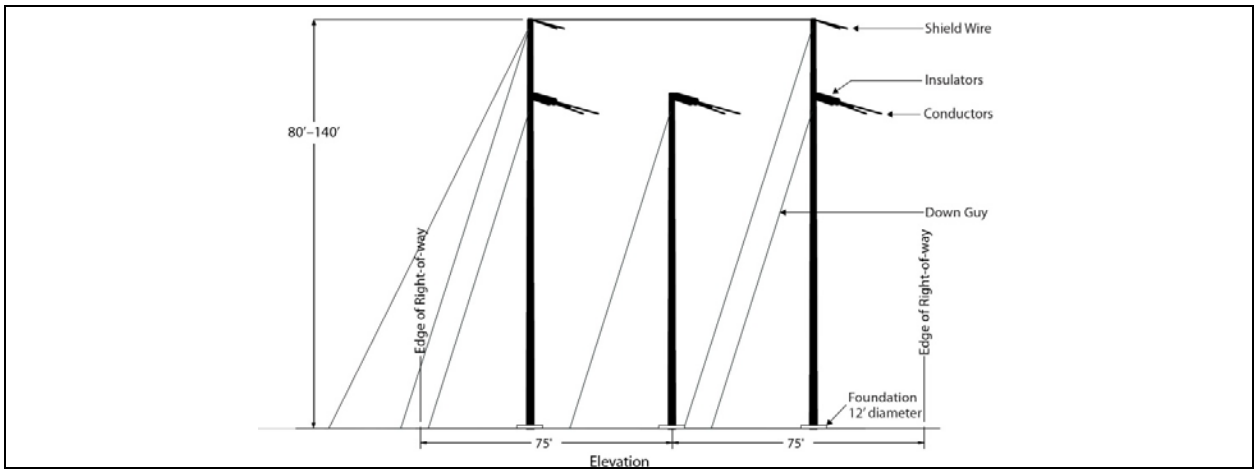


Figure 3-8a Alternative Structure 5 – Single-circuit Three-pole Deadend Structure with Down Guys (for angles 30 to 90 degrees)

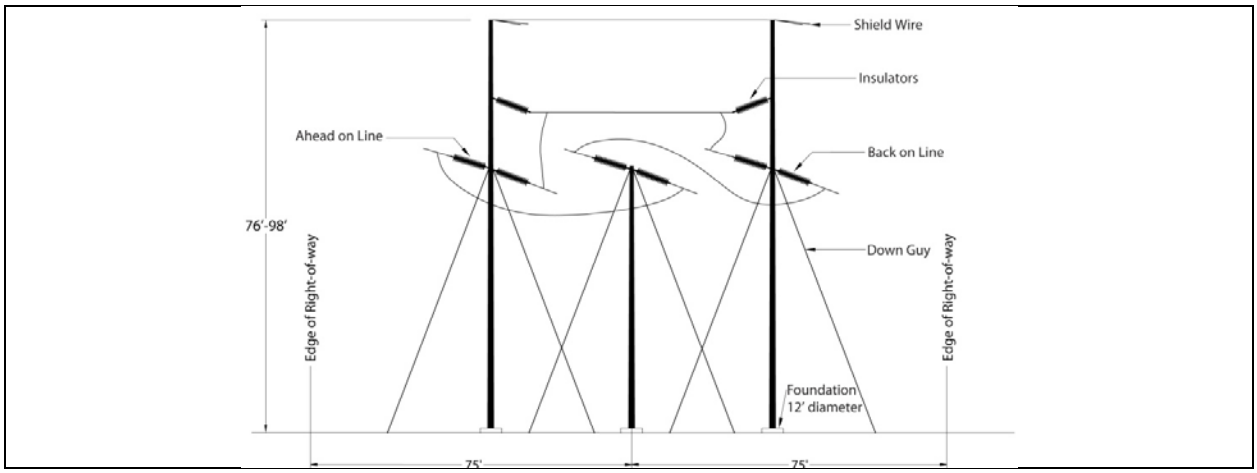


Figure 3-8b Transposition Structure (similar to Single-circuit Three-pole Deadend Structure with Down Guys)

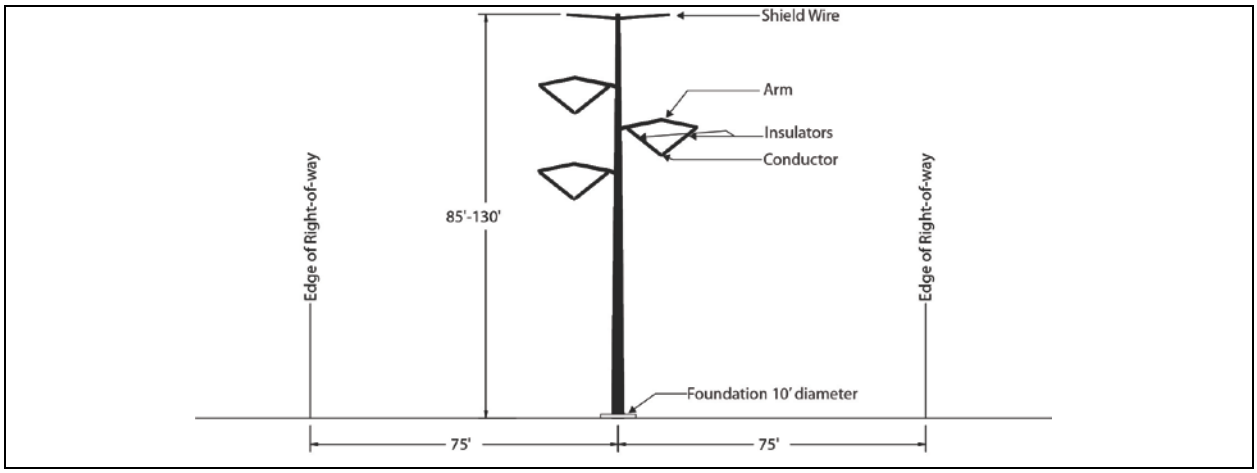


Figure 3-9 Alternative Structure 6 – Single-Circuit Mono-Pole Tangent Structure (for angles 0 to 5 degrees)

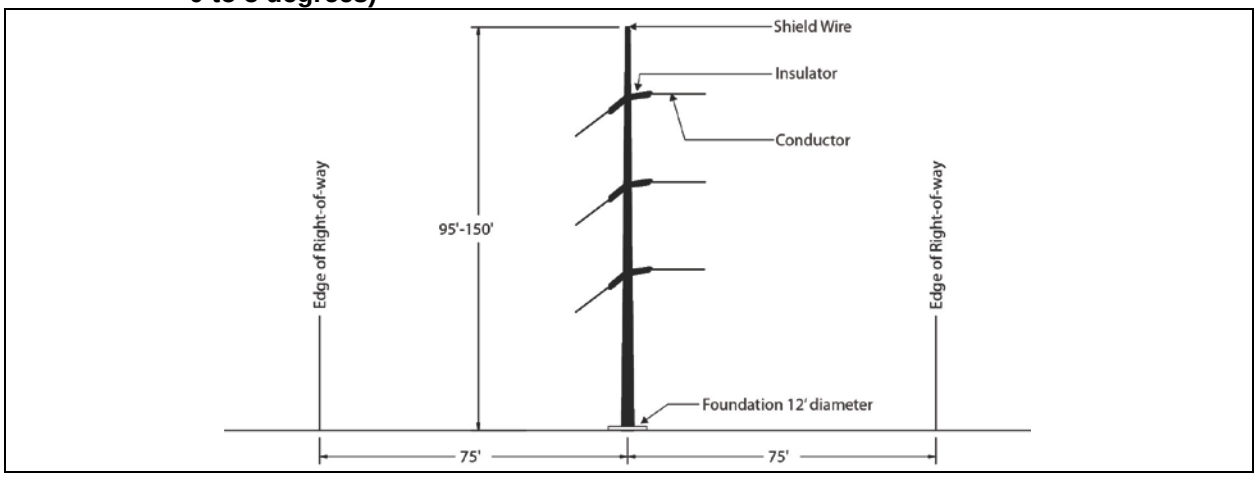


Figure 3-10 Alternative Structure 7 – Single-Circuit Mono-Pole Deadend Structure (for angles 5 to 90 degrees)

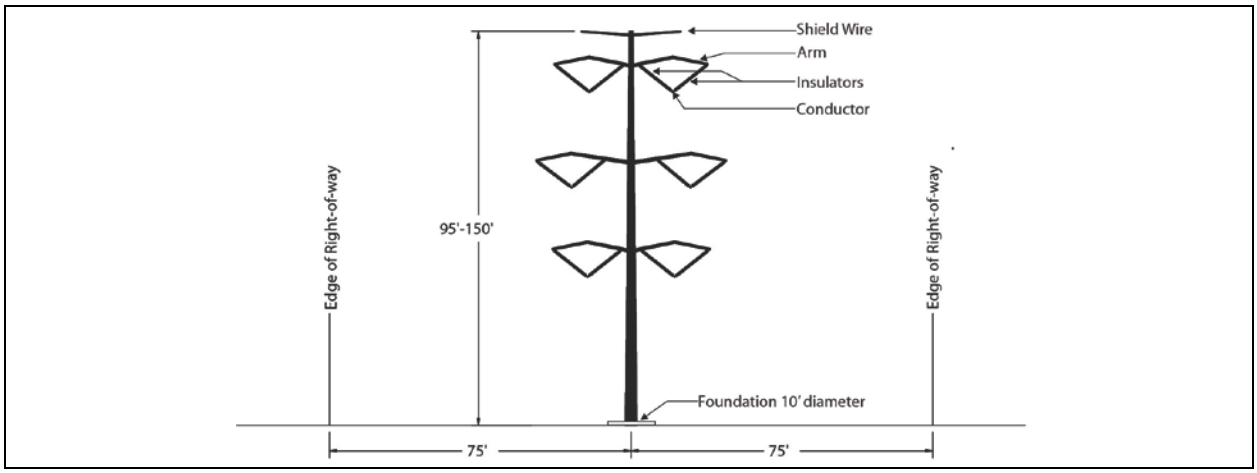


Figure 3-11 Alternative Structure 8 – Double-Circuit Mono-Pole Tangent Structure (for angles 0 to 5 degrees)

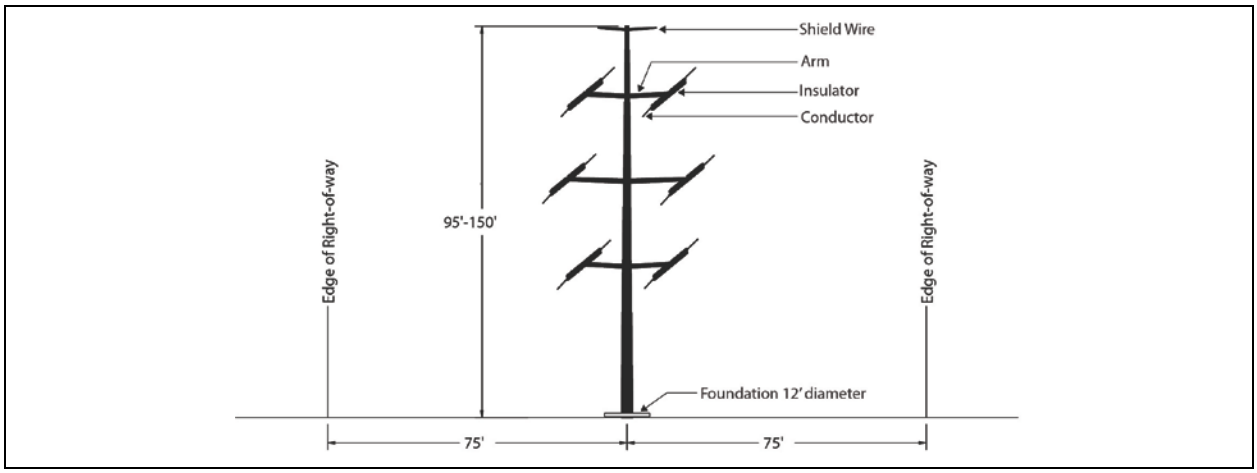


Figure 3-12 Alternative Structure 9 – Double-Circuit Mono-Pole Deadend Structure (for angles 5 to 90 degrees)

TABLE 3-2
TYPICAL STRUCTURE TYPE FOUNDATIONS

Structure Type	Figure Number	Number of Foundations	Foundation Diameter (feet)	Foundation Depth (feet)	Maximum Area of All Foundations (square feet)
Single-circuit H-frame tangent structure (for angles 0 to 3 degrees)	3-1	2	4 to 5	15 to 28	40
Single-circuit three-pole running angle structure (for angles 5 to 10 degrees)	3-2	3	6 to 7	15 to 28	116
Single-circuit lattice steel (DS-24 or DS-25) deadened structure (for angles (10° to 90°)	3-3	4	4 to 5	15 to 30	80

TABLE 3-3
ALTERNATIVE STRUCTURE TYPE FOUNDATIONS

Structure Type	Figure Number	Number of Foundations	Foundation Diameter (feet)	Foundation Depth (feet)	Maximum Area of All Foundations (square feet)
Single-circuit H-frame deadend structure (for angles 0 to 15 degrees)	3-4	2	4 to 5	20 to 30	39.3
Single-circuit H-frame running angle structure with down guys (for angles 0 to 15 degrees)	3-5	2	2 to 4	15 to 25	25.1
Single-circuit H-frame deadend structure with down guys (for angles 5 to 15 degrees)	3-6	2	2 to 4	20 to 30	25.1
Single-circuit three-pole running angle structure with down guys (for angles 5 to 10 degrees)	3-7	3	4 to 6	15 to 28	85

TABLE 3-3 ALTERNATIVE STRUCTURE TYPE FOUNDATIONS					
Structure Type	**Figure Number**	**Number of Foundations**	**Foundation Diameter (feet)**	**Foundation Depth (feet)**	**Maximum Area of All Foundations (square feet)**
Single-circuit three-pole deadend structure with down guys (for angles 30 to 90 degrees)	3-8a	3	4 to 6	15 to 28	85
Transposition structure (similar to single-circuit three-pole deadend structure with down guys)	3-8b	3	4 to 6	15 to 28	85
Single-circuit mono-pole tangent structure (for angles 0 to 5 degrees)	3-9	1	5 to 10	20 to 30	79
Single-circuit mono-pole deadend structure (for angles 5 to 90 degrees)	3-10	1	6 to 12	25 to 35	113
Double-circuit mono-pole tangent structure (for angles 0 to 5 degrees)	3-11	1	6 to 10	20 to 40	79
Double-circuit mono-pole deadend structure (for angles 5 to 90 degrees)	3-12	1	6 to 12	25 to 45	113

3.2.3 Transmission Line Hardware

3.2.3.1 Conductors

The 345kV single-circuit transmission line will consist of three phases with a double-conductor bundle (i.e., two subconductors) per phase installed in a vertical configuration with 18-inch spacing between subconductors. The conductor (the wire cable strung between transmission line towers through which the electric current flows) will consist of outer aluminum strands with a stranded steel reinforced core (i.e., Aluminum Conductor Steel Reinforced). The specified conductor (Aluminum Conductor Steel Reinforced 954 54/7 Cardinal), is about 1.2 inches in diameter, weighs approximately 1.23 pounds per foot, and will have a “non-specular” finish to reduce surface glare.

Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with the NESC, ANSI C2, produced by the American National Standards Institute (ANSI). This code provides guidelines for the minimum distances between the conductors and ground, crossing points of other lines and the transmission support structure and other conductors, and minimum working clearances for personnel during energized operation and maintenance activities (Institute of Electrical and Electronics Engineers 2007). Minimum conductor height aboveground and other clearances for the 345kV line will be based on NESC requirements and the Proponent’s own standards. Typically, conductor clearance is a minimum of 30 feet aboveground for 345kV lines. During final engineering, conductor clearances may be increased in certain locations to account for site-specific conditions and for safe operation.

Based on Avian Power Line Interaction Committee (APLIC) recommendations (Edison Electric Institute and APLIC 2006), adequate 3 conductor phase spacing (60 inches or greater for avian protection) will be implemented.

As conductor is supplied on reels up to about 9,600 feet in length, splicing is required to make a continuous run. Splices may be either compression type or explosive-charge type. If explosive-type splices are used, the Construction Contractor(s) will incorporate appropriate references and requirements into Appendix B-5 – Blasting Plan Framework.

To reduce vibration fatigue on installed conductor and associated hardware, vibration dampers will be installed on the conductor as required by the Proponent's standards and as specified in the final design.

3.2.3.2 Insulators and Associated Hardware

Insulators, which are made of an extremely low conducting material, such as porcelain, glass, or polymer, are used to suspend the conductors from each tower. Insulators inhibit the flow of electrical current from the conductor to the ground or another conductor. The assemblies of insulators are designed to maintain electrical clearances between the conductors and the structure, and ground. Typical single-circuit H-frame tangent structures and typical three-pole running angle structures will have three I-shaped string insulators suspended from the structure, while dead-end insulators will have six I-shaped strings and will be oriented parallel to the conductors (Figures 3-1 through 3-3). All other structures would have either V-shaped or I-shaped insulators (Figures 3-4 through 3-12). Final engineering design may require V-shaped insulators on the H-frame or three-pole structures in some situations, depending on constraints.

3.2.3.3 Overhead Ground Wire

The overhead ground wire shields the 345kV transmission line from direct lightning strikes. Each transmission structure will have two lightning protection overhead ground wires installed on the peak of the structure. One of the overhead ground wires will be a shield wire composed of extra-high-strength steel wire with a diameter of 0.495 inch and a weight of 0.517 pound per foot. The second overhead ground wire will be a fiber core optical ground wire (OPGW) for communication purposes (refer to Section 3.2.4.1 – Communication Systems) constructed of aluminum and steel that carries 48 glass fibers in its core. The OPGW's will have a diameter of 0.465 inch and a weight of 0.290 pound per foot. Current from lightning strikes will be transferred through the ground wires and structures into the ground.

3.2.3.4 Grounding

Ground rods will be installed next to the structure foundations and will be bonded to the structure. Lattice towers (single-circuit angle or deadend structures) will have four grounds installed per structure, and H-frame and steel-pole structures will have two grounds installed per structure. After the ground rods have been installed, the grounding will be tested to determine the resistance to ground. When the resistance to ground for each transmission structure is found to be greater than 15 ohms with the use of ground rods, counterpoise will be installed to lower the resistance to 15 ohms or less (PacifiCorp Standard TD300). Counterpoise consists of a bare copper-clad or galvanized-steel cable buried to a depth of 12 inches in noncultivated land and 19 inches in cultivated land, and extends away from one or more legs of the structure approximately 200 feet within the right-of-way.

Conductive objects will be grounded on receipt of a complaint from a property owner and after proper investigation has been completed. Grounding will be completed per PacifiCorp Transmission Construction Standard TD-310. Typical applications of the standard include objects summarized as follows:

- Wire fences with non-metal posts within the right-of-way
- Large metal buildings located within 100 feet from the outside conductor and large metal building s (e.g., metal surfaces 2,000 square feet or more) and other types of metallic objects within 150 feet of the centerline
- Metal gutters and other objects located within 100 feet, measured horizontally, from the outside conductor or between 100 and 150 feet from the outside conductor if at least 150 feet long.

3.2.4 Other System Facilities

3.2.4.1 Communication Systems

Reliable and secure communications for system control and monitoring of the Project are imperative to maintain the operational integrity of the transmission line and the overall interconnected system. Primary communications for relaying and control will be provided via fiber optical fibers in an OPGW shield wire, which will be installed on the transmission lines.

The optical glass fibers inside the OPGW shield wires will facilitate data transfer between the Proponent's facilities along the fiber path. The data transferred are required for system control and monitoring. A second communications path will be provided via the Proponent's existing microwave system. No new microwave sites are anticipated for the Project. Updated microwave equipment may be installed at existing sites and at the substations.

3.2.4.2 Communication Regeneration Station

Communication regeneration stations are required to amplify the system control and monitoring signals carried over the fiber optic cable attached to the transmission towers. As the data signal is passed through the optical fibers in the OPGW, the signal degrades with distance. Consequently, signal regeneration stations (regeneration stations/sites) are required to amplify the signals if the distance between substations or regeneration sites exceeds 55 miles. Three regeneration sites will be required for the Project.

The primary siting criteria for a regeneration site located outside of a substation are (1) adjacent to the transmission line right-of-way, (2) in proximity to existing low-voltage electric distribution lines that will power the facility, and (3) easily accessible by vehicle. A regeneration site may be housed in substation control houses where an existing substation occurs on the final transmission route; otherwise, land must be obtained. Where a new site is required, the typical site will be 100 feet by 100 feet, encompassing a fenced area of 75 feet by 75 feet. A 12-foot by 32-foot by 9-foot-tall building or equipment concrete shelter will be placed on the site, and access roads to the site and power from the local electric distribution circuits will be required. An emergency generator with a liquid petroleum gas fuel tank will be installed at the site inside the fenced area. The fibers within the OPGW cable supported on the transmission structures will be routed in and out of the communication regeneration site building from the nearest transmission structure, either underground or overhead, along two independent diverse paths. Electronic equipment that is required to support the fiber optic cable installation will be located inside the building. At the remote site, an emergency diesel generator will be installed to provide backup power during an outage of the local electric distribution supply system. Figure 3-13 illustrates the plan arrangement of a typical regeneration site.

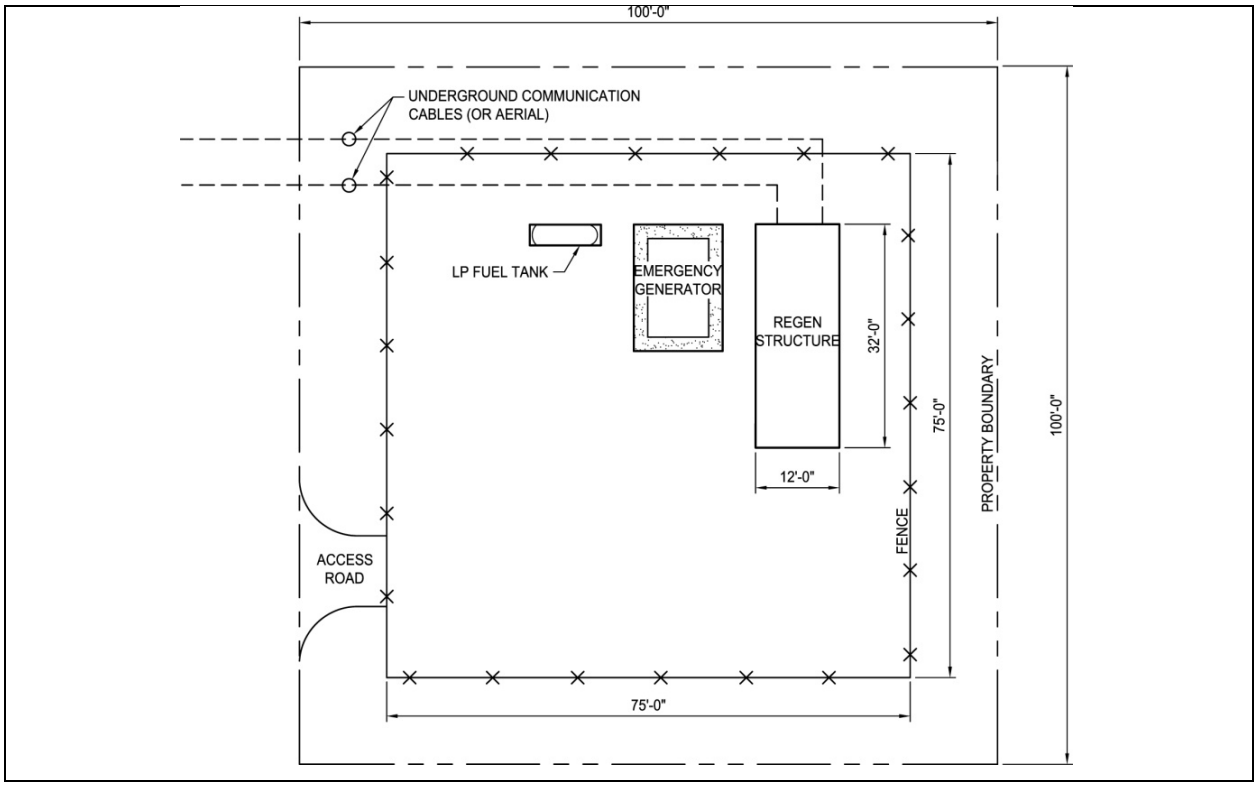


Figure 3-13 Typical Regeneration Site Layout

3.2.4.3 Communication Regeneration Station Distribution Supply Lines

Station service power will be required at each regeneration site. Typically, station service power is provided from a local electric distribution line, located in proximity to the regeneration site. The voltage of the distribution supply line is typically 12kV or lower and carried on wood poles. For all new sites, it will be necessary to extend the electric distribution line from a take-off point on the existing distribution line to the new site. The location and routing of the existing distribution lines to the new sites will be determined during the final design process.

3.2.5 Other Electrical Hardware

In addition to the conductors, insulators, and overhead shield wires, other hardware will be installed on the tower as part of the insulator assembly to support the conductors and shield wires. This hardware will include fasteners, clamps, shackles, links, plates, and various other hardware composed mostly of galvanized steel and aluminum. To the extent possible, electrical hardware will be specified as "corona-free" in order to reduce the effects of audible noise and electrical stress caused by corona in high-voltage applications.

A grounding system will be installed at the base of each transmission structure that will consist of copper ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper cable. When the resistance to ground for each transmission structure is found to be greater than 15 ohms with the use of ground rods, counterpoise will be installed to lower the resistance to 15 ohms or less (PacifiCorp Standard TD-300). Counterpoise consists of a bare copper-clad

or galvanized-steel cable buried a minimum of 12 inches deep, extending away from the structures (from one or more legs of the structure) for approximately 200 feet in the right-of-way.

3.2.6 Other Non-Electrical Hardware

Other hardware not associated with the transmission of electricity may be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting, as required for the conductors or structures per FAA regulations. Structure proximity to airports and structure height are the determinants of whether FAA regulations will apply, based on an assessment of wire/tower strike risk. The Proponent does not anticipate structure lighting will be required since all proposed structures are less than 200 feet tall and are not near airports that require structure lighting. If a change in design requires structure lighting, whomever (Proponent or Construction Contractor[s]) is initiating the change will be responsible for adhering to FAA requirements.

The use of down guys was negatively perceived by the public and other stakeholders, and down guys are only to be used in limited applications. In certain applications, such as transposition structures and areas of modest line angles (approximately 30 degrees or less), it is possible to use three-pole structures with down guys as "running angle" structures where permitted. These structures do not terminate the conductors and overhead ground wires, as on a deadend structure, but allow the conductors and overhead ground wires to remain contiguous through the structure. Since most of the mechanical loads imparted to structures with down guys are transferred to the guy anchors rather than directly to the structure and its foundation, the use of running angles structures with down guys will usually reduce the size of footings, but will often result in an increase in overall structure footprint, and in some cases may exceed the typical 150-foot right-of-way width.

3.2.7 Substation Upgrades and Expansions

New substation equipment will be needed at the terminus points to interconnect the transmission line with the existing Sigurd and Red Butte substations, as described in Section 2.2.1 of the EIS. Table 3-4 summarizes the typical design characteristics of a 345/138kV substation.

TABLE 3-4
TYPICAL DESIGN CHARACTERISTICS OF THE 345/138KV SUBSTATION EXPANSION

Feature	Description
Site size (approximate)	No additional site expansion required at Sigurd or Red Butte substations
Equipment	Shunt reactors, series reactors, series capacitors, station switches, voltage and current sensing devices, power transformers, power circuit breakers
Access road (width, road surface, grading)	Existing access roads would be used
Fire protection facilities	Existing fire protection facilities would be expanded to include new equipment
Substation grounding	According to applicable codes
Land temporarily disturbed	A 20-foot-wide buffer zone along the perimeter of the substation expansion area estimated to be less than 1 acre
Voltage	345/138kV and below

At the existing Sigurd Substation, new 345kV circuit breakers, a shunt reactor, high voltage switches, bus supports, and other equipment would be installed, along with all associated site preparation, foundations, oil spill containment steel substation structures, bus work, protection and control, and metering. The new Sigurd to Red Butte No. 2 – 345kV transmission line will enter the Sigurd 345kV yard from the north and terminate in the currently unused Bay 1 position. All substation additions made for this Project will be avian-safe and located within the existing perimeter fence line.

At the existing Red Butte Substation, which was recently expanded to accommodate this Project and other transmission lines, new 345kV and 138kV circuit breakers, high-voltage switches, bus supports, a shunt reactor, a series capacitor, a shunt capacitor, and other equipment will be installed along with all associated site preparation, foundations, oil spill containment, steel substation structures, bus work, protection and control, and metering. All improvements to the substation to accommodate this project will be avian-safe and made within the expanded portion of the substation. Dixie Deer Substation, which is located totally within the Red Butte fence line, will be upgraded from 34.5/12.5kV to 138/12.5kV to improve local distribution service and Red Butte station service. This upgrade will involve replacing the power transformer, replacing voltage regulators, replacing substation structures, replacing foundations, adding control and protection in the existing control house, and adding two steel monopole transmission structures outside the Red Butte fence to connect Dixie Deer to the Red Butte 138kV bus. The short 34.5kV tap line currently feeding Dixie Deer will be removed. The substation is located on property administered by USFS and leased by the Proponent.

3.2.8 Access Roads

Construction of the transmission line, substation upgrades, and ancillary facilities (e.g., multi-use construction yards, pulling and tensioning sites, etc.) will require vehicle, truck, and crane access to each new structure site for construction crews, materials, and equipment. Ten types of access will be used for this Project:

- Type 1 – Existing Permanent Access Road – No Improvement
- Type 2 – Existing Permanent Access Road – Limited Repair Required
- Type 3 – Existing Permanent Access Road – To Be Improved
- Type 4 – New Permanent Access Road – Bladed
- Type 5 – New Temporary Access Road – Bladed
- Type 6 – New Permanent Overland Access Route – Clear-and-Cut
- Type 7 – New Temporary Overland Access Route – Clear-and-Cut
- Type 8 – New Permanent Overland Access Route –Drive-and-Crush
- Type 9 – New Temporary Overland Access Route – Drive and Crush
- Type 10 – New Temporary Access Road – Matted

More detailed descriptions of these access types and stipulations associated with these types are provided in Appendix B1 – Traffic and Transportation Management Plan.

Access to the right-of-way will be via existing roads, to the extent practicable. These existing roads will be used in their present condition without improvements, unless improvements are required or are deemed to be in the best interest of the Project and for future use. In areas where improvements are required, roads will be graded, as needed, to provide a smooth travel surface. Access on the right-of-way will require a standard travel-surface width of 14 feet, except in specific circumstances, as defined in PacifiCorp's Transmission Construction Standards (refer to Appendix C1) , depending on site-specific conditions and as specified in the POD (refer to Appendix A3.3 – Access Roads and Appendix B1 – Traffic and Transportation Management Plan). These roads typically go directly from structure to structure, except on

hillsides, ridgebacks, rock-outcrop areas, wash crossings, treed areas, or in areas where sensitive environmental resources can be avoided. In such cases, the road would follow suitable topography from structure to structure and would be built in areas that generally cause the least amount of overall disturbance, which may be outside the right-of-way. In such circumstances, coordination with BLM or USFS is required.

3.3 Induced Currents on Adjacent Facilities

AC transmission lines, such as the Project transmission line, have the potential to induce currents on adjacent metallic structures such as other transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. Induced currents on these facilities occur to some degree during steady-state operating conditions and during a fault condition on the transmission line. For example, during a lighting strike on the line, the insulators may flash over, causing a fault condition on the line and current will flow down the structure through the grounding system (i.e., ground rod or counterpoise) and into the ground. The magnitude of the effects of the AC-induced currents on adjacent facilities is highly dependent on the magnitude of the current flows in the transmission line, the proximity of the adjacent facility to the line, and the distance (length) for which the facilities and the line parallel one another in proximity.

The methods and equipment needed to mitigate these conditions will be determined through electrical studies of the specific situation (refer to EIS, Section 3.2.13 – Public Health and Safety. As standard practice and as part of the design of the Project, electrical equipment and fencing at the substation will be grounded.

If applicable, grounding of metallic objects outside of the right-of-way also may be implemented (refer to Section 3.2.3.4 – Grounding). These actions take care of the majority of induced current effects on metallic facilities adjacent to the line by shunting the induced currents to ground through ground rods, ground mats, and other grounding systems, thus reducing the step and touch potential that a person may experience when touching a metallic object near the line (i.e., reduce electric shock potential).

In the case of a longer parallel facility, such as a pipeline parallel to the Project over many miles, additional electrical studies may be undertaken by the Proponent to (1) identify any additional mitigation measures (i.e., more than the standard grounding practices) that will need to be implemented to prevent damaging currents from flowing onto the parallel facility and (2) prevent electrical shock to any people who may come in contact with the parallel facility. Typical additional mitigation measures that could be considered for implementation, depending on the degree of mitigation needed, may include the following (National Association of Corrosion Engineers [NACE] International 2003):

- **Fault Shields.** Shallow grounding conductors connected to the affected structure adjacent to overhead electrical transmission towers, poles, substations, etc. They are intended to provide localized protection to the structure and pipeline coating during a fault event from a nearby electric transmission power system.

- **Lumped Grounding.** Localized conductor or conductors connected to the affected structure at strategic locations (e.g., at discontinuities). They are intended to protect the structure from both steady-state and fault AC conditions.

- **Gradient Control Wires.** A continuous and long grounding conductor or conductors installed horizontally and parallel to a structure (e.g., pipeline section) at strategic lengths and connected at

regular intervals. These are intended to provide protection to the structure and pipeline coating during steady-state and fault AC conditions from nearby electric transmission power systems.

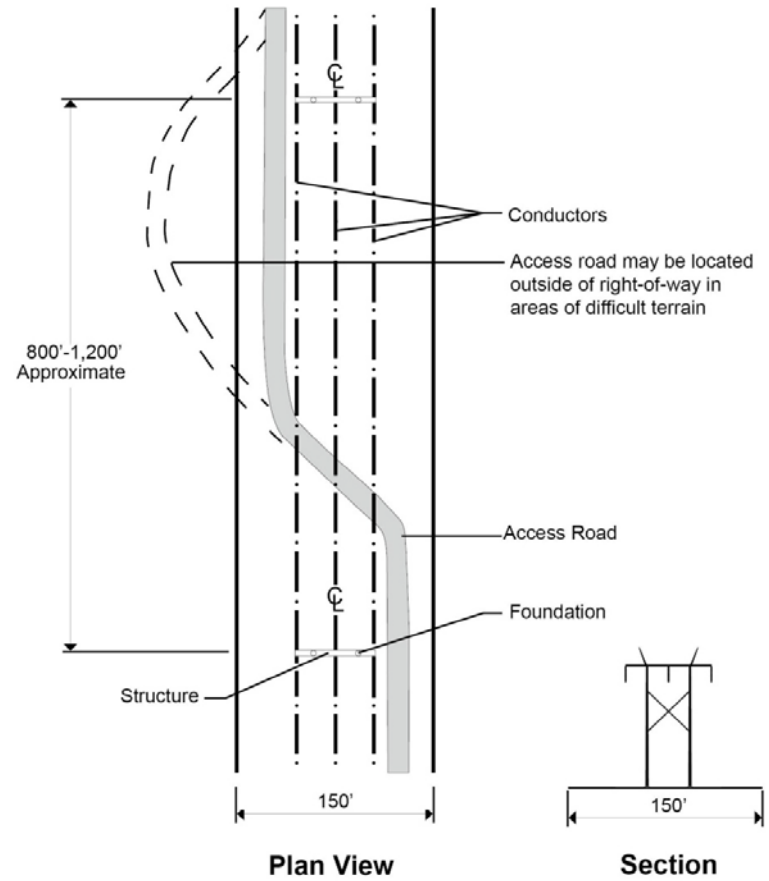
- **Gradient Control Mats.** Typically used for aboveground components of a pipeline system, these are buried ground mats bonded to the structure, and are used to reduce electrical step and touch voltages in areas where people may come in contact with a structure and be subject to hazardous potentials.

Permanent mats bonded to the structure may be used at valves, metallic vents, cathodic protection test stations, and other aboveground metallic and nonmetallic appurtenances where electrical contact with the affected structure is possible. In these cases there is no standard solution that will solve these issues every time. Instead, each case must be studied to determine the magnitude of the induced currents and the most appropriate mitigation given the ground resistivity, distance paralleled, steady-state and fault currents, fault clearing times expected on the transmission line, and distance between the line and paralleling facilities, to name a few of the parameters. In the instance that the electrical studies indicate a need to install cathodic protection devices on a parallel facility, a distribution supply line interconnection may be needed to provide power to the cathodic protection equipment.

During final design of the transmission line segments, appropriate electrical studies will be conducted by the Proponent to identify (1) the issues associated with paralleling other facilities and (2) the types of equipment that will need to be installed (if any) to mitigate the effects of the induced currents.

3.4 Land Requirements and Construction Disturbance

The Proponent proposes to acquire a 150-foot-wide right-of-way for construction, operation, and maintenance of the Project. Figure 3-14 shows a typical 150-foot-wide right-of-way for a transmission line. The determination of the right-of-way width is based on two criteria (1) sufficient clearance must be maintained during a high wind event when the conductors are blown toward the right-of-way edge, and (2) sufficient room must be provided within the right-of-way to perform transmission line maintenance. The second criterion is described in more detail in Section 4.2.1.2 – Routine Maintenance. In addition, temporary permission from landowners or land-management agencies will be required during construction for off-right-of-way access, multi-use construction yards, construction yards, and material storage.



NOTE: Dimensions are approximate and drawings are not to scale.

Figure 3-14 Typical Right-of-way Diagram

Table 3-5 provides a general breakdown of right-of-way requirements during construction and operation by landowner type. As further details of the final Project design are engineered, the amount of land required or disturbed may change. Final land requirements for federal lands will be provided as needed for any easement transaction with state or private entities

TABLE 3-5
RIGHT-OF-WAY ACREAGES ACROSS ADMINISTRATIVE JURISDICTIONS FOR THE SELECTED ROUTE

Jurisdiction	Right-of-way Acres for Temporary Use	Right-of-way Acres for Permanent Use	Total Right-of-Way Acres
BLM	108.5	1,305.8	1,414.3
USFS	131.3	391.5	522.8
State	5.1	93.3	98.4
Private	73.3	1,009.3	1,082.6
Total	**318.2**	**2,799.9**	**3,118.1**

3.4.1 Right-of-Way/Special-use Authorization Acquisition

New permanent (long-term) and temporary land use is required for the transmission line facilities such as the transmission line corridor, access roads, and temporary work sites (e.g., right-of-way grant/special-use authorization, easements, license agreement, and fee simple). All segments of the Project must obtain new rights-of-way through a combination of right-of-way grants/special-use authorizations and easements between the Proponent; various federal, state, and local governments; other companies (e.g., utilities and railroads); and private landowners. Where the proposed transmission line will parallel an existing 46kV or 138kV transmission line, the right-of-way will be adjacent to the existing right-of-way. The right-of-way width must be sufficient to accommodate "conductor blowout" (i.e., swinging of the conductor midway between tower structures due to wind) and maintenance clearances at the tower sites.

The Proponent filed a right-of-way application with the BLM and USFS in December 2008 for a lease term of 50 years. However, it is understood that BLM and USFS grant rights-of-way for a 30-year term with the right to renew. Any grant issued by BLM or USFS would be issued accordingly. A right-of-way for a width of 150 feet for the Project has been requested.

Additional rights-of-way may be required in areas where the transmission line will turn at a sharp angle. Access roads may be located outside of the transmission line right-of-way in areas of difficult terrain. Access roads will be identified in coordination with the agencies and included in the right-of-way grant/special-use authorization to be issued before construction and any required NTP. Also, areas used temporarily (e.g., roads, multi-use construction yards, batch plants) on federally administered public lands may require a short-term right-of-way. The BLM and USFS receive right-of-way rental payments for those portions of the transmission lines located on federal lands.

All negotiations with landowners will be conducted in good faith, and the Project's effect on the parcel or any other concerns the landowner may have will be addressed. Rights-of-way for transmission line facilities on nonfederal land (state, private, or fee-owned) will be obtained in perpetual easements or fee purchases. Every effort will be made to purchase all of the land rights on private land through reasonable negotiations with the present owners. In the event an agreement with the landowners cannot be reached, the Proponent may obtain land rights by eminent domain. Land rights will be obtained in the name of PacifiCorp, doing business as Rocky Mountain Power.

3.4.2 Temporary and Permanent (Long-term) Construction Disturbance

Areas of temporary and permanent (long-term) disturbance for the construction areas will be calculated using geographic information systems (GIS) per specifications presented in Table A3-3.

A temporary disturbance area of 150 feet by 200 feet was typically assumed for each non-lattice structure work area and a disturbance area of 250 feet by 250 feet for each lattice structure work area. The actual dimensions of the temporary area of disturbance may vary depending on factors such as terrain and vegetation. Variations in the area of disturbance will be monitored by the CIC during Project construction (refer to Appendix A6 – Environmental Compliance Management Plan).

Temporary work areas will be delineated by the Construction Contractor(s) in coordination with the CIC prior to construction, and the CIC will track the actual Project disturbance acreage. If the amount of temporary actual disturbance exceeds the acreage presented in Table A3-3, consultation with the BLM and other agencies will be required (refer to Appendix A6.4 – Procedures of the Environmental

Compliance Management Plan). If work areas at the base of some structures are needed for maintenance activities, consultation with the BLM and other agencies also will be required (refer to Appendix A6.4 – Procedures of the Environmental Compliance Management Plan).

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SECTION 4 – OPERATION AND MAINTENANCE

4.1 Introduction

Section 4 provides information describing on-going and long-term activities that will occur along the right-of-way. This information includes an introduction, discussion on compatible uses, right-of-way safety requirements, right-of-way inspection and maintenance, and contingency planning.

The goal of the Proponent is to provide their customers with a reliable supply of electricity while maintaining the overall integrity of the regional electrical grid. The Proponent's obligation to maintain reliable operation of the electrical system is directed through compliance with industry standard codes and practices. The design, operation, and maintenance of the Project will meet or exceed applicable criteria and requirements outlined by the FERC, Western Electricity Coordinating Council (WECC), NESC, and the U.S. Department of Labor Occupation Safety and Health Standards for the safety and protection of landowners, their property, and the general public. It is the NESC (ANSI C2) that governs the design and operation of high-voltage electric utility systems.

In 2005, Congress passed the Energy Policy Act of 2005, which provided a regulatory basis for the implementation of specific incentives (and penalties) for maintaining reliable service, among other issues. As a result of the passage of the Energy Policy Act of 2005, the FERC selected the National Electric Reliability (NERC) to act as the enforcement agency for compliance with electric utility reliability and operating standards, among other issues. The Proponent is required to be in compliance with the various reliability standards promulgated through the implementation of the NERC policies and procedures. Additionally, the Proponent is governed by the WECC standards that may be additional or more stringent than those currently required by NERC. In response, the Proponent has prepared internal operation and maintenance policies and procedures designed to meet the requirements of the NERC, WECC, and the state public utility commissions, while remaining in compliance with the applicable codes and standards with respect to maintaining the reliability of the electrical system.

After the transmission line has been energized, land uses compatible with safety regulations will be permitted in and adjacent to the right-of-way. Examples of compatible uses within the right-of-way include grazing, vehicle and pedestrian access, recreational use, and pre-existing compatible uses. Examples of prohibited uses include buildings or closed structures frequented by humans (such as residences) and any use that requires changes in surface elevation that affect electrical clearances of existing or planned facilities. Compatible uses of the right-of-way on public lands will have to be approved by the appropriate agency. Permission to use the right-of-way on private lands will have to be obtained from the Proponent. Land uses that comply with local regulations will be permitted adjacent to the right-of-way.

The transmission line to be constructed as part of the Project will become critical infrastructure of the Proponent and southwest Utah transmission systems as well as the western United States electrical grid. Limiting the duration of unplanned outages and planning for the use of live-line maintenance techniques to minimize the requirement for any outages is an important part of the design, construction, and operation/maintenance requirements for this Project.

4.2 System Inspection, Maintenance, and Repair

Regular inspection of transmission lines, substations, and support systems is critical for safe, efficient, and economical operation of the Project. Responsibly conducted routine maintenance activities are anticipated to have minimal impacts and are usually authorized under the transmission line easements and right-of-way grant. While carrying out routine maintenance activities, field personnel and contractors will adhere to basic standards and guidelines contained in other sections of the Project POD, special use stipulations, and any additional requirements (such as periodic review of the implementation plans associated with operation and maintenance) identified in the decision documents that apply to the specific area where work is to be done. With the exception of emergency maintenance activities (refer to Section 4.2.3 – Emergency Maintenance Activities), the Proponent will coordinate with the BLM or USFS Authorized Officer or his/her designated representative to review any new information or specific requirements concerning cultural, paleontological, and biological resources (e.g., federally listed species, special-status species, seasonal restrictions, habitat concerns, etc.), prior to initiating inspection, maintenance (including vegetation management), and/or repair activities. Mitigation measures (refer to Section 5 – Environmental Mitigation Measures) apply to construction and operation and maintenance activities. If for any reason the operation or maintenance activities require deviation from the basic standards and guidelines or those approved by the BLM or USFS Authorized Officer or his/her designated representative, field personnel and contractors will notify the designated agency contacts prior to initiating the activity and/or during the activity if any unanticipated biological, cultural, or paleontological resource issues are encountered.

This section provides information describing operation and maintenance activities, including transmission line patrols, inspections, tower and wire maintenance, and maintenance of access roads. This section describes the typical activities the Proponent will use for the inspection, and maintenance of its transmission line. The different activities can be categorized in three groups: Routine Maintenance Activities (Section 4.2.1), Major Maintenance Activities (Section 4.2.2), and Emergency Maintenance Activities (Section 4.2.3).

4.2.1 Routine Activities

4.2.1.1 Routine Inspection

The transmission lines will be patrolled (inspected) a minimum of three times per year to identify any maintenance requirements, twice by helicopter and once by driving patrol. The transmission lines and substations will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other existing or potential mechanical problems. The need for vegetation management also will be determined during inspection patrols.

Aerial inspection by helicopter is critical during the spring and fall of each year based on weather conditions, helicopter availability, and statutory requirements of the states served by the Proponent. The aerial inspections are conducted to identify conditions that pose an immediate hazard to the public or employees, or that risk immediate loss of supply or damage to the electrical system. Any conditions identified are to be resolved prior to peak demand in the summer and winter months.

The aerial inspections utilize helicopters to get an observer in an observation position above the transmission line. The observer assesses the condition of the transmission lines and hardware to determine whether any components need to be repaired or replaced or if other conditions exist that require maintenance or modification activities. The aerial inspections are dependent on weather, flight control

restrictions, and the extent of damage assessment required. The spring aerial inspection is typically performed anytime between March 1 and May 31. The Proponent will make a good faith effort to perform the spring aerial inspection prior to April 15 to avoid conflicts with avian species. The fall aerial inspection is typically performed between October 1 and November 30. The Proponent's employees are trained and adhere to bird management and avian protection plans for all maintenance activities, including aerial inspections to routinely identify nest locations and check these structures for activity. Overflight maintenance activities are conducted at a distance and speed that will not result in disturbance to avian species or nests. In the unlikely event aerial inspections are determined to potentially disturb birds, the BLM and/or USFS will notify the Proponent and collaborate to devise a suitable solution to conducting the required inspection. If relocation or removal of nests of a protected species is required, the Proponent will contact the FWS to obtain appropriate permits. If the nest is located on BLM- and/or USFS-administered lands, the BLM and/or USFS will be notified and provided a GIS shapefile in North American Datum 83 projection that provides time, date, place, species information, and associated metadata related to the affected nest. Data will be provided to the appropriate agency wildlife biologist (i.e., BLM Cedar City Field Office, Fishlake National Forest, Dixie National Forest, etc.) prior to any disturbance to the nest.

Ground inspections will be done on approved access roads or along the transmission line right-of-way to each structure as appropriate. The inspector will access each of the structures and will check all equipment and other components that could require repairs. Inspectors performing such inspections will utilize conventional four-wheel-drive trucks, four-wheel-drive all-terrain vehicles, snow cats, or the inspector may walk the line. The annual ground inspection will be conducted at a time deemed appropriate based on the weather conditions, results of aerial inspections, and other conditions subject to change on an annual basis. The Proponent may perform minor repairs during its ground inspections such as installing new numbers, installing/repairing ground wire, or performing other minor tasks that do not involve long duration, specialized equipment, or large work crews.

Both aerial and ground inspections will also note any unauthorized encroachments and trash dumping on the right-of-way that could constitute a safety hazard.

In the event of an outage or interruption in the transmission of electricity or other failure, the Proponent shall perform detailed inspections of the transmission line to determine the cause. The extent of activities associated with outage inspections is explained in more detail below.

4.2.1.2 Routine Maintenance

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis, including the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, or wear are in need of replacement or repair. The work performed is typically repair or replacement of individual components, performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days. Typically, maintenance vehicles and equipment will remain within the permanent maintenance work area which surrounds the structure (refer to Table 3-1), and no new ground disturbance will be required. If maintenance activities and/or equipment are required beyond the permanent maintenance work area, maintenance crews will coordinate with the BLM or USFS Authorized Officer or his/her designated representative to obtain any required temporary use approval/permits to complete the work, and maintenance activities will be conducted within the previously disturbed temporary work areas from Project construction. In such cases, reapplication of reclamation treatments (refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD) may be required after completion of maintenance activities, as determined by the BLM

or USFS Authorized Officer or his/her designated representative. All mitigation measures outlined in this POD apply to design, construction, and maintenance activities as reflected in Section 5 – Environmental Mitigation Measures.

There are two types of routine maintenance activities that will be performed by the Proponent:

- "A" condition activities are those maintenance activities where the Proponent's transmission lines or their components must be repaired within a short period of time, typically within 90 days of discovery, to ensure the line does not suffer an outage or cause safety concerns; and

- "B" condition routine maintenance activities are those maintenance activities where the Proponent's transmission lines or their components may be repaired during detailed ground or outage-cause inspections or may be scheduled to occur at any time within a 12-month period. Routine maintenance activities for "B" conditions, such as replacing structures and conductors that require relatively large crews or large or specialized equipment, are targeted to be performed by the Proponent between April 15 and October 15. This period of time may be extended or performed during other periods of the year after discussions with the BLM or USFS Authorized Officer or his/her designated representative.

Table 4-1 shows transmission line routine maintenance activities.

TABLE 4-1
TRANSMISSION LINE ROUTINE MAINTENANCE ACTIVITIES

Typical Activity	Description Of Example	Equipment Needed	Frequency
Aerial inspection	Aerial survey of transmission line	Helicopter/fixed-wing	Biannual or during emergency outage conditions
Ground inspection	Visual and physical inspection of lines and poles to detect any problems	All-terrain vehicle (ATV), 4-wheel drive truck, pedestrian and/or equestrian access	Annual or during emergency outage conditions
Insulator replacement[1]	Replacement of an insulator on failure	ATV, 4-wheel drive truck, large equipment, caterpillar	Annual[2]
Anchor wire/anchor replacement[1]	Replacing anchor wires or anchors	4-wheel drive truck, track hoe, other equipment	Annual[2]
Vegetation management	Clearing of trees from right-of-way that are under or within 50 feet of the lines and clearing all vegetation within 25 feet of poles	ATV, 4-wheel drive truck, chainsaws, mower, and track-mounted cutter/chipper	3-year cycle
Weed control	Treatment of noxious weeds in right-of-way	Sprayer (herbicide)	As described in the Operation and Maintenance Plan
Road Maintenance[1]	Vegetation removal, water bar installation, culvert installation, etc.	4-wheel drive truck, bulldozer, grader, excavator	Annual
Hardware tightening[1]	Tightening of existing hardware on structures	4-wheel drive truck, boom truck	10-year cycle
Pole replacement[1]	Access to site, creating lay-down area, digging new pole holes and anchor holes, framing structure, and removing old pole	4-wheel drive truck, boom truck, excavator, bulldozer or other tracked vehicle, line truck, helicopter	Annual[2]

NOTES:
[1]This activity may require access to a transmission line structure and therefore may also include site-specific road maintenance activities to facilitate access.
[2]This activity will occur on approximately 1 to 5 percent of structures as part of the annual inspection as the line ages but may also occur during emergency outage conditions to replace damaged infrastructure

The type of equipment used to perform routine maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities include four-wheel-drive pickups, man-haul, material flatbeds, line trucks, concrete trucks and pumping equipment, cranes, snow cat, tractor trailer, and high reach bulldozer/caterpillar.

Workers require access to the damaged portion of the line to allow for a safe and efficient repair of the facility. Equipment required for this work may include four-wheel drive trucks, material (flatbed) trucks, low-reach boom trucks, high-reach boom trucks, bulldozer/caterpillar, or man lifts. This work is scheduled and is typically required due to issues found during inspections. Typical items that may require periodic replacement on a 345kV tower include insulators, hardware, and tower members. It is expected these replacements will be required infrequently (every 5 to 10 years) or as determined by inspection.

The Proponent plans to conduct maintenance on the critical 345kV system using live-line maintenance techniques. Maintenance on the transmission lines can be completed safely using live-line techniques, thereby avoiding an outage to the critical transmission line infrastructure. High-reach boom trucks, along with other equipment, are used to conduct these activities. For the 345kV lattice structures, this requires adequate space be available at each structure site so the high-reach boom truck can be positioned to one side or the other of the structure and reach up and over the lower phases to access the upper and center phase for live-line maintenance procedures. For the 345kV H-frame structures, this requires adequate space be available at the structure site so a boom truck can be positioned to access the outside phases.

To allow room at the structure for these activities in low slope areas, a pad area is required with the structure in the center of 150-feet (right-of-way width) by 100-feet longitudinal for a lattice or 3-pole structure and 150-feet (right-of-way width) by 50-feet longitudinal for an H-frame structure. Figure 4-1 depicts the space requirements for live-line maintenance. The size and location of these required pads near the structures may vary depending on the side slope and access road at each site. The work areas and pads will be cleared to the extent needed to safely complete the work. These pads will remain in place after construction, but will be revegetated after the initial construction is completed. Temporary construction pads will be recontoured after construction. Live-line maintenance pads will be established when required to conduct live-line maintenance. Following completion of the live-line maintenance, these pads will be recontoured and revegetated.

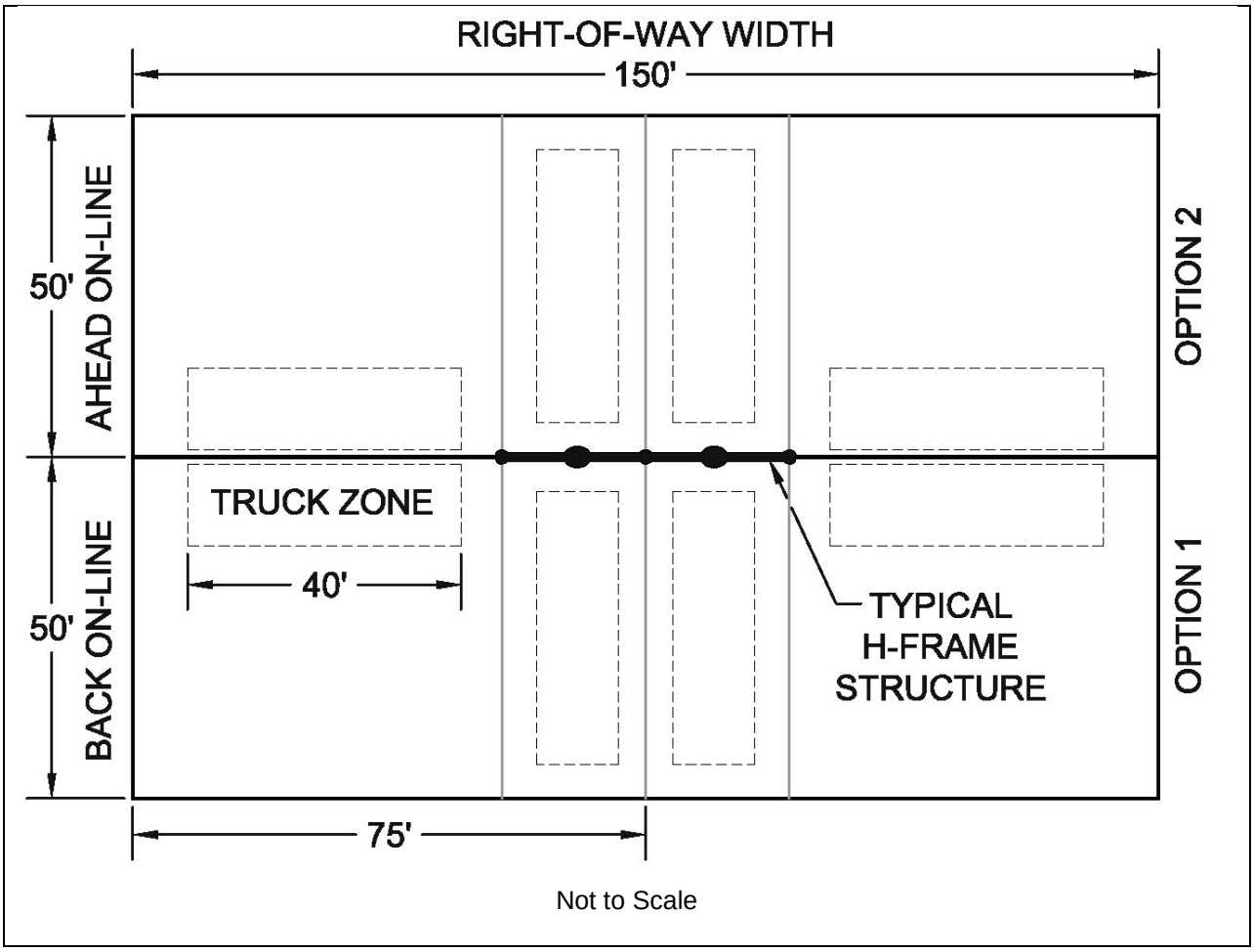

Figure 4-1 Long-term Operation and Maintenance Space Requirements of a 345kV Transmission Line

The term "Routine Maintenance Activities" does not include the repair or replacement of any equipment or facility that is not in working order and necessitates replacement immediately for the safe and efficient operation of a given transmission line. This type of activity is described in Emergency Maintenance Activities below.

4.2.1.3 Routine Vegetation Management

The Proponent must maintain work areas adjacent to electrical transmission structures and along the right-of-way for vehicle and equipment access necessary for operations, maintenance, and repair, including live-line maintenance activities as described above. Shrubs and other obstructions will be removed regularly near structures to facilitate inspection and maintenance of equipment and to ensure system reliability. At a minimum, trees and brush will be cleared within a 25-foot radius of the base or foundation of all electrical transmission structures and to accommodate equipment pads to conduct live-line maintenance operations. Within or adjacent to the right-of-way, mature vegetation will be removed under or near the conductors to provide adequate electrical clearance, as required by the NERC and Department of Energy. Typically, only large trees or fast growing vegetation will be pruned or removed. Slash will be left in place or disposed of in accordance with the requirements of the land-management agency or landowner. Trees and other vegetation will be removed selectively using the wire zone-border zone

technique described in the subsection below and Appendix C2 – PacifiCorp's Transmission and Distribution Vegetation Management Program Specification Manual. If necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation will be removed selectively in a manner that protects biological resources as much as possible. Vegetation management practices along the right-of-way will be in accordance with the Proponent's Transmission and Distribution Vegetation Management Program Specification Manual (PacifiCorp 2007b) and the Reclamation, Revegetation, and Monitoring Framework Plan (Appendix B14). Vegetation management must reduce hazardous fuels to improve or maintain conditions and avoid adverse effects on historic properties found within the right-of-way. If there is a conflict between the requirements of the land-management agency or landowner and PacifiCorp's standard procedures for vegetation management, the land-management agency or landowner requirements will be followed.

Vegetation will be removed using mechanical equipment such as chain saws, weed trimmers, rakes, shovels, brush hooks, and mowers. Clearing efforts in heavy growth areas will use equipment such as a Hydro-Ax excavator mounted brush mower or similar. The duration of activities and the size of crew and equipment required will be dependent on the amount and size of the vegetation to be pruned or removed. Periodic (every 2 to 5 years) mechanical treatment of trees and woody vegetation in the right-of-way will occur.

In selected areas, herbicides may be used to control noxious weeds or incompatible tree species (i.e., those species that have the potential to grow into the minimum conductor-vegetation clearance requirements, refer to Appendix C2 – PacifiCorp's Transmission and Distribution Vegetation Management Program Specification Manual of the POD) that regenerate from the root systems after removal to meet vegetation management objectives. All pesticide and herbicide applications will be performed in accordance with federal, state, and local regulations, and in compliance with land-management agency and/or landowner requirements, including obtaining a Pesticide Use Permit if herbicide is used on agency-administered lands.

Wire Zone-Border Zone Technique

Over 55 years of research on transmission rights-of-way has demonstrated that integrated vegetation management applied to creating distinct, compatible plant communities not only effectively manages vegetation on rights-of-way, but also enhances wildlife habitat, at least in forested areas (Yahner 2004). The Wire Zone-Border Zone technique was developed by W.C. Bramble and W.R. Byrnes (Bramble et al. 1991) as part of the research effort. The wire zone is the right-of-way portion directly under the wires and 10 feet to the field side of the outside phases. The border zone ranges from 10 feet outside the outer phases to the right-of-way edge (Figure 4-2). Properly managed, Wire Zone-Border Zone linear corridors not only effectively protect the electric facilities, but also can become an asset for forest ecology and forest management (Bramble et al. 1991, Yahner et al. 2001, Yahner 2004).

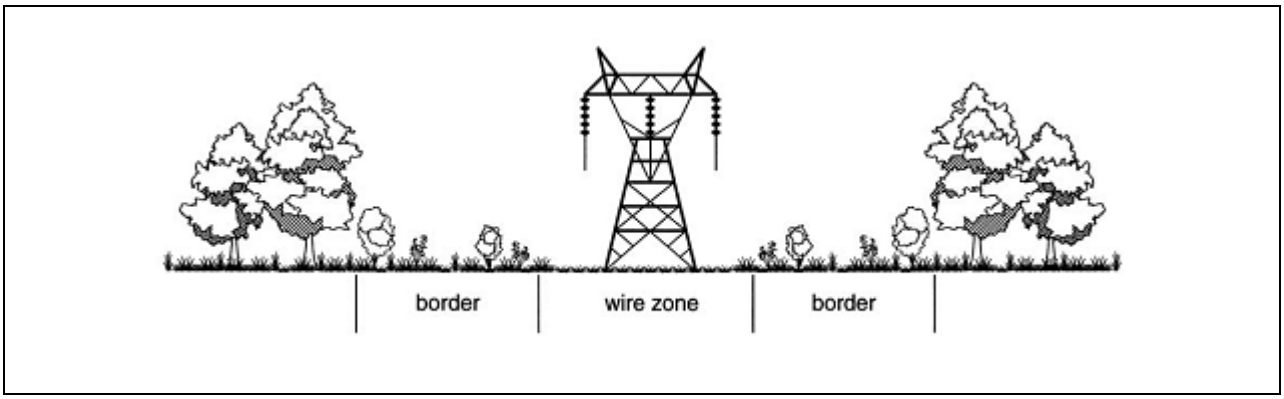

Figure 4-2 Border and Wire Zone

The wire zone is managed to promote a low growing plant community dominated by grasses, herbs, and small shrubs (under 3 feet in height at maturity). The border zone is the remainder of the right-of-way; it is managed to establish small trees and tall shrubs (under 25 feet in height at maturity).

The wire zone-border zone technique features vegetation cover type conversion to low-growing plant communities within the wire zone, where the line is less than 50 feet from the ground (Figure 4-3). Seed mixes establishing an understory of grasses, forbs, and/or low-growing shrubs will be applied to stabilize the right-of-way.

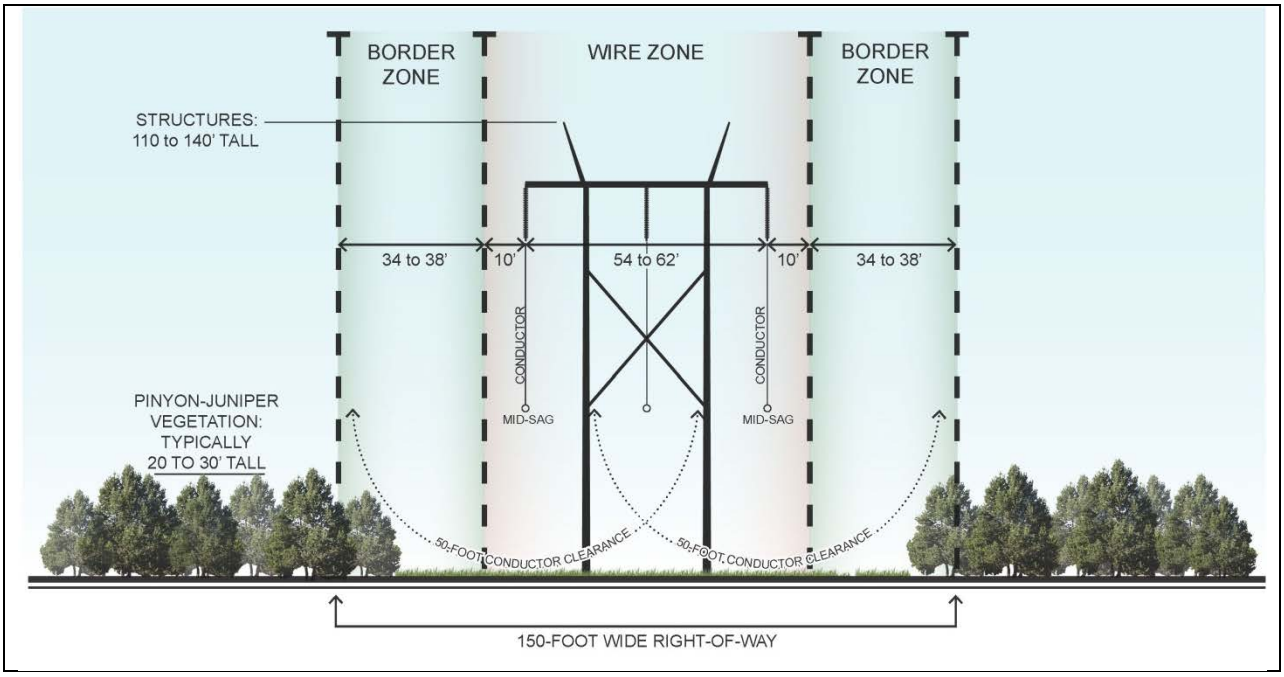

Figure 4-3 Border and Wire Zone in Typical Pinyon-Juniper Vegetation

Small trees and tall shrubs (under 25 feet in height at potential growth height) in nonurbanized areas can be grown in the border zone and throughout the right-of-way where conductor clearances are 50 to 100 feet from the ground. In the appropriate vegetation communities, timber species may be allowed to mature throughout the right-of-way where conductors are over 100 feet from the ground, and still maintain the appropriate conductor clearance (Figure 4-4 and refer to Section 3 – Project Description).

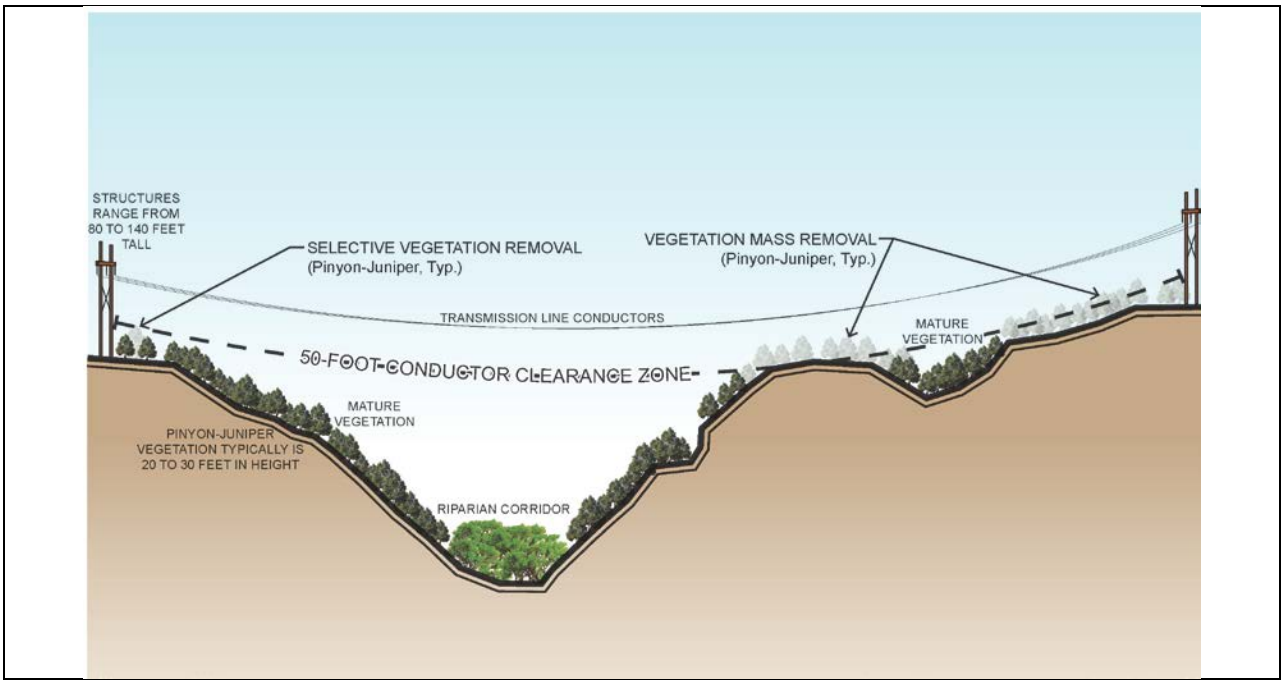

Figure 4-4 Vegetation Clearing and Retention in Typical Pinyon-Juniper Vegetation

The wire zone and border zone may be adjusted, as appropriate, based on slope conditions (e.g., where the Project is located on and parallels a side-hill condition). Where slope conditions warrant, the wire zone and border zone may be moved "up" or "down" the slope, as appropriate within the right-of-way (Figure 4-5).

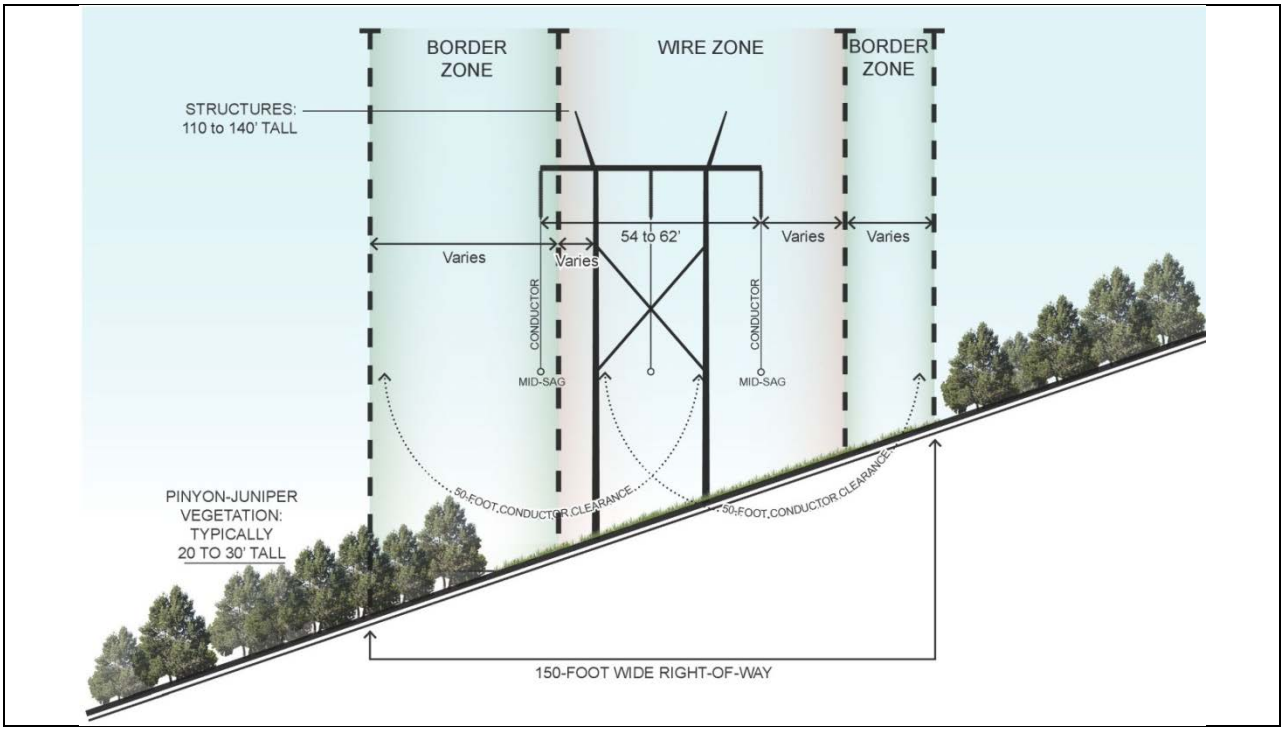

Figure 4-5 Border and Wire Zone in Side-hill Condition, Pinyon-Juniper Vegetation

4.2.1.4 Routine Right-of-Way and Access Road Maintenance

Repairs to the right-of-way will be scheduled as a result of line inspections or will occur in response to a significantly degraded condition or an emergency situation. Where access is required for maintenance of the line, the Proponent shall maintain the approved access roads in a safe, useable condition, as directed in consultation with the BLM or USFS Project Manager or authorized representative. Required equipment may include a grader, backhoe, four-wheel drive pickup truck, and a steel-tracked cat-loader or bulldozer. A cat-loader is equipped with steel tracks whereas graders, backhoes, and trucks typically have rubber tires. Where the ground is uneven at drainage crossings, special precautions will be taken to ensure equipment blades do not destroy vegetation. As needed, maintenance crews will rescarify and reclaim newly disturbed areas to pre-existing conditions. All maintenance and future road improvements will need to avoid adverse effects to historic properties and be completed in compliance with Section 106 of the NHPA and the Project Programmatic Agreement in consultation with the BLM or USFS Authorized Officer or his/her designated representative.

Access road repairs include grading or repair of existing maintenance access roads and work areas and spot repair of sites subject to erosion, slumping of side-slopes, inadequate drainage, flooding or scouring. In some cases, cut and/or fill of foreign material may be required to repair the access roads into suitable condition for safe travel of maintenance repair vehicles such as high-reach boom trucks. When an approved access route into a structure location needs improvement, heavy equipment appropriate for the required work will be used after notifying the BLM or USFS Authorized Officer or his/her designated representative (refer to Section A6.4 – Procedures of Appendix A6 – Environmental Compliance Monitoring Plan). Required equipment may include a grader, backhoe, four-wheel-drive pickup truck, and a cat-loader or bulldozer. The cat-loader has steel tracks whereas the grader, backhoe, and truck typically have rubber tires. Any berms or boulders that were in place to limit access will also be reclaimed after completion of the maintenance work. Repairs to the access roads will be scheduled as a result of line inspections, or will occur in response to an emergency situation.

Snow will be removed from the right-of-way where necessary to provide access to roads (excluding overland routes), structure work sites, and other Project-related facilities and to expose soils for backfilling and grading. Snow will typically be bladed or pushed off the roads and construction area but within the right-of-way. The storage of snow (i.e. snow piles) will be confined to areas approved for disturbance and where appropriate surveys have been completed. BLM or USFS approval, as appropriate, must be obtained prior to removing snow in areas identified as potentially occupied by sensitive plants or wildlife.

Snow removal will be done typically with a motor grader, snowplow, or dozer. Care will be taken when removing snow to minimize mixing of soil with snow. Tracked equipment used for snow removal operations shall be equipped with shoes to keep the blade 2 inches off the ground. The Construction Contractor(s) shall take special precautions where the surface of the ground is uneven and at drainage crossings to ensure equipment blades do not destroy vegetation.

In areas where snow fills trenches or holes, the Construction Contractor(s) will be responsible for removing it to allow visual inspection of the trench or holes prior to installing project facilities and backfilling.

The Construction Contractor(s) will backfill trenches with unfrozen soils to the extent practicable to minimize the potential for ditch line settlement resulting from voids between frozen chunks of backfill.

As directed by the BLM or USFS Authorized Officer or his/her designated representative, all access roads shall be winterized by providing a well-drained roadway. This may be achieved by installing water bars,

maintaining drainage, and any additional measures necessary to minimize erosion and other damage to the roadway or the surrounding public lands.

4.2.1.5 Routine Substation and Communication Regeneration Site Maintenance

Substation and regeneration station monitoring and control functions are performed remotely from the Proponent's central operations facilities located at its operation center in Portland, Oregon. Unauthorized entry into substations or regeneration stations is prevented with the provision of fencing and locked gates. Warning signs will be posted and entry to the operating facilities will be restricted to authorized personnel. In general, substations and regeneration stations will not be staffed continuously; however, a remotely monitored security system will be installed. Several forms of security are planned for each of the locations, although the security arrangements at each of the substations or regeneration stations may differ somewhat. Security measures may include fire detection in the control building via the remote monitoring system; alarming for forced entry; and a perimeter security system coupled with remote sensing infrared camera equipment in the fenced area of the station to provide visual observation/confirmation to the system operator of disturbances at the fence line.

Substations will have a monthly inspection performed with maintenance activities scheduled to address any issues identified. Safety lighting at the substations will be provided inside the substation fence for the purpose of emergency repair work. Because night activities are not expected to occur more than once per year, the safety lighting inside the substation fence will normally be turned off. One floodlight, mounted near the entry gate to safely illuminate the substation entry gate, may be left on during nighttime hours.

Maintenance activities include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. It is anticipated that maintenance at each substation will require approximately six trips per year by a two- to four-person crew. Routine operations will require one or two workers in a light utility truck to visit the substations monthly. Typically, once per year a major maintenance inspection will take place requiring up to 15 personnel for 1 to 3 weeks. Regeneration stations will be visited every two to three months by one individual in a light truck to inspect the facilities. Annual maintenance will be performed by a two-man crew in a light truck over a two- to five-day period. All outbuildings, substations, or communication regeneration sites will have defensible space created and maintained at a minimum of a 30-foot clearance of vegetation, on 0 to 10 percent slopes, from all structures or flammable fencing. If the slope exceeds 10 percent, the clearance on the downhill side will be increased. Structures of any type should be set back from the edge of slopes whenever possible. If substation landscaping is required by the permitting agency, drought-tolerant plant materials will be used to minimize watering requirements after plant establishment.

4.2.2 Major Maintenance Activities

Major maintenance activities will be relatively large-scale efforts that occur on an infrequent basis. These activities require planning and budgeting in advance and agency coordination. They may involve larger work crews than routine maintenance activities and a variety of equipment, including heavy equipment, and usually require several days or longer to complete (Table 4-2).

TABLE 4-2 TRANSMISSION LINE MAJOR MAINTENANCE ACTIVITIES			
Typical Activity	**Description Of Example**	**Equipment Needed**	**Frequency**
Structure relocation	Access to site, creating landing pad and pole lay-down area, digging new pole holes and anchor holes, framing structure, removing old pole	4-wheel drive truck, boom truck, excavator, bulldozer or other tracked vehicle, line truck, helicopter	Annual[1]
Conductor replacement	Replacing conductor typically associated with a non-emergency pole change-out	4-wheel drive truck, boom truck, and line truck, large equipment, helicopter	Annual[1]
Access route reconstruction and relocations	Altering the alignment of any existing access routes, creating replacement access routes, grading and culvert installation	4-wheel drive truck, bulldozer, grader, excavator	As needed
NOTE: [1]This activity will occur on approximately 1 percent of structures annually but may also occur during emergency outage conditions to replace damaged infrastructure.			

The Proponent will identify proposed major maintenance activities and notify the designated contact for the appropriate public land-management agency before initiating major maintenance activities. The Proponent and the appropriate public land-management agency will identify what, if any, special notification or additional clearance approvals are required prior to conducting the proposed major activities.

When the Proponent's field personnel and contractors carry out major maintenance activities, they will be required to adhere to all standards and guidelines contained in the approved POD, terms and conditions of the ROD, any site-specific activity or timing constraints, and the requirements of any mutually agreed on additional clearance or special notification requirements.

4.2.3 Emergency Maintenance Activities

The continued operation and maintenance of the transmission line will reduce or prevent, to the greatest extent possible, any emergency activities (defined as situations that could threaten life, property, or resources). Even so, unforeseen emergency conditions may arise. The operation of the system is remotely managed and monitored from control rooms at the Proponent's operation center in Portland, Oregon. Electrical outages or variations from normal operating protocols will be sensed and reported at this operation center. As well, the substations are equipped with remote monitoring, proximity alarms, and in some cases video surveillance.

Examples of emergency maintenance include activities necessary to restore power due to a transmission structure or conductor failure due to natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the powerline, or restore service if there is an outage. In an emergency, the Proponent must respond as quickly as possible to restore power.

In practice, as soon as an incident is detected, the control room dispatchers will notify the responsible operations staff in the area(s) affected and crews and equipment will be organized and dispatched to respond to the incident. In these cases, the Proponent will notify the designated contact for the appropriate land-management agency concurrently with responding to the emergency. The appropriate land-

management agency may elect to have a representative present during emergency operations and/or to conduct a post-event site visit to evaluate the Proponent's response, assess impacts, and propose remedial measures for discussion. The Proponent will adhere to the same constraints identified for routine and major maintenance activities to minimize impacts to resources, when possible.

The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs. For example, where the site of the outage is remote, helicopters may be used to respond quickly to emergencies.

When working on BLM or USFS lands, the Proponent's employees and contractors will be equipped with approved suppression tools and equipment. The Proponent or their Construction Contractor(s) will notify local fire authorities and the BLM or USFS (as appropriate) if a Project-related fire occurs within or adjacent to a construction area.

If the Proponent becomes aware of an emergency situation caused by a fire on or threatening BLM- or USFS-administered lands and that could damage the transmission lines or their operation, they will notify the appropriate agency contact (refer to Appendix B9 – Emergency Preparedness and Response Plan Framework for a complete list of appropriate emergency contacts). Specific construction-related activities and safety measures will be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression if a fire occurs.

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SECTION 5 – ENVIRONMENTAL MITIGATION MEASURES

5.1 Introduction

The purpose of this section is to orient to reader to the environmental issues associated with the Project and to provide a cross-reference of Project design features for environmental protection and selected mitigation measures considered in the Final EIS with their location in the Section 5 of this POD includes the following:

- Overview of environmental issues associated with the construction, operation, and maintenance of the Project as identified in the Project EIS
- Design features for environmental protection and selective mitigation measures considered in analysis presented the Project EIS, as to address the identified environmental issues and their referenced locations in Appendix A – Construction Considerations, and Appendix B – Environmental Protection Plans

5.2 Summary of Environmental Issues by Environmental Resource

This section of the POD summarizes the types of environmental resource issues identified in the EIS and through field investigations and surveys conducted for the Project. The summary in this section is intended to provide an overview of the types of environmental impacts associated with the construction, operation, and maintenance of the Project and context for the design features for environmental protection in the Project description and site-specific mitigation measures.

5.2.1 Climate and Air Quality

Particulate-matter emissions associated with construction of the transmission line would result predominantly from fugitive dust generated by construction vehicles traveling on unpaved roads.

Gaseous pollutant emissions associated with construction of the transmission line would result predominantly from diesel- and gasoline-powered construction equipment.

Overall, impacts on air quality from Project construction would be temporary, localized to the vicinity of the activity, and would disperse quickly or settle.

5.2.2 Earth Resources and Soils

5.2.2.1 Geologic Hazards

The Project would not be anticipated to impact faults, earthquakes, or liquefaction. However, the Project could potentially contribute to destabilization of slopes or the re-activation of landslide deposits.

Geologic hazards could directly or indirectly affect the construction, operation, and maintenance of the Project.

5.2.2.2 Mineral Resources

Locatable and salable mineral resources can be exposed at the surface, lie just below the surface, or be located several hundred feet below the surface. Oil and gas leases exist in a number of counties that could be crossed by the Project. Significant petroleum exploration, recovery, and transportation infrastructure exists, or could exist in the future. Because existing oil and gas production facilities were avoided during project siting, the Project will not interfere with current oil and gas production in the Project area. Furthermore, the Project should not affect future oil or gas production because oil and gas deposits generally are located at depths of more than 1,000 feet.

Active mines and mining operations exist in a number of counties in the Project area. Avoidance of land use conflicts, such as mining operations and oil and gas production areas, where possible, was a criterion in the Proponent's engineering study to identify locations where transmission lines could be sited and constructed. Where mining operations or mineral resources could not be avoided, the construction and maintenance of the Project could have direct effects to mineral resources that include the following:

- Loss of mineral resources caused by construction activities
- Limiting development and extraction of mineral resources resulting from the presence of permanent facilities (permanent)

5.2.2.3 Soil Resources

Most of the detrimental impacts on the soil resources will be limited to relatively small areas where ground disturbances will actually occur, such as cutting and grading access roads and clearing and leveling of transmission-line structure work areas. In the northern Project area, the primary impact of concern would be on soils susceptible to wind erosion, primarily those associated with the Escalante Desert. Accelerated erosion could result in temporary to permanent loss of soil material.

In the southern project area, primary impacts would be on soils susceptible to water or wind erosion. Impacts on designated Prime and Unique Farmland soils could include irreversible conversion of these soils to nonagricultural uses. Impacts on soils would include potential acceleration of water erosion. Accelerated erosion could result in temporary to permanent loss of soil material.

5.2.3 Water Resources

Only low impacts on water resources will be anticipated in the northern project area. The mitigation of any high or moderate impacts can be attributed to spanning riparian areas or avoiding ground-disturbing activities that would remove soil-stabilizing vegetation in riparian areas such as at Dry Creek. Avoiding surface-disturbing activities on steep slopes like those occurring in the Dry Hollow area, where the potential for increased erosion following ground disturbance or removal of vegetation exists, also would reduce impacts.

In the southern project area, the selected route is located within the Upper Virgin Watershed, which contains a state-listed impaired water (Santa Clara River) that has the potential for being affected by construction and maintenance activities. Ground disturbance related to the construction and maintenance

of the transmission line could potentially increase erosion in disturbed areas and reduce permeability of soils where compacted, potentially contributing to an increased level of total dissolved solids, salinity, chlorides, and selenium being discharged into the Santa Clara River. If not avoided or mitigated, this potentially could exceed effluent limits set by the EPA. However, with implementation of planned mitigation, most effects on state-listed impaired waters, as well as the municipal and agricultural needs of citizens living downstream, will be avoided and/or mitigated to acceptable levels.

5.2.4 Biological Resources

The construction, operation, and maintenance of the Project will result in both direct and indirect effects on biological resources. Direct effects associated with construction activities will likely include (1) behavioral disturbance and the displacement of wildlife (temporary); (2) habitat loss, modification, and fragmentation, including increased potential for the establishment and spread of noxious weeds in disturbed areas (long-term); (3) the long-term displacement of individual animals; and (4) the potential for mortality, primarily for wildlife species with limited mobility (temporary).

Indirect effects associated with Project-related activities can result from the construction of permanent access roads, which can be used by the general public to access currently inaccessible habitats. This additional human presence and activity and vehicle noise can result in displacement, abandonment of habitat, behavioral disruption, and additional stress during critical periods. New access into previously inaccessible habitats can increase displacement of wildlife and mortality by legal hunting or poaching. Public use of access roads can facilitate the spread of noxious weeds and increase the risk of human-caused wildfire. These indirect effects can be permanent.

5.2.4.1 Vegetation

Vegetation will be cleared prior to construction of access roads, tower sites, and work areas; tall growing vegetation will be removed from within the right-of-way throughout the life of the Project to allow for safe operation of the transmission line. Other impacts can include crushing of vegetation during construction, operation, and maintenance as a result of movement of public and construction vehicles off of areas cleared and maintained for vehicle access and construction activities. Project-related construction and maintenance activities, in addition to construction of access roads that can be used by the public for motorized access to previously inaccessible areas, can affect vegetation communities in the Project area by introducing or spreading weeds and non-native plant species. These activities also can potentially alter the frequency of wildland fire in the Project area due to increased risk of fire ignition due to vehicle use, human presence, and spread of non-native plant species.

Sensitive vegetation, including riparian communities and associated stream crossings and agriculture fields, has been avoided or spanned in Project design and engineering and vegetation clearing will be limited in riparian habitats to minimize adverse impacts. Application of these mitigation measures will allow sensitive vegetation to remain undisturbed by the Project activities and available for use by wildlife. Avoiding or spanning these resources also will lower the risk of introduction of weeds and invasive species and reduce overall habitat fragmentation associated with the Project within the Project area.

In areas where vegetation is removed for installation of permanent Project features or where the Project will require ongoing vegetation management, these impacts will be permanent. In areas impacted by temporary Project features or requiring permanent stabilization, such as temporary work areas, multi-use construction yards, and road cuts, vegetation will be restored as outlined in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. Restoration of vegetation and application of mitigation

measures will reduce impacts to multiple resources and allow for ongoing use of vegetation resources in the Project area for livestock grazing, wildlife habitat, soil stabilization, and mitigation of visual resource impacts.

5.2.4.2 Wildlife

Behavioral disturbance and displacement of wildlife from areas within and adjacent to the right-of-way due to construction noise and the presence of humans and construction equipment can occur during construction. Mortality of wildlife can occur during construction and maintenance if wildlife is crushed by or collide with moving construction equipment. Birds and bats could be killed by collisions with the transmission line and other Project features during operation of the transmission line. Additionally, construction of access roads and the transmission line can alter existing habitats, affecting their capability to satisfy the forage and shelter needs of wildlife.

Construction of the transmission line, access roads, and other Project facilities can fragment wildlife habitat, increase the potential for spread of noxious weeds, and can increase the frequency of human-caused wildfires. Habitats affected by wildfires often take several years to recover and provide for the forage and shelter needs of wildlife. Construction of new access roads and associated increases in human visitation can cause disturbance of wildlife due to increased human presence in areas rarely visited by humans in their existing condition. Prey species for raptors can experience increased predation due to use of transmission structures by raptors as perches in habitats with otherwise limited perching opportunities. These impacts may cause degradation and abandonment of wildlife habitat and alteration of predator-prey relationships, which potentially can affect carrying capacity of habitats in the Project area.

Aquatic species may experience loss of aquatic habitat and removal of vegetation that is important for habitat function as a result of construction of access roads or transmission structures in aquatic habitats. Indirect effects on aquatic habitats and fisheries can include temporary increases in turbidity and sedimentation associated with ground disturbance near aquatic habitats.

Raptors and Other Migratory Birds

Raptors and migratory birds can experience modification of foraging and nesting habitat due to construction of access roads and tower structures. Vegetation clearing and maintenance also can modify or remove foraging and nesting habitat. Mortality of birds can occur due to collisions with the transmission line or towers. Birds may abandon nests during breeding seasons as a result of increased stress from human presence and construction activities. Construction of tall structures that can be used by raptors for perching or nesting in habitats where perches are otherwise limited can increase raptor hunting and nesting success.

Construction, operation, and maintenance of the transmission line can cause similar indirect impacts on raptors and migratory birds as those described under the Wildlife subheading. Additionally, raptors and other migratory birds can be affected by increases in hunting and poaching pressure due to increased motorized access in habitats that in their existing condition are visited rarely by humans.

Raptor nest surveys were conducted in 2012 to identify existing raptor nests (active and inactive) along the transmission line route that may be affected by construction and operation activities. Preconstruction surveys for active raptor nests will be conducted prior to ground disturbance or other construction activities to identify nesting activity (i.e., territorial behaviors, occupancy, etc.) and to identify locations, in coordination with BLM and USFS, where mitigation measures must be applied (Mitigation Measure 12

[Table 5-2]). Requirements for preconstruction nest surveys are identified in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan.

Migratory bird nest surveys must be performed within 72 hours of ground disturbance or other construction activities if construction would take place during the migratory bird nesting season. Where nests are present, seasonal wildlife restrictions (Mitigation Measure 12 [Table 5-2]) will be applied during construction and maintenance activities. Seasonal wildlife restrictions will be effective in reducing impacts on raptors by preventing Project-related human disturbances during sensitive breeding, nesting, and brood-rearing activities.

Big Game

Effects on big game (i.e., mule deer, elk, and pronghorn) can include temporary displacement of big game animals from crucial seasonal habitats into less suitable habitats, behavioral disruption, and additional stress due to construction noise and activity. Impacts associated with operation and maintenance can include temporary behavioral disturbance and displacement from crucial seasonal habitats to less suitable habitats during routine inspections and maintenance activities. Big game animals also can experience modification of forage resources as a result of right-of-way vegetation maintenance and Project construction. Application of seasonal wildlife restrictions (Mitigation Measure 12) to construction activities in areas designated as crucial big game ranges and known fawning areas will reduce impacts on big game by minimizing stress on big game individuals and herds and avoid potential displacement from habitats important for their survival. Limiting access into sensitive habitats reduces public access and human disturbance during crucial periods and limits potential hunting and poaching of big game.

Construction, operation, and maintenance of the transmission line can cause similar indirect impacts on big game as those described under the Wildlife subheading. Other impacts on big game species that can occur include increased legal hunting and poaching pressure resulting from increased public access into big game habitats.

5.2.4.3 Special Status Species

Greater Sage-grouse

Analysis performed for the EIS identified that the transmission line route crosses 11.7 miles of UDWR-mapped sage-grouse occupied, crucial brood-rearing, and crucial winter habitats. The route also crosses within 4 miles of an active sage-grouse lek for 3.8 miles. After implementation of mitigation measures, 11.7 miles of high impacts on sage-grouse are anticipated to occur within sage-grouse habitat. These impacts could include removal of vegetation used by sage-grouse for nesting, foraging, and escape cover; increased predation of sage-grouse by raptors, corvids, and terrestrial predators; mortality of sage-grouse due to collisions with the transmission line, guy wires, and construction equipment; reduced breeding and nesting success; and additional stress during wintering periods. Removal of vegetation and placement of transmission line structures could fragment and reduce the connectivity of sage-grouse habitat in the Project area. Long-term impacts on sage-grouse habitats would be reduced by reclaiming and revegetating areas not required for ongoing operation and maintenance of the transmission line in accordance with the Reclamation, Revegetation, and Monitoring Framework Plan (Appendix B14); however, residual impacts would still be high. The Proponent, in coordination with BLM and UDWR, has developed a Sage-grouse Compensatory Mitigation Plan and implemented additional mitigation measures to reduce and compensate for the Project's effects on sage-grouse. Mitigation measures to reduce impacts on sage-grouse are included in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan.

Utah Prairie Dog

Surveys for Utah prairie dog were conducted in 2010 in suitable habitat identified along the transmission line route. No Utah prairie dog occupied or unoccupied habitat was identified during these surveys. BLM consulted with the FWS under Section 7 of the Endangered Species Act on the potential effects of the Project on Utah prairie dog. FWS concurred with BLM on November 9, 2012, that the Project "may affect, but is not likely to adversely affect" the species. Additional surveys for Utah prairie dog will be required within suitable habitat prior to initiation of ground disturbance or other construction activities. Requirements for these surveys are identified in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan. If conditions change based on the pre-construction surveys for Utah prairie dogs (i.e. Utah prairie dog habitat is identified and mapped) then consultation with FWS would be re-initiated.

Pygmy Rabbit and Kit Fox

Surveys for pygmy rabbit and kit fox were conducted along the transmission line route in 2012. No kit fox, pygmy rabbit, or their sign were located during these surveys. However, suitable habitat for both species occurs along the transmission line route and kit fox were observed in the transmission corridor in 2010. A low probability exists that either species could move into the transmission line right-of-way between the time surveys were conducted and construction and maintenance activities.

Sensitive Plant Species

Elsinore buckwheat and Ward's beardtongue, USFS sensitive plants, were located along the transmission line route during surveys in 2011 and 2012. Approximately 17,600 individual Elsinore buckwheat plants were estimated to occur within 300 feet of the transmission line across five element occurrences. Approximately 1,000 individual Ward beardtongue plants were estimated to occur within 300 feet of the transmission line across two separate element occurrences. A total of 1,709 individual Elsinore buckwheat and 77 Ward's beardtongue plants were counted within the limits of areas that would be subject to ground disturbance (e.g., access roads, structure pads) within the Project corridor by USFS and Environmental Planning Group botanists.

The Project was designed to avoid and reduce impacts on these species to the extent possible by spanning and avoiding known populations. Spanning and avoiding sensitive plant populations will reduce impacts on sensitive plant populations because specialized soil, geology, hydrology, and vegetative communities that provide habitat for these species will not be disturbed by construction activities. However, all occurrences of special status species and their habitats cannot be avoided. Additional mitigation measures to reduce impacts on Elsinore buckwheat and Ward beardtongue were also developed, and are identified in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan.

In addition to mitigation measures that will be effective at reducing impacts on sensitive plant species during construction and maintenance activities, USFS botanists have undertaken actions to preserve existing genetic variation within affected populations and ensure population stability. These actions include (1) USFS botanists have collected seeds from sensitive plant occurrences in and around areas that will be affected during construction and submitted the seeds for long-term storage in a native seed bank to maintain the genetic variation of existing populations, and (2) USFS botanists have collected some individual sensitive plants that would be lost during construction and moved the individual plants to Red Butte Garden at the University of Utah for long-term storage to maintain the existing genetic variation and to maintain stability of existing populations.

5.2.5 Wildland Fire Ecology and Management

The potential effects on wildland fire ecology and management associated with the Project include the (1) risk of potential fire caused by construction activities; (2) presence of transmission lines and the limited ability of the agencies to manage fire in remote mountain areas; and (3) potential effect on operation of the transmission line in the event of a wildland fire, as wildfires can damage transmission line structures and smoke can cause transmission lines to arc, putting them out-of-service.

5.2.6 Cultural and Paleontological Resources

5.2.6.1 Cultural Resources

The construction, operation, and maintenance of the Project can result in both direct and indirect effects on cultural resources related to the loss or degradation of prehistoric and historic archaeological sites. The types of potential impacts on archaeological sites include (1) direct and permanent ground disturbance of sites resulting in damage to intact surface and subsurface cultural materials, such as artifacts and features during construction of access roads, ancillary facilities, and tower locations; (2) direct and long-term visual and auditory intrusions, which can compromise aspects of site integrity, such as setting, feeling, and association, which are components of eligibility of the sites for the National Register of Historic Places (NRHP); and indirect and permanent disturbances of sites due to changes in public accessibility (e.g., unauthorized use of access roads)

Avoidance is the preferred mitigation for cultural resources. If avoidance is not possible, other mitigation efforts will be necessary. All mitigation efforts will be in accordance with the requirements of the Programmatic Agreement developed for the Project among the various agencies and consulting parties (including special interest organizations and the Proponent) and documented in a HPTP. Because of the sensitivity of cultural resource site locations and descriptions, the HPTP is confidential but will provide information on the following:

- A brief description of the Proposed Action
- A list of the properties where data recovery is to be carried out
- A list of properties that will require archaeological monitoring during construction
- An archaeological construction monitoring plan
- Research questions to be addressed
- Methods to be used during fieldwork for data recovery
- A cultural resource unanticipated discovery plan
- Methods to be used during analysis
- Reporting and curation of artifacts
- Schedule for the submission of progress reports
- Recommendations for treatment of cultural resources during operation and maintenance of the Project
- Qualifications of consultants employed to undertake the work
- Training protocols for contractors

5.2.6.2 Paleontological Resources

Direct effects associated with construction activities can include the loss of paleontological resources as a result of excavation and construction of facilities, multi-use construction yards, and road construction or

road improvement. Direct effects associated with the operation and maintenance of the facilities and the presence of the transmission line are not anticipated. Indirect effects associated with the construction, operation, and maintenance of the Project include (1) loss of paleontological resources as a result of increased access of the general public to sensitive geological formations, contributing to unauthorized collection or vandalism from the construction of permanent access roads; and (2) loss of paleontological resources as a result of increased erosion from construction activities.

- Mitigation measures will be implemented in areas of high or moderate/undetermined sensitivity (determined by potential fossil yield classification [PFYC]) before and during construction. Areas of PFYC Class 3 or higher, will be surveyed prior to construction to support development of a PRTP to be implemented before and/or during construction. The PRTP will prescribe collecting scientifically significant fossils, monitoring of ground-disturbing activities during construction to collect scientifically significant fossils, curation of any fossils collected during the survey or monitoring, and transfer the fossils into a federally approved repository for future scientific study and education. Because of the sensitivity of paleontological resource site locations and descriptions, the HPTP is confidential but will provide information on the following: A brief description of the Proposed Action
- A list of the areas where monitoring is to be carried out
- A paleontological construction monitoring plan
- Research questions to be addressed
- Methods to be used during monitoring
- A paleontological resource unanticipated discovery plan
- Methods to be used during analysis
- Reporting and curation of fossils
- Schedule for the submission of progress reports
- Recommendations for treatment of paleontological resources during operation and maintenance of the Project
- Qualifications of consultants employed to undertake the work
- Training protocols for contractors

5.2.7 Visual Resources

Regional landscapes in the Project area range from developed urban and suburban landscapes in the northern area of the Project to rural areas and areas of intact character in the southern area of the Project. The urban growth parallels Interstate 70 from Sigurd to Joseph to the Fishlake National Forest boundary. Foothills and mountains, including the Pahvant, Tushar, and Mineral mountains, occur in the northern Project area. Sagebrush basins surrounded by foothills comprise the central Project area. Foothills and mountains, including the Bull Valley, Atchinson, and Pine Valley mountains, comprise the southern Project area. Agricultural development, such as center-pivot farming, dryland agriculture, and livestock grazing lands are integral to the character of the areas around the Sevier River, Escalante Desert, Ox Valley, Mountain Meadows, and along Pinto Creek.

The construction, operation, and maintenance of the Project will result in direct effects on visual resources where:

- Landscape scenery (and associated integrity) would be degraded by the presence of vertical elements in the landscape (transmission line structures), areas of cleared vegetation (right-of-way clearing), and exposed soil from the construction of new permanent access roads

- Views from sensitive viewpoints would be adversely modified through the introduction of Project components into the landscape

- The Project would not comply with federal agency visual management objectives where Project components would contrast with or modify the characteristic landscape to a level that would not be consistent with the established management objectives or applicable planning documents

During project siting and engineering and design, mitigation measures were applied to all areas of potential moderate/high and moderate initial impacts to reduce impact levels where necessary and effective, and where feasible based on the Project description.

5.2.8 Land Use and Recreation Resources

Given the predominately rural character of the Project area, agriculture, particularly livestock grazing, is the primary land use. Irrigated agriculture is common near populated areas located along interstate and state highways. The city of Richfield and the surrounding Sevier Valley are the most urbanized areas, with a concentration of residential, industrial, commercial, and quasi-public uses.

The construction, operation, and maintenance of the Project will result in both direct and indirect adverse effects on land use and recreation resources. Direct effects associated with construction, operation, and maintenance activities can include the following:

- Loss of rangeland for livestock grazing associated with clearing pulling and tensioning sites, multi-use construction yards, access roads, tower sites, and a batch plant (short- and long-term)
- Trail and scenic backway closures during construction (short-term)
- Increased access and OHV use in areas not suitable for vehicular travel due to new and temporary access roads constructed for the Project (long-term)
- Loss of big game habitat and displacement of big game during construction and limit use of land for hunters (short-term)
- Ground disturbance and diminishment of wilderness and/or roadless characteristics in inventoried roadless areas and USFS unroaded/undeveloped areas (long-term)
- Impacts on recreational values on the Dixie and Fishlake National Forests based on the recreational opportunity spectrum
- Conflicts with future energy facilities, including the design, construction, and operation of these facilities (long-term)
- Limit future development of agricultural, industrial, and residential areas (long-term)
- Diminishment of open space in areas zoned for open space conservation (long-term)

Indirect effects can include degradation of popular recreation destination points on lands administered by the BLM and USFS as the result of increased access. If destination points are made more accessible by new access roads constructed for the Project, these areas can be degraded to the point that the enjoyment of future generations can be diminished.

5.2.9 Materials, Hazardous and Solid

All construction, operation, and maintenance activities will comply with all applicable federal, state, and local regulations regarding the use of hazardous substance. Hazardous materials will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. Portable toilets will be located at designated construction sites. All construction waste, including trash,

litter, garbage, and other solid waste, petroleum products, human waste, and other potentially hazardous materials will be removed and transported to a disposal facility authorized to accept such materials.

Sulfur hexafluoride (SF_6) is used as an electrical insulator in high-voltage equipment to transmit electricity between generation centers and custom load centers. PacifiCorp has committed to numerous best management practices, as identified in the Project EIS, to reduce or eliminate the risk of leaks. With these measures in place, leaks are not anticipated, and thus potential impacts of using SF_6 equipment are minimal.

5.2.10 Electromagnetic Fields and Noise

The existing and proposed transmission lines (circuits) between the Sigurd and Red Butte substations are sources of electric and magnetic fields, audible noise, and radio noise. The calculated magnetic field levels associated with the operation of the Project will be below limits for the general public recommended by the International Commission on Non-Ionizing Radiation Protection and the International Committee on Electromagnetic Safety. The highest calculated electric-field level associated with the operation of the Project will be below limits recommended by the International Commission on Non-Ionizing Radiation Protection and the International Committee on Electromagnetic Safety for the general public outside the right-of-way.

The existing and proposed transmission lines meet the criterion for fair-weather radio noise recommended in the Electrical and Electronics Engineers Radio Noise Design Guide.

Isolated noise events associated with blasting during construction will be managed according to the Blasting Plan developed for the Project (B5 – Blasting Plan Framework).

5.3 Overview of Mitigation Measures

Two types of mitigation measures were developed during the EIS process of the Project. These include (1) design features of the Project for environmental protection (i.e., incorporated into the Project description, including Project siting) and (2) selective mitigation measures. Both design features of the Project for environmental protection and selective mitigation measures are either based on or consistent with agency best management practices contained in RMPs and interagency operating procedures from the West-wide Energy Corridor Programmatic EIS.

Design features of the Project for environmental protection are those that are incorporated into the Project description, including transmission route and facility design and construction specifications. These design features for environmental protection typically address specific environmental policies and regulatory requirements and are applied Project-wide, wherever applicable. Where warranted based on the analysis in the EIS and on a case-by-case basis, mitigation beyond these design features for environmental protection has been recommended to reduce potential impacts in specific locations. These types of mitigation are called selective mitigation measures.

Table 5-1 provides a list of design features of the Project for environmental protection. Table 5-2 provides a list of selective mitigation measures identified to reduce impacts on environmental resources. Additional information on selective mitigation measures for biological resources can be found in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan. Information on where selective mitigation measures are to be applied is indicated in Table 5-3. Also, Volume II – POD Map Sets 1 and 2 identify where selective mitigation measures are to be applied. In each instance where selective mitigation

measures have been applied, Table 5-2 explains the rationale why they have been applied and the desired outcome. These selective mitigation measures have been generally categorized as they apply to three specific phases of the Project, including (1) design and engineering, (2) construction, and (3) operation and maintenance. Design features for environmental protection and selective mitigation measures noted as applied during the operation and maintenance phase will be in effect throughout the life of the right-of-way grant and special-use authorization for the Project.

Many of the mitigation measures are applicable to the design and engineering phase of the Project (e.g., locating structures to avoid sensitive features). The Construction Contractor(s) also will be required to adhere to the measures identified during the design and engineering phase, as well as measures identified for application during the construction and reclamation phase. During construction, the CIC will be responsible to oversee the Construction Contractor's adherence to and implementation of these measures.

Volume II – POD Map Sets 1 and 2 are presented in Volume II of the POD. These map sets illustrate engineering, selective mitigation, and environmental information, which supports information presented in Volume I. These maps contain regional to detailed information, including site-specific instructions to guide the construction of the transmission line and associated facilities.

Volume II – POD Map Set 1 includes panel maps (U.S. Geological Survey 7.5-minute topographic quadrangles, scale of 1:24,000) that illustrate the location of facilities at a large scale for the entire alignment, including the location of tower sites, pulling and tensioning sites, multi-use construction yards, and access routes (including all approved potential ingress and egress points to the right-of-way). This information is intended for use by the BLM and USFS, CIC, the Proponent, and Construction Contractor(s).

Volume II – POD Map Set 2 includes panel maps (aerial maps, scale of 1:400) that show (1) the right-of-way in detail, including the specific location of facilities (e.g., structures, pulling and tensioning sites, and access roads, etc.), and sensitive environmental resource areas in the immediate vicinity and (2) selective mitigation measures to be implemented during the, construction, and operation of the transmission line. Each of these detailed panel maps is numbered and indexed on the 1:24,000-scale maps for Volume II – POD Map Set 1.

Volume II – POD Map Set 3 includes aerial panels (aerial maps, scale of 1:400) that depict temporary and permanent access roads along the project alignment from the Sigurd Substation to the Red Butte Substation.

As construction proceeds, data used to generate Volume II – POD Map Sets 1, 2, and 3 will likely be updated. Examples of changes in data can include, but are not limited to:

- site-specific conditions encountered during preliminary construction activities may require a variance to the location of facilities;
- pre-construction resource surveys may identify a new nesting location or a nesting location that was occupied previously, but has been abandoned;
- a spatial and/or seasonal buffer may change status.

Therefore, updates to the POD data will be required. In most cases, these updates will be generated by the Construction Contractor, reviewed by the Proponent, and then submitted to the CIC for review and approval with the BLM and/or USFS. The CIC and the Construction Contractor(s) will be responsible to maintain compatible data sets updated regularly throughout the Project. Any updates to the data will be accompanied by a change log that describes what data have changed, why they changed, the party responsible for approving the change, and the approval date. Maintenance of the change log will be the

responsibility of the CIC but will be done so in cooperation with the Construction Contractor(s). The change log and updated POD data will be submitted monthly to the Proponent. At the conclusion of construction activities, the CIC will provide the final data set to the BLM and to the Proponent, as well as a copy of the original data set and the complete change log.

In addition to the information presented in Tables 5-1 and 5-2, other specific stipulations and methods that implement or supplement the design features of the Project for environmental protection and selective mitigation measures are presented in the environmental protection plans included in Appendix B. The objective of the other specific stipulations and methods is to provide for Project-specific environmental protection as follows:

- Implement the design features of the Project for environmental protection and selective mitigation measures
- Provide consistency across jurisdictions to the extent practical
- Demonstrate methods of compliance with current BLM and USFS management guidance for federal lands
- Balance cost and practicality by avoiding or minimizing environmental impacts

5.4 Overview of Appendix B

Appendix B contains 14 management plans or plan methodologies which describe the mitigation measures and other specific stipulations and methods the Proponent and its Construction Contractor(s) will follow during construction, operation, and maintenance of the Project. All management plans or plan methodologies found in Appendix B are stand-alone documents that contain complete lists of all mitigation measures and other specific stipulations and methods for that environmental resource. The management plans and plan methodologies in Appendix B have been developed jointly by the Proponent and the BLM with input from the USFS and other cooperating agencies. The Proponent will be responsible for implementation of and adherence to these management plans and plan methodologies.

Some of the plans shown below are characterized as “framework” plans. These framework plans establish the approach and the protocols for developing more specific plans, some of which may need to be developed and approved prior to construction. In general, “framework” plans provide guidance at a project level that need to be refined by development of “implementation” plans that are developed at a site-specific level. The Construction Contractor(s) will be required to fully develop implementation plans based on the framework plans identified below. Upon review and approval by the Proponent, the Proponent will submit the fully developed plans to the CIC who will coordinate with the BLM and USFS for final approval. A list of all Appendix B management plans and plan methodologies is provided below.

B1 Traffic and Transportation Management Plan
B2 Stormwater Pollution Prevention Plan (SWPPP) Framework
B3 Spill Prevention, Containment, and Countermeasures (SPCC) Plan Framework
B4 Historic Properties Treatment Plan (HPTP)
B5 Blasting Plan Framework
B6 Plant and Wildlife Species Conservation Measures Plan
B7 Erosion, Dust Control, and Air Quality Plan
B8 Hazardous Materials Management Plan Framework
B9 Emergency Preparedness and Response Plan Framework
B10 Noxious Weed Management Plan
B11 Fire Protection Plan
B12 Stream, Wetland, Well, and Spring Protection Plan

B13 Paleontological Resources Treatment Plan (PRTP)
B14 Reclamation, Revegetation, and Monitoring Framework Plan

5.5 Selective Mitigation by Milepost

Table 5-3 provides milepost locations of mitigation measures. Their application is further depicted in Volume II – POD Map Set 1 and 2. They are intended to reduce impacts to specific resources described in the EIS. In each instance where they have been applied, Table 5-3 explains the rationale why they have been applied and the desired outcome.

TABLE 5-1
DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION

	Mitigation Measure	Application Phase: Design and Engineering	Application Phase: Construction	Application Phase: Operation and Maintenance	Referenced Location
	Biological Resources				
1.	In construction areas where recontouring is not required, vegetation will be left in place wherever possible, and original contour will be maintained to avoid excessive root damage and allow for resprouting in accordance with the reclamation plan. Tall vegetation (e.g., trees) not consistent with minimum clearance distances between trees and transmission lines must be maintained for line safety and reliability (required by NERC Transmission Vegetation Management Program [NERC 2009; 2008; 2006]).	●	●	●	Note: Refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information ■ Appendix B7: EDA 1 ■ Appendix B12: SWWS 33 ■ Appendix B14: B14.6.1.3
2.	In temporary construction areas (e.g., marshalling yards, tower site work areas, and spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface reclamation will occur as required by the landowner or land-management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches. With the exception of sensitive plant habitats, areas on BLM- or USFS-administered lands disturbed as a part of the construction and/or maintenance of the proposed powerline will be reseeded with a seed mixture appropriate for those areas. The BLM or USFS will prescribe a seed mixture that fits each range site. Seeding methods will typically include		●	●	Note: Refer to Attachment B in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information ■ Appendix B7: EDA 2 ■ Appendix B10: NW 8, 9, 10, 11, 14, 15, 17, and 18 ■ Appendix B12: SWWS 1, 8, 9, 10, 11, 13, 14, and 15 ■ Appendix B14: B14.3.1, B14.6.2.1, B14.6.2.3, B14.6.2.4, and B14.6.2.5

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	**Design and Engineering**	**Construction**	**Operation and Maintenance**	**Referenced Location**
	drill seeding, where practicable; however, the BLM or USFS may recommend broadcast seeding as an alternative method in some cases. Drill seeding for all Project areas outside the jurisdiction of the BLM Cedar City Field Office will be performed during September 1 through December 15 to maximize the chance of success. Within the jurisdiction of the BLM Cedar City Field Office, drill seeding will be performed during October 15 through December 15. Where broadcast seeding is implemented, seed will be applied at 1.5 to 2 times the rate of drill seeding application, and the seed will be covered by a method such as harrowing or raking. A Reclamation, Revegetation, and Monitoring Framework Plan identifying reclamation stipulations will be developed and incorporated in the POD, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.				
3.	Special status species or other species of concern (e.g., raptors) will be considered in accordance with management policies set forth by appropriate land-management agencies (e.g., BLM, USFS, FWS, UDWR, etc.). This will entail conducting surveys for special status plants and wildlife and species of concern along the proposed transmission line route and associated facilities (e.g., access and spur roads, multi-use construction yards, etc.) (refer to Appendix B6 – Plant and Wildlife Conservation Measures Plan) within the appropriate seasonal periods and as agreed on by the agencies. In cases where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and its habitat, which may include altering the placement of roads or towers, where practicable as approved by the landowner and CIC, as well as monitoring activities, implementation of Project speed limits, and other restrictions..	●	●		■ Appendix B6: PWC 17, 29, 30, 19, 20, and 21
4.	The Proponent designs and constructs all new or rebuilt transmission facilities to its raptor-safe design standards, including *Suggested Practices for Avian Protection on Power Lines; The State of the Art in 2006* (Edison Electric Institute and APLIC 2006); PacifiCorp's Bird Management Program Guidelines,	●	●	●	■ Appendix B6: PWC 1, PWC 11, and 19

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	Design and Engineering	Construction	Operation and Maintenance	Referenced Location
	updated June 2011; and PacifiCorp's substation guidelines. New substations or modified portions of the existing substations must incorporate animal protections in accordance with PacifiCorp standards.				
5.	To prevent the spread of noxious/invasive weeds, a Noxious Weed Management Plan will be developed and incorporated into the POD, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.		●	●	Note: Refer to Appendix B10 – Noxious Weed Management Plan for more information
6.	Avoid construction and maintenance activities during the migratory bird nesting season, typically between February 15 and July 31; however, dates may vary depending on species, current environmental conditions, results of preconstruction surveys, and approval by agency biologists or agency-approved environmental inspectors in coordination with agency biologists.		●	●	■ Appendix B6: PWC 2, 12, 13, and 21
7.	If construction and maintenance activities could not be avoided in the primary nesting season for migratory birds, migratory bird and nest surveys will be performed. A 100-foot construction buffer around each active nest will be implemented.		●	●	Note: Refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan for more information. ■ Appendix B6: PWC 12
8.	Follow BLM and FWS guidelines for raptor protection (BLM Instruction Memorandum UT 2006-096; Romin and Muck 2002). Preconstruction surveys for nesting raptors would be required during the raptor breeding season. Appendix B6 – Plant and Wildlife Conservation Measures Plan describes mitigation measures and survey protocols. .	●	●	●	Note: Refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan for more information. ■ Appendix B6: PWC 2
9.	Based on preconstruction surveys, special status plants and/or habitat will be flagged and structures have been placed to allow spanning of these features, where feasible, within the limits of standard structure design.	●	●	●	Note: Refer to Appendix A1 – Flagging and Fencing Plan; Appendix B6 – Plant and Wildlife Species Conservation Measures Plan; and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information ■ Appendix B6: PWC 34

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	Design and Engineering	Construction	Operation and Maintenance	Referenced Location
Cultural Resources					
10.	In consultation with appropriate land-management agencies and the SHPO and in accordance with the Programmatic Agreement (to comply with Section 106 of the NHPA) entered into between the Proponent, BLM, USFS, and the State of Utah, specific mitigation measures for cultural resources will be developed and documented in an HPTP. The HPTP will be implemented to mitigate any identified adverse impacts. These may include Project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies. Project modifications for avoidance will be the preferred method for preventing adverse effects to historic properties.	●	●	●	Note: Where feasible, Project modifications were implemented during initial design to avoid known locations of significant cultural resource sites. Project modifications included movement of Project features (including transmission towers, ancillary facilities, and access corridor locations) and truncation of work spaces.
Design, Construction, Operation, and Maintenance					
11.	The Proponent will continue to follow studies performed on electric magnetic field research. The Proponent relies on the findings of public health specialists and international scientific organizations for guidelines regarding electric magnetic fields.		●	●	
12.	Transmission line materials that have been designed and tested to minimize corona will be used. A bundle configuration and larger conductors will be used to limit audible noise, radio interference, and television interference due to corona. Tension will be maintained on all insulator assemblies to ensure positive contact between insulators, thereby avoiding sparking. Caution shall be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.	●	●	●	
13.	The Proponent will apply grounding or other methods where possible to eliminate problems of induced currents and voltages onto conductive objects sharing the same right-of-way, to meet the appropriate codes.		●	●	
14.	A Fire Protection Plan will be developed and incorporated into the POD, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.		●	●	Note: Refer to Appendix B11 – Fire Protection Plan for full mitigation measure text ■ Appendix B11: FP 1

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	Design and Engineering	Construction	Operation and Maintenance	Referenced Location
15.	The transmission line will be patrolled regularly and properly maintained in compliance with applicable safety codes.			●	
16.	The right-of-way will be free of nonbiodegradable debris. Slash will be left in place or disposed of in accordance with requirements of the land-management agency or landowner.		●	●	
	Earth Resources				
17.	In newly disturbed temporary work areas, any soil removed will be salvaged and distributed and contoured evenly over the surface of the disturbed area after construction completion. The soil surface will be left rough to help reduce potential wind erosion.		●		Note: Refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information ■ Appendix B7: EDA 3 ■ Appendix B12: SWWS 8, 10, 35, and 38 ■ Appendix B14: B14.6.1.4, B14.6.1.5, B14.6.2.2, B14.6.2.6, and B14.6.2.8
18.	Grading will be minimized by driving overland within predesignated work areas whenever possible.	●	●		■ Appendix B1: TR 4 ■ Appendix B7: EDA 4
19.	In consultation with appropriate land-management agencies, specific mitigation measures for paleontological resources will be developed and implemented to mitigate any identified adverse impacts. These measures include: ■ preparation of a Paleontological Resources Treatment Plan; ■ paleontological surveys; ■ education of construction personnel; ■ monitoring ground disturbance; ■ curation; and ■ deposition in a paleontological repository.		●		
	Land Use				
20.	On agricultural land, the right-of-way will be aligned, insofar as is practicable, to reduce the impact on farm operations and agricultural production.	●			■ Appendix B1: TR 2
21.	The Proponent will respond to complaints of line-generated radio or television interference by investigating the complaints and implementing appropriate mitigation measures where possible. The transmission lines will be patrolled by air or inspected			●	

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	Design and Engineering	Construction	Operation and Maintenance	Referenced Location
	on the ground on a periodic basis, in compliance with the Proponent's standards, so damaged insulators or other line materials that could cause interference are repaired or replaced.				
22.	Fences, gates, and walls will be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land-management agency in the event they are removed, damaged, or destroyed by construction activities. Fences will be braced before cutting. Temporary gates or enclosures will be installed only with the permission of the landowner or the land-management agency and will be removed/reclaimed following construction. Cattle guards with access gates or access gates will be installed where permanent access roads cross fence lines as required by the BLM, USFS, or landowner and in accordance with the Proponents standards (PacifiCorp TA 520). Cattle guards on BLM-administered lands will be all steel with no cleanout, 14 feet by 8 feet by 8 feet painted yellow, set on rough sawn pressure treated timbers (No. 2 or better grade) 12 inches by 12 inches by 16 feet.		●	●	■ Appendix B1: TR 5
23.	In cultivated agricultural areas, soil compacted by construction activities will be de-compacted. Construction activities will occur as practical to minimize impacts on agricultural operations.		●		■ Appendix B14
24.	Towers and/or conductors and/or shield wires will be marked with high-visibility devices (i.e., marker balls or other marking devices) where required by governmental agencies with jurisdiction (i.e., FAA). Tower heights will be less than 200 feet to avoid the need for aircraft obstruction lighting.	●	●	●	
	Multiple Resources				
25.	All construction vehicle movement outside the right-of-way normally will be restricted to predesignated access, Construction Contractor-acquired access, or public roads.		●	●	■ Appendix B1: TR 1Appendix B6: PWC 27, and 40 ■ Appendix B7: EDA 5 ■ Appendix B10: NW 2 ■ Appendix B12: SWWS 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 36, and , 37
26.	The spatial limits of construction activities will be predetermined (e.g., 250-foot by 250-foot area for		●		■ Appendix B1: TR 6 ■ Appendix B7: EDA 6

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	**Design and Engineering**	**Construction**	**Operation and Maintenance**	**Referenced Location**
	structure work sites), with activity restricted to and confined within those limits. No paint or permanent discoloring agents indicating survey or construction limits will be applied to rocks, vegetation, structures, fences, etc.				
27.	Prior to construction, the CIC will instruct all personnel on the protection of cultural, ecological, and other natural resources such as: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources; and (c) the purpose and necessity of protecting them.		●		■ Appendix B6: PWC 4
28.	All requirements of those entities having jurisdiction over air quality matters will be adhered to. Any necessary dust control plans will be developed and permits for construction activities will be obtained. Open burning of construction trash will not be allowed, unless permitted by appropriate authorities. Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance.		●	●	■ Appendix B1: TR 7 ■ Appendix B7: EDA 7
29.	Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.		●	●	■ Appendix B1: TR 8 ■ Appendix B3: SPCC 1 ■ Appendix B8: HM 2 ■ Appendix B12: SWWS 2
30.	Project related personnel will not have firearms or pets in their possession while on the Project site. The rules on firearms and pets will be explained to all personnel involved with the project during environmental compliance training.		●	●	
	Visual Resources				
31.	Dull-galvanized steel for lattice towers and either dull-galvanized steel or self-weathering steel for H-frames, along with nonspecular conductors, will be used to reduce visual impacts.	●		●	
	Water Resources				
32.	Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be repaired or replaced if they are damaged or destroyed by construction activities to their predisturbed		●		■ Appendix B12: SWWS 3

TABLE 5-1 DESIGN FEATURES OF THE PROJECT FOR ENVIRONMENTAL PROTECTION					
		Application Phase			
	Mitigation Measure	Design and Engineering	Construction	Operation and Maintenance	Referenced Location
	condition. If livestock are displaced during Project construction, temporary water facilities will be provided until the water facilities have been repaired or replaced, as required by the landowner or land-management agency.				
33.	Refueling and storing potentially hazardous materials will not occur within a 100-meter radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 328-foot (100-meter) radius of any riparian area or water body. Spill preventive and containment measures or practices will be incorporated as needed.		●	●	■ Appendix B1: TR 9 ■ Appendix B3: SPCC 2 ■ Appendix B8: HM 3 ■ Appendix B12: SWWS 4, and 27 ■ Volume II – POD Map Set 2: Refueling Avoidance Zone

NOTES:
EDA = Erosion/dust/air protection measures
FP = Fire protection measures
HM = Hazardous materials measures
NW = Noxious weeds measures
PWC = Plant and wildlife species conservation measures
SPCC = Spill prevention, containment, and countermeasures
SWWS = Streams, wetlands, wells, and springs measures
TR = Transportation-related measures

TABLE 5-2
SELECTIVE MITIGATION MEASURES

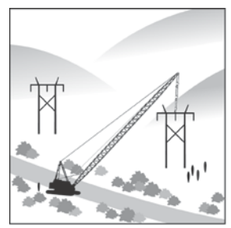
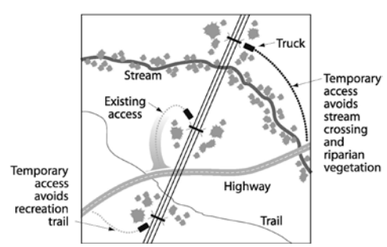
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
1. <u>Disturbance to Sensitive Soils and Vegetation</u> Existing access roads/trails will not be widened or otherwise upgraded for construction and maintenance in areas determined by the land-management agency, where soils and vegetation are particularly sensitive to disturbance, except in areas where repairs are necessary to make existing roads/trails passable and safe.		●			●	●	●			●	●	●	●	Note: Refer to Volume II – POD Map Sets 1, 2, and 3 ■ Appendix B1: TR 10 ■ Appendix B7: EDA 8 ■ Appendix 10: NW 7 and NW 8
					Avoiding unnecessary access road upgrades will limit the amount of habitat disturbed or removed. In addition, the avoidance of road upgrades will not allow for vehicular traffic to increase significantly, thereby reducing the potential for indirect effects such as damage or loss of vegetation, spread of noxious weeds, harassment of wildlife, vandalism of cultural resources, and disturbance to sensitive land uses (e.g., parks, preservation, and recreation areas). Desired outcome(s): Reduced amount of vegetation and wildlife habitat disturbed during construction; limited spread of noxious weeds and harassment of wildlife associated with construction traffic; reduced exposure of soils susceptible to wind or water erosion									
2. <u>Sensitive Resources Avoidance</u> There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction (or maintenance). Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. Every crossing must be identified and a crossing plan developed. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM or USFS Authorized Officer or his/her designated representative.		●	●		●	●	●		●	●		●	●	Note: For flagging specifications, refer to Appendix A1 – Flagging and Fencing Plan Refer to Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information. Refer to Volume II – POD Map Sets 1, 2, and 3 ■ Appendix B1: TR 11 ■ Appendix B6: PWC 8, 14, 24, and 35 ■ Appendix B7: EDA 9 ■ Appendix B12: SWWS 6 and 12 ■ Appendix B14: B14.6.1
					Mitigation Measure 2 is effective for the same reasons as Mitigation Measure 1. Minimizing ground-disturbing construction activities in the same vicinity as streams will limit disturbance to riparian areas and/or streambeds, therefore avoiding turbidity and sedimentation. In addition, it will limit land use conflicts with trails and/or disruption of sensitive views and minimize impacts on sensitive cultural resources. Desired outcome(s): Reduced loss and degradation of vegetation and sensitive plant and wildlife habitat; avoidance of impacts on prime and unique farmlands; avoidance of placement of permanent fill in rivers and perennial and intermittent streams, springs, and wetlands									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

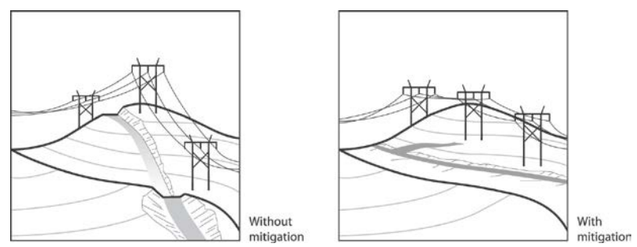
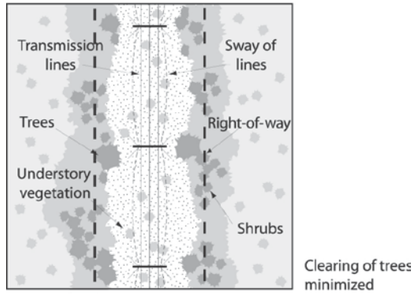
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
3. <u>Minimize Slope Cut and Fill</u> The alignment of any new access roads or overland routes in designated areas will follow the landform contours where practicable to minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, providing that such alignment does not affect other resource values.		●					●			●		●	●	■ Appendix B1: TR 12 ■ Appendix B7: EDA 10 ■ Appendix B6: PWC 33
					Following the existing land contours and terrain, particularly in steep terrain, minimizes the cutting and filling of slopes, and ensures that the form and line of the landscape is not visually interrupted. This results in reducing visual contrast between the exposed ground of the road and the surrounding environment. Also, water runoff is less likely to accelerate soil erosion (minimizing potential damage from rutting, drilling), which in turn protects adjacent vegetation and minimize potential impacts to sensitive cultural resources resulting from erosion of sediments. Desired outcome(s): Reduced risk of landslides; limited soil erosion; reduced visibility of access roads									
4. <u>Minimize Tree Clearing</u> Clearing of trees in and adjacent to the right-of-way will be minimized to limit disturbance to timber resources, reduce visual contrast, and protect raptor nesting habitat, to the extent practicable to satisfy conductor-clearance requirements (i.e., PacifiCorp's Transmission and Distribution Vegetation Management Program Specifications). Trees and other vegetation will be removed selectively (e.g., edge feathering) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate. Trees will be removed selectively in riparian habitats to protect biological resources, including raptor nesting habitat.			●					●		●	●	●	Note: Refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan for more information. ■ Appendix B6: PWC-3 ■ Appendix B6: PWC 15, 26, and 42 ■ Appendix B12: SWWS 7 and 32 ■ Appendix B14: B14.6.1.3 ■ Volume II – POD Map Set 2: Selective Tree Clearing/Feathering of Right-of-way
					Selectively removing vegetation (i.e., trees) within and along the edges of the right-of-way reduces disruption of habitat, minimizes removal of timber resources, and reduces the visual contrast between the right-of-way and the surrounding environment. Furthermore, "feathering" the edges of the right-of-way instead of cutting trees and vegetation in a straight line results in a more gradual modification to the environment. Desired outcome(s): Less vegetation removed from the right-of-way; less tree clearing and associated impacts on riparian habitats and wetlands									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

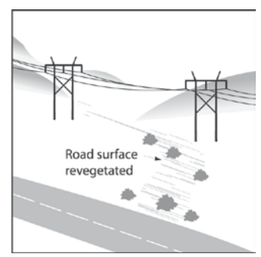
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
5. <u>Minimize New or Improved Accessibility</u> To limit new or improved access into the Project area, all new or improved access (e.g., blading, widening existing access) not be required for operation or maintenance, and with landowner or land-management agency approval, will be closed or rehabilitated using the most effective and least environmentally damaging methods appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders, pocking), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour in combination with vegetation. Site-specific off-highway vehicle (OHV) deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Plan and illustrated on Volume II –POD Volume II – POD Map Sets 2 and 3. The OHV deterrents shown on Volume II – POD Map Set 2 are approximate locations only. Exact location of OHV deterrents will be verified in the field by a Fishlake National Forest Representative as reclamation occurs. OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (Attachment B of Appendix B1 – Traffic and Transportation Plan).	 	●		●			●		●	●	●	●		■ Appendix B1: TR-13 ■ Appendix B6: PWC 9, 17, 25, 36, and 47 ■ Appendix B14: B14.6.2.9 and B14.6.2.10
					Closing access roads where they are not needed after construction protects the resources in that area from further disturbance for the reasons as described in Mitigation Measure 1. Desired outcome(s): Less long-term disturbance and reduced opportunity for use of project access routes for unauthorized activities (e.g., off-highway vehicles [OHV])									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

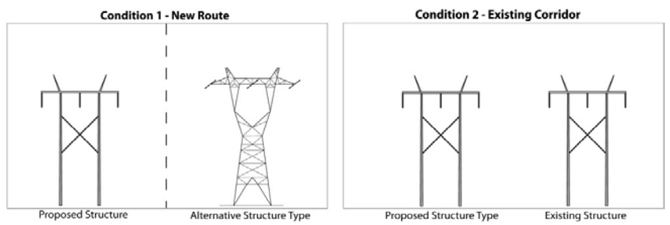
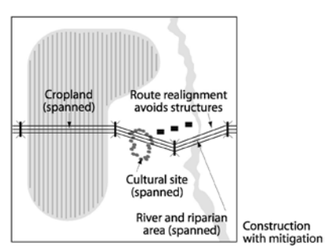
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
6. <u>Tower Design Modification</u> The tower design may be modified or an alternative tower type may be used to minimize visual contrast or to address site-specific constraints (e.g., terrain, airports, raptor perching etc.), if practical and consistent with PacifiCorp standards.		●							●		●	●	●	■ Appendix B6: PWC 18
					Flexibility in designing the tower or use of different tower types will allow tower structures to be more adapted to specific site situations (i.e., Condition 1 – New Route, Condition 2 – Existing Corridor). For example, in areas where there are sensitive views and an existing corridor, the proposed line will parallel an existing line and match the type of tower used along the existing line. This would minimize visual contrast and/or minimize poles with perching opportunities for aerial predators where sensitive grassland species occur. . Desired outcome(s): Avoid any conflicts with airport operations (e.g., Richfield Airport)									
7. <u>Span and/or Avoid Sensitive Features</u> Within the limits of standard tower design and in conformance with engineering and PacifiCorp requirements, structures will be located to allow conductors to clearly span identified sensitive features. Structures will be placed so as to avoid sensitive features, including, but not limited to, wetlands, riparian areas, water courses, hazardous substance remediation, sensitive plants, noxious weeds, and cultural sites. Avoidance measures may include selective tower placement, spanning sensitive features, or realigning access routes.		●			●	●			●	●	●		●	■ Appendix B6: PWC 20 and 34 ■ Appendix B12: SWWS 5 ■ Volume II – POD Map Set 2: Maximum Feasible Distance of Structure Placement at Crossings
					Flexibility in the placement of towers allows for sensitive features to be avoided. Realigning the towers along a route or realigning the route can result in avoiding or minimizing direct impacts on resources, such as cultural and biological resources, as well as land uses such as agriculture, parks, preservation, hazardous substance remediation, and recreation areas. Desired outcome(s): Reduced impacts on habitats occupied by special status species, riparian communities, wetland habitat, and streams, and agricultural fields									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

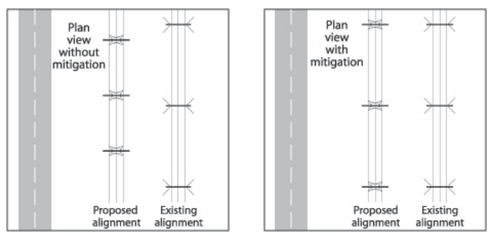
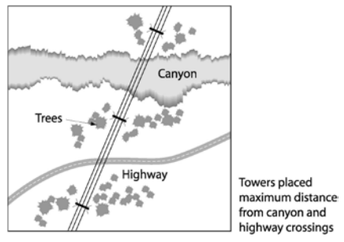
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
8. <u>Match Transmission Line Spans</u> Standard tower design will be modified to correspond with spacing of existing transmission line structures of the same voltage, where feasible and within limits of standard tower design, to reduce visual contrast and/or potential operational conflicts. The normal span will be modified to correspond with existing towers, but not necessarily at every location.		●									●	●	●	
					Matching tower spacing with existing parallel lines reduces the visual space occupied by the towers and minimizes the amount of contrast between the man-made structures and the landscape. Desired outcome(s): Reduced visibility of transmission line									
9. <u>Maximum Span at Crossings</u> At highway, canyon, and trail crossings, towers will be placed at the maximum feasible distance from the crossing within limits of standard tower design and in conformance with engineering and PacifiCorp requirements to reduce visual impacts and potential impacts on recreation values and to increase safety at these locations.		●									●	●	●	■ Volume II – POD Map Set 2: Maximum Feasible Distance of Structure Placement at Crossings ■ Appendix B7: EDA 11
					Placing towers at a maximum distance from major or sensitive crossings (i.e., roads and trails) will reduce visual impacts and potential safety hazards (i.e., vehicle collision with tower). Desired outcome(s): Reduced visibility of transmission line; increased public safety (i.e., towers located as far away as possible from a trail or road)									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

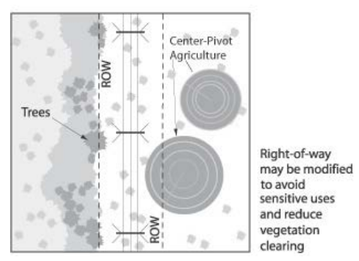
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
10. <u>Helicopter Construction</u> Helicopter placement of towers during construction and helicopter patrol and maintenance may be used where practicable to reduce surface impacts in environmental constraint areas or steep terrain locations. For example, within Inventoried Roadless Areas, The Project will be constructed by helicopter-only construction methods in these areas and supported by overland travel. Helicopters will transport personnel, drilling equipment, towers, and other construction materials to and from the right-of-way and would be used for wire pulling and tensioning. Appendix A4 – Special Construction Techniques includes guidance regarding the use of helicopters for construction during big game hunting seasons.			●	●			●	●	●	●	●	●	●	■ Volume II – POD Map Set 2: Helicopter Construction ■ Appendix A4: A4.2 ■ Appendix B6: PWC 28 and 39 ■ Appendix B7: EDA 12
					Using helicopters to place towers in steep terrain or otherwise sensitive areas reduces land use and natural resource impacts as a result of construction activities. The decrease of ground disturbances will reduce the loss of vegetation, accelerated soil erosion, potential damage to cultural resources, and visual impacts. Desired outcome(s): Reduced ground disturbance and visibility of transmission line									
11. <u>Minimize Right-of-Way Clearing</u> Clearing of the right-of-way will be minimized to reduce visual contrast and avoid sensitive features including, but not limited to, land uses, biological resources, and cultural sites. In select areas, the right-of-way width may be modified (within the limits of PacifiCorp Vegetation Management Standards and standard tower design) to protect sensitive resources, but current land uses will be allowed to continue unabated, provided the use meets applicable standards.			●	●					●	●	●	●	●	■ Appendix B6: PWC 3 ■ Appendix B6: PWC 15, 26, and 40 ■ Appendix B12: SWWS 7 and 33 ■ Appendix B14: B14.6.1.3
					Limiting the width of the area cleared in the right-of-way reduces the amount of vegetation (i.e., trees) removed at the edges of and within the right-of-way, minimizing the loss of habitat and reducing visual contrast between the cleared areas and the surrounding environment. In limited circumstances, the width of the right-of-way may be reduced to accommodate a land use (i.e., residential). Desired outcome(s): Reduced amount of vegetation and wildlife habitat disturbed during construction; reduced exposure of soils susceptible to wind or water erosion; less visibility of access roads									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

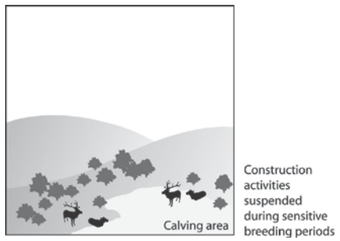
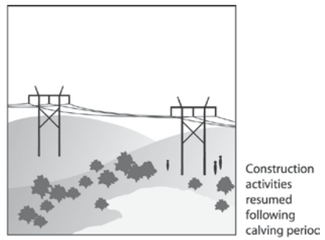
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
		Design And Engineering	Construction	Operation And Maintenance	Water Resources		Earth Resources		Biological Resources		Land Use	Visual Resources	Cultural Resources	
					Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species				
12. <u>Seasonal Wildlife Restrictions</u> To minimize disturbance to wildlife during sensitive periods, construction and maintenance activities will be restricted for the listed wildlife in designated areas unless exception to the stipulation is granted by the agencies in accordance with agency policy or land use plans. Receiving clearance to proceed from a biological monitor will be as follows: *Big Game* ■ Coordinate with UDWR and BLM when construction or maintenance activities are planned within pronghorn crucial year-long habitat between April 15 and June 15 ■ No construction or maintenance activities within mule deer crucial winter ranges from November 1 to May 15 (UDWR 2010) ■ No construction or maintenance activities within mule deer crucial summer range from May 1 to June 15 (UDWR 2010) *Migratory Birds* ■ Spatial buffers and seasonal restrictions for nesting raptors in accordance with FWS Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances (construction restrictions range from December 1 to September 30, depending on the species) (Romin and Muck 2002) ■ Spatial buffers and seasonal restrictions for roosting bald eagles (if detected during preconstruction surveys) in accordance with FWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances will be followed from November 1 to March 31 (Romin and Muck 2002) ■ No construction or maintenance activities within the FWS's recommendation of 100 feet from nesting (nonraptor) migratory birds from February 15 to July 31	 		●	●					●				Restricting construction activities or maintenance during breeding or nesting periods eliminates potential disturbance of wildlife during these critical periods of their life cycles. Desired outcome(s): Avoiding disturbance or displacement of sensitive wildlife animals due to construction noise and human presence during sensitive periods (i.e., breeding, nesting, wintering periods)	Note: Refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan for more information. ■ Appendix B6: PWC 2, 6, 21, and 45 ■ Volume II – POD Map Set 1 ■ Volume II – POD Map Set 2: Seasonal or Modified Timing of Construction (Wildlife Restriction)

TABLE 5-2
SELECTIVE MITIGATION MEASURES

Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
Utah prairie dog ■ No construction or maintenance activities within Utah prairie dog colonies between September 1 to March 31 (FWS 2010) ■ Preconstruction surveys will be required a minimum of 2 weeks prior to surface disturbance within suitable habitat from April 1 to August 31. *Greater sage-grouse* ■ No construction or maintenance activities within 4.0 miles of sage-grouse leks between February 15 and July 31 ■ No construction or maintenance activities within UDWR-mapped sage-grouse crucial winter habitat between November 15 and March 15 ■ No construction or maintenance activities will occur within UDWR-mapped sage-grouse habitat between March 15 and June 15 to avoid impacts on nesting sage-grouse.														■ Appendix B6: PWC 21 and 23

TABLE 5-2
SELECTIVE MITIGATION MEASURES

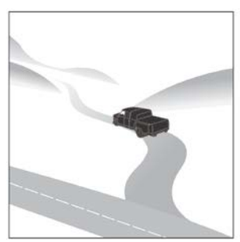
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
13. <u>Overland Access</u> The Construction Contractor(s) will use overland access to the greatest extent possible in areas where no grading will be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD. Rutting and other similar damage to overland access shall not exceed 4 inches in depth and shall be repaired and reseeded with approved seed mixes as soon as ground conditions permit. No snow removal shall occur on overland access.			●	●			●		●		●	●	●	■ Appendix B1: TR 14 ■ Appendix B6: PWC 10, 16, 29, 37, and 48 ■ Appendix B7: EDA 13 ■ Appendix 10 NW 2, 3, 4, 5, 6, and 7 ■ Appendix B12: SWWS 6, 12, and 33
					Overland access will avoid or minimize the removal of surface soil and vegetation, reducing the potential for erosion and loss of habitat. In addition, avoiding the construction of a new road will reduce the potential for increased traffic and the associated indirect effects. Desired outcome(s): Preventing displacement or disturbance of animals associated with increased human presence and public access along new access roads in sensitive habitats.; less long-term disturbance and reduced opportunity for use of project access routes for unauthorized activities (e.g., OHVs); reduced exposure of soils susceptible to wind or water erosion									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

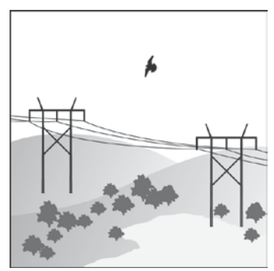
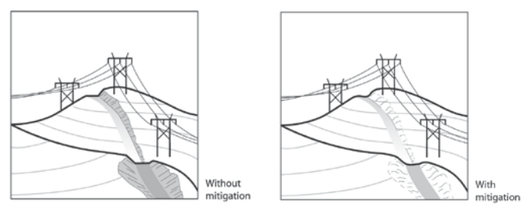
Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
14. <u>Flight Diverters and Perch Deterrents</u> All guy wires used on structures within occupied sage-grouse habitat will be marked with agency-approved flight diverters to increase visibility and further minimize potential for impacts/collisions. Flight diverters will also be employed on portions of the transmission line that cross through, or are adjacent to general migratory pathways, waterfowl habitat, and habitat for high priority avian species. These areas will be determined through consultation with the appropriate agencies. Agency-approved perch deterrents will be installed on all transmission towers within 4.0 miles of active sage-grouse leks to reduce raptor and raven use of the line and the potential predation of sage-grouse. Examples of flight diverters and perch deterrents can be viewed in Attachment D of Appendix B6 – Plant and Wildlife Species Conservation Measures Plan.		●	●	●					●					■ Appendix B6: PWC 1 ■ Appendix B6: PWC 11 and 19 ■ Volume II – POD Map Set 2: Flight Diverters and Perch Deterrents
					Installing flight diverts on segments of the transmission lines that cross through, or are adjacent to, waterfowl habitats, general migratory pathways, or habitat for high priority avian species (e.g., sage-grouse) will minimize the risk of avian collision Installing perch deterrents will reduce predation on sage-grouse by avian predators Desired outcome(s): Minimize risk of avian collision with transmission line and reduce predation on sage-grouse by avian predators									

TABLE 5-2
SELECTIVE MITIGATION MEASURES

Mitigation Measure	Mitigation Examples	Mitigation Application Phase			Mitigation Effectiveness and Desired Outcome									Referenced Locations
					Water Resources		Earth Resources		Biological Resources					
		Design And Engineering	Construction	Operation And Maintenance	Streams/Washes	Wetlands/Springs	Geology/Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species	Land Use	Visual Resources	Cultural Resources	
15. <u>Limit Accessibility in Sensitive Habitats</u> Where feasible, access roads that traverse sensitive habitats (e.g., crucial winter range) will be gated or otherwise blocked to limit public access.			●	●					●		●		●	■ Appendix B1: TR 15 ■ Appendix B6: PWC 5, 7, 30, and 46 ■ Volume II – POD Map Set 2: Off-highway vehicle Deterrent
					Mitigation Measure 15 is effective for the same reasons as Mitigation Measure 12. Limiting access to sensitive areas will reduce the potential for indirect effects associated with increased traffic. Desired outcome(s): Reduced opportunity for use of project access routes for unauthorized activities (e.g., OHVs)									
16. <u>Blend Road Cuts or Grading</u> To reduce visual contrast, soil amendments, mineral emulsions, or asphalt emulsions (e.g., Permeon™ or approved equivalent) will be applied, or grading techniques such as slope rounding and slope scarification will be used to blend road and pad cuts into the landscape in areas of steep terrain where grading is necessary, in rocky areas, or where newly-exposed rock color will create strong landscape contrasts.		●	●									●	●	■ Appendix B1: TR 16
					Similar to Mitigation Measure 3, the implementation of grading techniques (i.e., slope rounding and slope scarification) will reduce the visual contrast between exposed ground and the surrounding environment. The application of this mitigation will be determined in the field, during or after construction, by the CIC and BLM or USFS Authorized Officer or his/her designated representative. Desired outcome(s): Reduced visibility of access roads									

NOTES:
EDA = Erosion/dust/air protection measures
NW = Noxious weeds measures
PWC = Plant and wildlife species conservation measures
SWWS = Streams, wetlands, wells, and springs measures
TR = Transportation-related measures

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TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
24	0.0	0.2	0.2	1, 2	–	–	1, 3	–	–	–	5, 7, 11	–	–
24	0.2	0.3	0.1	3	–	–	1, 2, 3	–	–	–	5, 7, 11	–	–
25	0.0	0.2	0.2	4	–	–	1, 3	–	–	–	5, 7, 11	2	–
25	0.2	0.3	0.1	–	2, 4, 7	–	1, 3	–	–	–	5, 7, 11	2	–
25	0.3	0.4	0.1	5	2, 4, 7	–	1, 3	–	–	–	–	2	–
25	0.4	0.5	0.1	6	–	–	1, 3	–	–	–	–	2	–
25	0.5	0.6	0.1	–	–	–	–	–	–	–	–	2	–
27	0.0	0.1	0.1	7	–	–	–	–	–	–	–	2	–
27	0.1	0.2	0.1	–	–	–	–	–	12	–	–	2	–
30	0.0	0.1	0.1	30	–	–	1, 2, 3	Monitoring	12	–	–	2	7
30	0.1	0.2	0.1	31	2, 7		1, 2, 3	Monitoring	12	–	–	2	7
30	0.2	0.3	0.1		–	–	1, 2, 3	Monitoring	12	–	–	2	–
30	0.3	0.5	0.2	32	–	–	1, 3	Monitoring	12	–	–	2	–
30	0.5	0.6	0.1	33	–	–	1, 3	–	12	–	–	2	–
30	0.6	0.7	0.1	–	–	–	1, 2, 3, 7	–	12	–	–	2	–
30	0.7	0.8	0.1	34	–	–	1, 3	–	12	–	–	2	–
30	0.8	0.9	0.1	–	–	–	1, 3	–	12	–	–	1, 2	–
30	0.9	1.1	0.2	35	2, 7	–	1, 3	–	12	–	–	1	–
30	1.1	1.2	0.1	36			1, 3	–	12	–	–	1	–
30	1.2	1.3	0.1		–	–	1, 3	–	12	–	–	1	–
30	1.3	1.4	0.1	37	–	–	1, 3	–	12	–	–	1, 3	–
30	1.4	1.5	0.1		–	–	1, 3	Monitoring	12	–	–	1, 3	–
30	1.5	1.9	0.4	38, 39	–	–	1, 3	Monitoring	12	–	–	3	–
30	1.9	2.0	0.1		–	–	1, 3	Monitoring	12	–	9	3	–
30	2.0	2.1	0.1	–	–	–	1, 3	Monitoring	12	–	–	3	–
30	2.1	2.2	0.1	40	–	–	1, 3	Monitoring	12	–	–	2	–
30	2.2	2.4	0.2			–	1, 3	Monitoring	12	–	–	2	–
30	2.4	2.8	0.4	41, 42, 43	–	–	1, 3	Monitoring	12	–	–	2	–
30	2.8	3.0	0.2	44	–	–	–	Monitoring	12	–	–	2	–
30	3.0	3.1	0.1		–	–	–	Monitoring	12	–	–	1, 2	–
30	3.1	3.2	0.1	45	–	–	–	Monitoring	12	–	7, 11	1, 3	–
30	3.2	3.3	0.1		–	–	–	Monitoring	12	–	7, 11	1, 2, 3	–
30	3.3	3.5	0.2	46	–	–	1, 3	–	–	2, 7	7, 11	1, 2, 3	–
30	3.5	3.9	0.4	47, 48, 49	–	–	1, 3	–	–	2, 7	7, 11	1, 3	–
30	3.9	4.0	0.1		–	–	3	–	–	2, 7	7, 11	1, 3	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
30	4.0	4.1	0.1	50	–	–	1, 2, 3	–	–	2, 7	7, 11	1, 3	–
30	4.1	4.2	0.1		–	–	1, 2, 3	–	–	2, 7	7, 11	2	–
30	4.2	4.3	0.1	51	–	–	–	–	–	2, 7	7, 11	2	–
30	4.3	4.5	0.2	52	2, 4, 7	–	–	–	–		7, 11	2	7
30	4.5	4.6	0.1		2, 4, 7	–	3	–	–		7, 11	2	7
30	4.6	4.7	0.1	–	2, 4, 7	–	3	–	–		7, 11	2, 3	7
30	4.7	4.8	0.1	53	2, 4, 7	–	3	–	–		7, 11	3	7
30	4.8	4.9	0.1	–	2, 4, 7	–	–	–	–		7, 11	2, 3	7
30	4.9	5.0	0.1	54	2, 7	–	2	–	–		7, 11	2	–
30	5.0	5.1	0.1	55	–	–	2	–	12	2, 7	7, 11	2	–
30	5.1	5.2	0.1		2, 4, 7	–	3	–	12	2, 7	7, 11	2, 3	7
30	5.2	5.4	0.2	56	2, 4, 7	–	3	–	12	–	–	2, 3	7
30	5.4	5.5	0.1		2, 4, 7	–	1, 3	–	12	–	–	3	7
30	5.5	5.6	0.1	57		–	3	–	12	–	–	3	–
30	5.6	6.0	0.4	58, 59	–	–	3	–	12	–	–	3	–
30	6.0	6.1	0.1		2, 4, 7	–	3	–	12	–	–	–	7
30	6.1	6.2	0.1	–	2, 4, 7	–	–	–	–	–	–	–	7
30	6.2	6.3	0.1	60		–	–	–	–	–	–	–	–
30	6.3	6.6	0.3	61	2, 7	–	–	–	–	–	–	–	–
30	6.6	6.7	0.1	–	2, 7	–	–	–	–	–	–	–	–
30	6.7	6.8	0.1	62		–	–	–	–	–	–	–	–
30	6.8	7.2	0.4	63		–	–	–	–	–	–	1, 3	–
30	7.2	7.4	0.2	64	–	–	–	–	–	–	–	1, 3	–
30	7.4	7.6	0.2	65	–	–	–	–	–	–	–	1, 2, 3	–
30	7.6	8.0	0.4	66, 67	–	–	3	–	–	–	–	1, 3	–
30	8.0	8.1	0.1	–	–	–	3	–	–	–	–	3	–
30	8.1	8.2	0.1	68	–	–	3	–	–	–	4, 5, 7, 11	1, 3	–
30	8.2	8.3	0.1	–	–	–	3	–	–	–	–	1, 3	–
30	8.3	8.5	0.2	69	–	–	–	–	12	2, 7	4, 5, 11	1, 3	–
30	8.5	8.6	0.1		2, 7	–	3	–	12	2, 7	4, 5, 11	1, 3	–
30	8.6	8.7	0.1	–	2, 7	–	–	–	12	2, 7	–	1	–
30	8.7	8.9	0.2	70	–	–	3	–	12	2, 7	–	1, 3	–
30	8.9	9.1	0.2	71, 72	–	–	3	–	–	2, 7	4, 5, 11	1	–
30	9.1	9.2	0.1		–	–	3	–	–		–	1, 3	–
30	9.2	9.4	0.2	73, 74	–	–	3	–	–	2, 7	–	1, 3	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
30	9.4	9.5	0.1	75	–	–	3	–	–		–	1, 3	–
30	9.5	9.6	0.1	76	–	–	3	–	–	2, 7	–	1, 3	–
30	9.6	9.7	0.1		2, 7	–	1, 3	–	–	2, 7	9	1, 3	–
30	9.7	9.8	0.1	77	2, 7	–	1, 3	–	–	2, 7	1, 2, 7, 11	1, 3	–
30	9.8	10.0	0.2	78	–	–	1, 3	–	–	2, 7	1, 2, 7, 11	1, 3	–
30	10.0	10.1	0.1		–	–	1, 3	–	–	–	1, 2, 7, 11	1, 3	–
30	10.1	10.3	0.2	79	–	–	1, 3	–	12	–	1, 2, 7	1, 3	–
30	10.3	10.4	0.1	–	–	–	1, 3	–	12	2, 7	1, 2, 7	1, 3	–
30	10.4	10.5	0.1	80	–	–	3	Monitoring	12	2, 7	1, 2, 7	1, 3	–
30	10.5	10.9	0.4	81, 82	–	–	3	Monitoring	12	2, 7	1, 2, 4, 5, 7, 11	1, 3	–
30	10.9	11.0	0.1		–	–	3	Monitoring	12	–	1, 2, 4, 5, 7, 11	1, 2, 3	–
30	11.0	11.1	0.1	83	–	–	1, 3	Monitoring	12	–	1, 2, 4, 5, 7, 11	1, 2, 3	–
30	11.1	11.5	0.4	84, 85	2, 7	–	1, 3	Monitoring	–	–	1, 2, 7	1, 2, 3	–
30	11.5	11.7	0.2	86	–	–	–	Monitoring	–	–	1, 2, 7	1, 2, 3	–
30	11.7	12.2	0.5	87, 88	–	–	–	–	–	–	1, 2, 7	1, 2, 3	–
30	12.2	12.4	0.2	89	–	–	1, 3	–	–	–	–	2	–
30	12.4	12.7	0.3	90	–	–	1, 3	–	12	–	–	2	–
30	12.7	12.8	0.1	91	–	–	–	–	12	–	–	2	–
30	12.8	12.9	0.1		–	–	1, 3	–	12	–	–	2	–
30	12.9	13.0	0.1	92	–	–	–	–	12	–	1, 2, 7	1, 2	–
30	13.0	13.3	0.3	93	–	–	–	–	12	–	–	2	–
30	13.3	13.4	0.1	94	–	–	–	–	12	–	–	2	–
30	13.4	13.5	0.1		2, 7	–	–	–	12	–	1, 2, 7	2	–
30	13.5	13.6	0.1	95	2, 7	–	–	–	12	–	1, 2, 7	2	–
30	13.6	13.7	0.1		–	–	–	–	12	–	1, 2, 7	2	–
30	13.7	13.9	0.2	96	–	–	–	–	12	–	1, 2, 7	2	–
30	13.9	14.0	0.1	–	2, 7	–	–	–	12	–	1, 2, 4, 5, 7, 11	2	–
30	14.0	14.1	0.1	97	2, 7	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	1, 2, 3	–
30	14.1	14.5	0.4	98, 99	–	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	1, 2, 3	–
30	14.5	14.7	0.2	100	–	–	1, 3	–	12	–	4, 5, 7, 11	1, 2, 3	–
30	14.7	14.8	0.1		–	–	1, 3	–	12	–	4, 5, 7, 11	1, 3	–
30	14.8	14.9	0.1	101	2, 7	–	1, 3	–	12	–	4, 5, 7, 11	3	–
30	14.9	15.0	0.1	–	2, 7	–	1, 3	–	12	–	4, 5, 7, 11	3	–
30	15.0	15.1	0.1	–	–	–	1, 3	–	12	–	4, 5, 7, 11	3	–
30	15.1	15.3	0.2	102	2, 7	–	1, 3	–	12	–	–	3	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
30	15.3	15.4	0.1	103	–	–	1, 3	–	12	–	9	3	–
30	15.4	15.5	0.1		–	–	1, 3	–	12	–	9	3	–
30	15.5	15.7	0.2	104	–	–	1, 3	–	12	–	1, 2, 7	3	–
30	15.7	15.8	0.1		–	–	1, 3	Monitoring	12	–	1, 2, 7	3	–
30	15.8	15.9	0.1	105	2, 7	–	1, 3	Monitoring	12	–	1, 2, 4, 5, 7, 11	3	–
30	15.9	16.0	0.1		2, 7	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	3	–
30	16.0	16.2	0.2	106	–	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	3	–
30	16.2	16.3	0.1		–	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	3	–
30	16.3	16.5	0.2	107	2, 7	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	3	–
30	16.5	16.6	0.1		–	–	1, 3	–	12	–	1, 2, 7	3	–
30	16.6	16.7	0.1	108	–	–	1, 3	–	12	2, 7	1, 2, 7	2, 3	–
30	16.7	16.8	0.1		2, 7	–	3	–	12	2, 7	1, 2, 7	2, 3, 4	–
30	16.8	16.9	0.1	109	2, 7	–	3	–	12	2, 7	1, 2, 4, 5, 7, 11	2, 3, 4	–
30	16.9	17.0	0.1	–	–	–	3	–	12	2, 7	1, 2, 7	2, 3	–
30	17.0	17.1	0.1	110	–	–	–	Monitoring	12	2, 7	–	2, 3	–
30	17.1	17.2	0.1	–	–	–	–	Monitoring	12	–	–	2, 3	–
33	0.0	0.2	0.2	8	–	–	–	–	12	–	–	2	–
33	0.2	0.3	0.1	9	–	–	2	–	12	–	–	2	–
33	0.3	0.4	0.1	–	–	–	1, 2, 3	–	12	–	–	2	–
33	0.4	0.5	0.1	10	–	–	1, 2, 3	–	12	–	–	2	–
33	0.5	0.6	0.1	–	2, 7	–	1, 2, 3	–	12	–	–	2	–
33	0.6	0.7	0.1	11	–	–	1, 2, 3	–	12	–	–	–	–
33	0.7	1.0	0.3	12	2, 7	–	1, 2, 3	–	12	–	–	–	–
33	1.0	1.1	0.1	13	–	–	1, 3	–	12	–	–	–	–
33	1.1	1.2	0.1	–	2, 7	–	1, 3	–	12	–	–	–	–
33	1.2	1.3	0.1	14	2, 7	–	1, 3	Monitoring	12	–	–	–	–
33	1.3	1.4	0.1	–	–	–	1, 3	Monitoring	12	–	–	–	–
33	1.4	1.5	0.1	15	–	–	1, 3	–	12	–	–	–	–
33	1.5	1.7	0.2	–	–	–	1, 2, 3	–	12	–	–	–	–
33	1.7	2.4	0.7	16, 17, 18	–	–	1, 2, 3	–	12	–	–	2	–
33	2.4	2.5	0.1	19	–	–	1, 3	–	12	–	–	2	–
33	2.5	2.6	0.1	–	2, 7	–	1, 3	–	12	–	–	2	–
33	2.6	2.9	0.3	20, 21	–	–	1, 3	–	12	–	–	2	–
33	2.9	3.3	0.4	22	–	–	–	–	12	–	–	2	–
33	3.3	3.5	0.2	23	–	–	–	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
33	3.5	3.7	0.2	24	–	–	1, 3	–	12	–	–	–	–
33	3.7	3.8	0.1	–	2, 7	–	1, 3	–	12	–	–	–	–
33	3.8	3.9	0.1	25	–	–	1, 3	–	12	–	–	–	–
33	3.9	4.1	0.2	26	–	–	1, 3	–	12	–	–	–	–
33	4.1	4.6	0.5	27, 28	–	–	1, 3	Monitoring	12	–	–	–	–
33	4.6	4.9	0.3	29	–	–	1, 2, 3	Monitoring	12	–	–	2, 3	–
45	0.0	0.1	0.1	111	2, 7	–	–	Monitoring	12	–	–	2, 3	–
45	0.1	0.2	0.1	112	2, 7	–	–	–	12	2, 7	–	3	–
45	0.2	0.3	0.1	–	–	–	3	–	12	2, 7	1, 2, 7	3	–
45	0.3	0.5	0.2	113, 114	–	–	–	Monitoring	12	2, 7	1, 2, 7	3	–
45	0.5	0.6	0.1		–	–	–	Monitoring	12	2, 7	1, 2, 7	2, 3, 4	–
45	0.6	0.7	0.1	115	2, 7	–	3	Monitoring	12	2, 7	1, 2, 7	3	–
45	0.7	0.8	0.1		2, 7	–	3	Monitoring	–	2, 7	1, 2, 7	2, 3, 4	–
45	0.8	0.9	0.1	116	–	–	–	Monitoring	–	2, 7	–	2, 3, 4	–
45	0.9	1.0	0.1		–	–	–	Monitoring	12	2, 7	–	2, 3, 4	–
45	1.0	1.1	0.1	117	2, 7	–	–	Monitoring	12	2, 7	–	2, 3, 4	–
45	1.1	1.2	0.1		–	–	–	Monitoring	12	2, 7	–	2, 3, 4	–
63	0.0	0.2	0.2	142	–	–	3	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
63	0.2	0.4	0.2	143	–	–	–	Monitoring	12	–	1, 2, 7	2, 3, 4	–
63	0.4	0.5	0.1		–	–	3	Monitoring	12	–	–	2, 3, 4	–
63	0.5	0.6	0.1		–	–	–	Monitoring	12	–	–	3, 4, 9	–
63	0.6	0.7	0.1	144	–	–	–	–	12	–	–	3, 4, 9	–
63	0.7	0.9	0.2	–	2, 4, 7	–	–	–	12	–	–	2, 3, 4, 9	7
64	0.0	0.1	0.1	118	–	–	–	Monitoring	12	2, 7	–	2	–
64	0.1	0.3	0.2	119	–	–	–	Monitoring	–	–	–	2	–
64	0.3	0.4	0.1	120	–	–	–	Monitoring	–	–	–	2	–
64	0.4	0.5	0.1		–	–	2, 7	–	–	–	–	2, 3	–
64	0.5	0.6	0.1	121	2, 4, 7	–	2, 3, 7	–	–	–	–	2, 3, 4	–
64	0.6	0.7	0.1	–	2, 4, 7	–	–	–	–	–	–	2, 4	–
64	0.7	0.8	0.1	122	–	–	–	–	–	–	–	2	–
64	0.8	0.9	0.1	–	–	–	–	–	–	–	–	2	–
64	0.9	1.0	0.1	123	2, 7	–	–	–	–	–	–	2	–
64	1.0	1.1	0.1	–	2, 7	–	–	–	–	–	9	2, 3	–
64	1.1	1.3	0.2	124	–	–	1, 3	–	–	2, 7	–	1, 2, 3, 4	–
64	1.3	1.4	0.1		–	–	1, 3	–	–	2, 7	4, 5, 7, 11	1, 3, 4	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
64	1.4	1.6	0.2	125, 126	–	–	1, 3	–	–	2, 7	1, 2, 4, 5, 7, 11	1, 3, 4	–
64	1.6	1.7	0.1		–	–	1, 3	–	–	2, 7	1, 2, 4, 5, 7, 11	1, 3, 4	–
64	1.7	1.8	0.1	127	2, 7	–	1, 3	–	–	2, 7	1, 2, 4, 5, 7, 11	1, 3, 4	–
64	1.8	2.1	0.3	128	2, 7	–	1, 2, 3	–	12	2, 7	1, 2, 4, 5, 7, 11	1, 3, 4	–
64	2.1	2.2	0.1	129	2, 7	–	2, 3	–	12	2, 7	4, 5, 7, 9, 11	1, 3, 4	–
64	2.2	2.3	0.1		2, 7	–	3	–	12	2, 7	4, 5, 7, 11	1, 3, 4	–
64	2.3	2.4	0.1	130	2, 7	–	3	–	12	2, 7	4, 5, 7, 11	2, 3, 4	–
64	2.4	2.5	0.1	–	2, 7	–	–	–	12	2, 7	4, 5, 7, 11	2, 3, 4	–
64	2.5	2.6	0.1	131	2, 7	–	1, 3	–	12	2, 7	4, 5, 7, 9, 11	2, 3, 4	–
64	2.6	2.7	0.1	–	2, 7	–	3	–	12	2, 7	4, 5, 7, 9, 11	2, 3, 4	–
64	2.7	2.8	0.1		–	–	–	–	12	–	4, 5, 7, 11	2, 3, 4	–
64	2.8	2.9	0.1	132	2, 7	–	2, 7	–	12	–	4, 5, 7, 11	2, 3, 4	–
64	2.9	3.0	0.1	–	2, 7	–	–	–	12	–	4, 5, 7, 11	2, 3, 4	–
64	3.0	3.1	0.1	133	–	–	1, 3	–	12	–	1, 2, 4, 5, 7, 9, 11	2, 3, 4	–
64	3.1	3.2	0.1	–	–	–	1, 3	–	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	7
64	3.2	3.3	0.1	134	–	–	1, 3	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	7
64	3.3	3.4	0.1	–	2, 7	–	1, 3	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
64	3.4	3.5	0.1	–	–	–	1, 3	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
64	3.5	3.6	0.1	135	2, 4, 7	–	1, 3	Monitoring	12	–	4, 5, 7, 9, 11	2, 3, 4	–
64	3.6	3.8	0.2		2, 4, 7	–	1, 3	Monitoring	12	–	4, 5, 7, 11	3, 4, 10	–
64	3.8	3.9	0.1	136	–								
64	3.9	4.0	0.1		2, 4, 7								
64	4.0	4.1	0.1	137	–	–	1, 3	–	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.1	4.3	0.2	138	–	–	1, 3	–	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.3	4.4	0.1		–	–	3	–	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.4	4.5	0.1	–	2, 7	–	3	Monitoring	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.5	4.7	0.2	139	–	–	3	Monitoring	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.7	4.8	0.1	–	–	2, 7	3	Monitoring	12	–	4, 5, 7, 11	3, 4, 10	–
64	4.8	4.9	0.1	–	2, 4, 7	2, 7	–	Monitoring	12	–	9	3, 4, 9	–
64	4.9	5.0	0.1		2, 4, 7	2, 7	3	Monitoring	12	–	1, 2, 7	3, 4, 9	–
64	5.0	5.1	0.1	140	–	2, 7	–	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
64	5.1	5.2	0.1	141	–	–	3	Monitoring	12	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
66	0.0	0.1	0.1	145	2,4, 7	–	1, 3	–	12	–	–	2, 3, 4	–
66	0.1	0.2	0.1	–	2,4, 7	–	1, 3	Monitoring	12	–	–	2, 3, 4	–
66	0.2	0.3	0.1	146	2, 7	–	1, 3	Monitoring	12	–	–	2	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
66	0.3	0.5	0.2		–	–	1, 3	Monitoring	12	–	7, 9	2	–
66	0.5	0.7	0.2	147	–	–	3	Monitoring	12	–	–	2, 3, 4	–
66	0.7	0.8	0.1	148	–	–	3	Monitoring	12	–	4, 5, 7, 11	2, 3, 4	–
66	0.8	1.0	0.2		2, 4, 7	–	3	Monitoring	–	–	4, 5, 7, 11	2, 3, 4	–
66	1.0	1.1	0.1	149	–	–	3	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	1.1	1.2	0.1	150	–	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	1.2	1.3	0.1		–	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	1.3	1.4	0.1	151	2, 4, 7	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	1.4	1.6	0.2	152	2, 4, 7	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	7
66	1.6	1.7	0.1	–	–	–	–	–	–	–	4, 5, 7, 11	1, 3	–
66	1.7	1.8	0.1	153	–	–	–	–	–	–	4, 5, 7, 11	1, 3	–
66	1.8	1.9	0.1		–	–	–	Monitoring	–	–	–	1, 3	–
66	1.9	2.0	0.1	154	2, 7	–	3	Monitoring	–	–	–	1, 3	–
66	2.0	2.1	0.1	–	2, 7	–	–	Monitoring	–	–	–	1, 3	–
66	2.1	2.2	0.1	155	–	–	1, 3	–	–	–	–	1, 3	–
66	2.2	2.7	0.5	156, 157	–	–	1, 3	–	–	–	–	1, 3	7
66	2.7	2.8	0.1		–	–	–	–	–	–	–	1, 3	–
66	2.8	3.0	0.2	158	–	–	–	Monitoring	–	–	–	1, 3	7
66	3.0	3.1	0.1	159	–	–	–	Monitoring	–	–	–	1, 3	–
66	3.1	3.2	0.1	160	–	–	–	–	–	–	–	1, 3	–
66	3.2	3.3	0.1	–	–	–	–	–	–	–	–	1, 3, 4	–
66	3.3	3.4	0.1	161	–	2, 7	–	–	–	–	–	1, 3, 4	7
66	3.4	3.5	0.1		2, 4, 7	2, 7	–	–	–	–	–	1, 3, 4	7
66	3.5	3.6	0.1	162	2, 4, 7	2, 7	–	–	–	–	–	1, 2, 3, 4	7
66	3.6	3.7	0.1		2, 7	–	3	–	–	–	–	1, 2, 3	–
66	3.7	3.8	0.1	–	–	–	3	–	–	–	–	1, 2, 3, 4	–
66	3.8	3.9	0.1	163	–	–	3	–	–	–	9	2, 3, 4	–
66	3.9	4.0	0.1	–	–	–	3	–	–	–	9	2, 3, 4	–
66	4.0	4.1	0.1	–	2, 4, 7	–	1, 3	–	–	–	9	3, 4, 9	–
66	4.1	4.2	0.1		2, 4, 7	–	3	–	–	–	9	2, 3, 4	–
66	4.2	4.4	0.2	164	–	–	1, 3	–	–	–	9	1, 3, 4	–
66	4.4	4.5	0.1	165	–	–	1, 3	–	–	–	–	1, 3, 4	–
66	4.5	4.6	0.1		–	–	3	–	–	–	–	1, 3, 4	–
66	4.6	4.8	0.2	166	–	–	1, 3	–	–	–	–	1, 3, 4	–
66	4.8	4.9	0.1	167	–	–	1, 3	Monitoring	–	–	–	1, 3, 4	7

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
66	4.9	5.1	0.2	168	–	–	–	Monitoring	–	–	–	1, 3, 4	–
66	5.1	5.3	0.2	169	–	–	–	Monitoring	–	–	–	1, 3	–
66	5.3	5.7	0.4	170, 171	–	–	–	Monitoring	–	–	–	1, 3	7
66	5.7	5.8	0.1		–	–	–	–	–	–	–	1, 3	7
66	5.8	5.9	0.1	172	2, 4, 7	2, 7	1, 3	–	–	–	9	1, 2, 3	7
66	5.9	6.0	0.1		–	–	1, 3	Monitoring	–	–	–	2, 3, 4	7
66	6.0	6.1	0.1	173	–	–	1, 3	Monitoring	–	–	–	2, 3, 4	–
66	6.1	6.2	0.1	–	–	–	1, 3	–	–	–	–	1, 2, 3, 4	–
66	6.2	6.3	0.1	174	–	–	1, 3	–	–	–	–	1, 3, 4	–
66	6.3	6.6	0.3	175	–	–	1, 3	–	–	–	–	1, 3, 4	7
66	6.6	6.7	0.1	176	–	–	–	–	–	–	–	1, 3, 4	7
66	6.7	6.8	0.1	–	–	–	1, 3	–	–	–	–	–	7
66	6.8	6.9	0.1	177	–	–	1, 3	–	–	–	–	–	7
66	6.9	7.0	0.1		2, 4, 7	–	1, 3	–	–	–	–	–	7
66	7.0	7.1	0.1	–	2, 4, 7	2, 7	1, 3	–	–	–	–	–	7
66	7.1	7.2	0.1	178	2, 4, 7	2, 7	1, 3	–	–	–	–	–	–
66	7.2	7.3	0.1	–	2, 4, 7	2, 7	1, 3	–	–	–	–	–	7
66	7.3	7.4	0.1	179	–	2, 7	–	–	–	–	–	2, 3, 4	7
66	7.4	7.5	0.1	–	–	–	3	–	–	–	–	2, 3, 4	–
66	7.5	7.7	0.2	180	–	–	–	–	–	–	–	1, 3, 4	7
66	7.7	7.8	0.1	181	–	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	7.8	8.0	0.2	182	–	–	3	Monitoring	–	–	4, 5, 7, 11	1, 3, 4	–
66	8.0	8.2	0.2	183	–	–	–	Monitoring	–	–	4, 5, 7, 11	1, 3, 4	–
66	8.2	8.3	0.1	–	–	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	8.3	8.8	0.5	184, 185, 186	–	–	1, 3	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	8.8	8.9	0.1	187	–	–	1, 3	–	–	–	–	1, 3, 4	–
66	8.9	9.3	0.4	188, 189	–	–	1, 3	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	9.3	9.4	0.1		2,4,7	–	1, 3	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	9.4	9.5	0.1	190	–	–	3	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	9.5	9.6	0.1		–	–	–	–	–	–	4, 5, 7, 11	1, 3, 4	–
66	9.6	9.7	0.1		–	–	2	–	–	–	–	1, 3, 4	–
66	9.7	9.8	0.1	191	–	–	2	–	12	–	–	1, 3	–
66	9.8	9.9	0.1		–	–	1, 2, 3	–	12	–	–	1, 3	–
66	9.9	10.0	0.1	192	2, 4, 7	–	1, 2, 3	–	12	–	–	1, 3	–
66	10.0	10.1	0.1		–	–	2	–	12	–	–	1, 3	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
66	10.1	10.2	0.1	193	–	2, 7	2, 3	–	12	–	–	1, 3, 4	–
66	10.2	10.3	0.1		–	2, 7	2	–	12	–	–	1, 3, 4	–
66	10.3	10.4	0.1	194	–	2, 7	1, 2, 3	–	12	–	–	1, 3, 4	–
66	10.4	10.5	0.1		–	2, 7	1, 2, 3	–	12	–	–	1, 3	–
66	10.5	10.7	0.2	195	2, 4, 7	–	1, 2, 3	–	12	–	–	1, 3	–
66	10.7	10.9	0.2	196	–	–	2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	–
66	10.9	11.0	0.1		–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	–
66	11.0	11.1	0.1	197	–	–	2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	–
66	11.1	11.3	0.2	198	–	–	2	–	12	–	4, 5, 7, 11	1, 3, 4	–
66	11.3	11.4	0.1		–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	–
66	11.4	11.5	0.1	199	–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3	–
66	11.5	11.6	0.1		–	–	1, 2, 3	–	12	–	–	1, 3	–
66	11.6	11.9	0.3	200, 201	–	–	2	–	12	–	–	1, 3, 4	–
66	11.9	12.0	0.1		–	–	1, 2, 3	–	12	–	–	1, 3	–
68	0.0	0.3	0.3	202, 203	–	–	1, 2, 3	–	12	–	–	1, 3	–
68	0.3	0.8	0.5	204, 205	–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3	–
68	0.8	0.9	0.1	206	–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	–
68	0.9	1.0	0.1		–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	7
68	1.0	1.1	0.1	207	–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3, 4	7
68	1.1	1.2	0.1		2, 7	–	2	–	12	–	4, 5, 7, 11	1, 3, 4	7
68	1.2	1.3	0.1	208	2, 7	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3	7
68	1.3	1.4	0.1		–	–	1, 2, 3	–	12	–	4, 5, 7, 11	1, 3	–
68	1.4	1.5	0.1	209	–	–	1, 2, 3	–	12	–	4, 5, 7, 11	–	–
68	1.5	1.7	0.2	210	–	–	1, 2, 3	–	12	–	7	–	–
68	1.7	2.1	0.4	211	–	–	1, 2, 3	–	12	–	7	–	7
155	0.0	0.5	0.5	426, 427, 428	–	–	1, 2, 3	–	12	–	–	2	–
155	0.5	0.7	0.2	429	–	–	1, 2, 3	–	12	–	–	2	7
155	0.7	1.0	0.3	430	–	–	1, 2, 3	–	12	–	–	2	–
155	1.0	1.2	0.2	431	–	–	1, 2, 3	–	12	–	–	–	7
155	1.2	1.4	0.2	432	–	–	1, 2, 3	–	12	–	–	–	–
155	1.4	1.5	0.1	433	–	–	1, 2, 3, 13	–	12	–	–	–	–
155	1.5	1.8	0.3	434	–	2, 7	1, 2, 3, 13	–	12	–	–	–	–
155	1.8	2.0	0.2	435	–	–	1, 2, 3, 13	–	12	–	–	–	–
155	2.0	2.2	0.2	436	–	–	1, 2, 3, 13	–	12	–	–	–	7
155	2.2	3.4	1.2	437, 438, 439, 440, 441	–	–	1, 2, 3, 13	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
155	3.4	7.8	4.4	442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461	–	–	1, 2, 3	–	12	–	–	–	–
155	7.8	8.1	0.3	462	–	–	1, 3	–	12	–	–	–	–
155	8.1	8.8	0.7	463, 464, 465	–	–	1, 3, 13	–	12	–	–	–	–
155	8.8	9.0	0.2	466	–	–	1, 3	–	12	–	–	–	–
155	9.0	9.1	0.1	467	–	–	1, 3, 13	–	12	–	–	–	–
155	9.1	10.3	1.2	468, 469, 470, 471, 472	–	–	1, 3	–	12	–	–	–	–
155	10.3	12.0	1.7	473, 474, 475, 476, 477, 478, 479	–	–	1, 3, 13	–	12	–	–	–	–
160	0.0	0.4	0.4	480, 481	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	0.4	0.7	0.3	482, 483	–	–	1, 3, 13	–	12	–	–	–	–
160	0.7	1.0	0.3	484	–	–	1, 3, 13	–	12	–	–	–	7
160	1.0	1.1	0.1		–	–	1, 3, 13	–	12	–	–	–	–
160	1.1	1.9	0.8	485, 486, 487, 488	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	1.9	2.1	0.2	489	–	–	1, 2, 3, 13	–	12	–	–	–	7
160	2.1	2.9	0.8	490, 491, 492, 493	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	2.9	3.1	0.2	494	–	2, 7	1, 2, 3, 13	–	12	–	–	–	–
160	3.1	3.8	0.7	495, 496, 497	–	2, 7	1, 2, 3, 13	–	12	–	–	–	7
160	3.8	3.9	0.1		–	2, 7	1, 2, 3	–	12	–	–	–	–
160	3.9	4.0	0.1	498	–	2, 7	1, 3	–	12	–	–	–	–
160	4.0	4.2	0.2	499	–	2, 7	1, 3	–	12	2, 7	–	–	–
160	4.2	4.3	0.1		–	2, 7	1, 3	–	12	2, 7	–	–	7
160	4.3	4.4	0.1	500	–	2, 7	1, 3	–	12	–	–	–	7
160	4.4	4.6	0.2		–	2, 7	1, 3	–	12	–	–	–	–
160	4.6	5.1	0.5	501, 502, 503	–	2, 7	1, 2, 3	–	12	–	–	–	–
160	5.1	5.3	0.2	504	–	2, 7	1, 2, 3	–	12	–	–	–	7
160	5.3	5.6	0.3	505	–	2, 7	1, 2, 3, 13	–	12	–	–	–	7
160	5.6	6.3	0.7	506, 507, 508, 509	–	2, 7	1, 2, 3, 13	–	12	–	–	–	–
160	6.3	6.4	0.1		–	2, 7	1, 2, 3, 13	–	12	–	–	–	7
160	6.4	6.8	0.4	510, 511, 512	–	2, 7	1, 2, 3, 13	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
160	6.8	7.3	0.5	513, 514	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	7.3	7.5	0.2	515	–	–	1, 2, 3, 13	–	12	–	–	–	7
160	7.5	9.1	1.6	516, 517, 518, 519, 520, 521, 522	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	9.1	9.6	0.5	523, 524	–	–	1, 3, 13	–	12	–	–	–	–
160	9.6	9.7	0.1	525	–	–	1, 2, 3, 13	–	12	–	–	–	–
160	9.7	9.8	0.1		–	–	1, 2, 3	–	12	–	–	–	–
160	9.8	11.5	1.7	526, 527, 528, 529, 530, 531, 532, 533	–	–	1, 2, 3	–	14	–	–	–	–
160	11.5	11.8	0.3	534	–	2, 7	1, 2, 3	–	12, 14	–	–	–	–
160	11.8	12.0	0.2	535	–	–	1, 2, 3	–	12, 14	–	–	–	–
160	12.0	15.3	3.3	536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551	–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
160	15.3	15.5	0.2	552	–	–	1, 2, 3, 13	–	12, 14	2, 7	–	–	7
160	15.5	15.8	0.3	553	–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
160	15.8	15.9	0.1		–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
160	15.9	16.1	0.2	554	2, 7	–	1, 2, 3, 13	–	12, 14	–	–	–	–
160	16.1	16.6	0.5	555, 556	–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
160	16.6	16.8	0.2	557	–	–	1, 2, 3, 13	–	12, 14	–	–	–	7
160	16.8	17.3	0.5	558, 559, 560	–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
163	0.0	0.1	0.1		–	–	1, 3	–	12, 14	–	–	–	–
163	0.1	1.0	0.9	561, 562, 563, 564	–	–	1, 3, 13	–	12, 14	–	–	–	–
163	1.0	2.2	1.2	565, 566, 567, 568, 569, 570	–	–	1, 2, 3, 7, 13	–	12, 14	–	–	–	–
163	2.2	2.6	0.4	571	–	–	1, 2, 3, 13	–	12, 14	–	–	–	–
163	2.6	2.7	0.1	572	–	–	1, 2, 3, 13	–	12, 14	–	–	–	7
163	2.7	2.9	0.2	573	–	–	1, 2, 3, 7, 13	–	12, 14	–	–	–	7
163	2.9	3.2	0.3	574	–	–	1, 2, 3, 7, 13	–	12, 14	–	–	–	–
165	0.0	1.1	1.1	575, 576, 577, 578, 579	–	–	1, 2, 3, 7, 13	–	12, 14	–	–	–	–
165	1.1	1.6	0.5	580, 581	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	1.6	1.8	0.2	582	2, 7	–	1, 2, 3, 13	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
165	1.8	2.2	0.4	583, 584	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
165	2.2	2.4	0.2	585	2, 7	–	1, 2, 3, 13	–	12	–	–	–	–
165	2.4	3.3	0.9	586, 587, 588, 589	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	3.3	3.4	0.1		–	–	1, 3, 13	–	12	–	–	–	–
165	3.4	3.7	0.3	590, 591	–	–	1, 3, 13	–	12	2, 7	–	–	–
165	3.7	3.9	0.2	592	–	–	1, 3, 13	–	12	–	–	–	7
165	3.9	4.1	0.2		–	–	1, 3, 13	–	12	–	–	–	–
165	4.1	4.3	0.2	593	–	–	1, 3, 13	–	12	–	–	–	7
165	4.3	4.4	0.1	594	–	–	1, 3	–	12	–	–	–	7
165	4.4	4.6	0.2	595	–	–	1, 3, 13	–	12	–	–	–	7
165	4.6	4.7	0.1		–	–	1, 3, 13	–	12	–	–	–	–
165	4.7	5.2	0.5	596, 597	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	5.2	5.3	0.1	598	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	5.3	5.5	0.2		2, 7	–	1, 3, 13	–	12	–	–	–	–
165	5.5	5.6	0.1	599	–	–	1, 3, 13	–	12	–	–	–	–
165	5.6	6.0	0.4	600, 601	–	–	1, 3, 13	–	12	–	–	–	–
165	6.0	7.6	1.6	602, 603, 604, 605, 606, 607, 608	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	7.6	7.9	0.3	609	–	–	1, 2, 3	–	12	–	–	–	–
165	7.9	8.0	0.1	610	–	–	1, 2, 3, 13	–	12	–	–	–	–
165	8.0	8.1	0.1		2, 7	–	1, 2, 3, 13	–	12	–	–	–	–
165	8.1	8.2	0.1		–	–	1, 2, 3, 13	–	12	–	–	–	–
165	8.2	10.8	2.6	611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
165	10.8	10.9	0.1		–	–	1, 3, 13	–	12	–	–	–	–
165	10.9	11.0	0.1	623	2, 7	–	1, 3, 13	–	12	–	–	–	–
165	11.0	11.9	0.9	624, 625, 626, 627	–	–	1, 3, 13	–	12	–	–	–	–
165	11.9	12.1	0.2		–	–	1, 3	–	12	–	–	–	–
165	12.1	12.3	0.2	628	–	–	1, 3	–	12	–	–	–	–
165	12.3	12.5	0.2	629	–	–	1, 3	–	12	–	–	–	–
165	12.5	13.0	0.5	630, 631	–	–	1, 2, 3, 7	–	12	–	–	–	–
165	13.0	13.6	0.6	632, 633, 634	–	–	1, 3	–	12	–	–	–	–
165	13.6	13.8	0.2	635	2, 7	–	1, 3	–	12	–	–	–	–
165	13.8	14.6	0.8	636, 637, 638	–	–	1, 3	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
220	0.0	0.1	0.1	639	2, 7	–	1, 3	–	12	–	–	–	–
220	0.1	0.3	0.2	640	–	–	1, 3	–	12	–	–	–	–
220	0.3	0.4	0.1		–	–	1, 2, 3, 7	–	12	–	–	2	–
220	0.4	0.8	0.4	641, 642, 643	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	0.8	0.9	0.1		2, 7	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	0.9	1.1	0.2	644	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	1.1	1.3	0.2	645	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	1.3	1.7	0.4	646	–	–	1, 2, 3, 7	–	12	–	9	2, 8	–
220	1.7	2.0	0.3	647, 648	–	–	1, 2, 3, 7	–	12	–	–	8	–
220	2.0	2.2	0.2	649	–	–	1, 2, 3, 7	–	12	–	–	8	7
220	2.2	2.4	0.2	650	–	–	1, 2, 3, 7	–	12	–	–	8	–
220	2.4	2.6	0.2	651	–	–	1, 3	–	12	–	–	8	–
220	2.6	3.8	1.2	652, 653, 654, 655, 656	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	3.8	3.9	0.1	657	2, 7	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	3.9	4.0	0.1		2, 7	–	1, 2, 3, 7	–	–	–	–	2, 8	–
220	4.0	4.5	0.5	658, 659	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	4.5	4.6	0.1	660	–	–	1, 3	–	12	–	–	4, 8	–
220	4.6	4.7	0.1		–	–	1, 3	–	12	–	–	3, 4, 8	–
220	4.7	4.9	0.2	661	–	–	1, 2, 3, 7	–	12	–	–	3, 4, 8	–
220	4.9	5.0	0.1		–	–	1, 2, 3, 7	–	12	–	–	4, 8	–
220	5.0	5.1	0.1	662	–	–	1, 2, 3, 7	–	12	–	–	2, 4, 8	–
220	5.1	5.5	0.4	663, 664	–	–	1, 2, 3, 7	–	12	–	–	2, 8	–
220	5.5	5.6	0.1		–	–	1, 2, 3, 7	–	12	–	–	2	–
220	5.6	6.2	0.6	665, 666, 667	–	–	1, 3	–	12	–	–	–	–
220	6.2	6.4	0.2	668	2, 7	–	1, 3	–	12	–	–	–	–
220	6.4	7.1	0.7	669, 670, 671	–	–	1, 3	–	12	–	–	–	–
220	7.1	7.3	0.2	672	–	–	1, 2, 3, 7	–	12	–	–	–	–
220	7.3	7.5	0.2	673	–	–	1, 2, 3, 7	–	–	–	–	–	–
220	7.5	7.7	0.2	674	–	–	1, 3	–	–	–	–	3, 4, 8	–
220	7.7	8.2	0.5	675, 676	–	–	1, 3	–	–	–	–	3, 8	–
220	8.2	8.7	0.5	677, 678	–	–	1, 3	–	12	–	–	3, 8	–
220	8.7	8.8	0.1	679	2, 7	–	1, 3	–	12	–	–	3, 8	–
220	8.8	9.1	0.3	680, 681	–	–	1, 3	–	12	–	–	3, 8	–
220	9.1	9.2	0.1		2, 7	–	1, 3	–	12	–	–	–	–
220	9.2	9.3	0.1		2, 7	–	1, 3	–	12	–	–	1, 4	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
220	9.3	9.4	0.1	682	–	–	1, 3	–	12	–	–	1, 4	–
220	9.4	9.6	0.2		2, 7	–	1, 3	–	12	–	–	1, 4	–
221	0.0	0.3	0.3	683, 684	–	–	1, 3	–	12	–	–	2	–
221	0.3	0.5	0.2	685	–	–	1, 3	–	12	–	–	2	–
221	0.5	0.8	0.3	686	–	–	1, 3	–	12	–	–	2, 4	–
221	0.8	1.2	0.4	687, 688	–	–	1, 3	–	12	–	–	2	–
221	1.2	1.3	0.1		–	–	1, 3	–	–	–	–	2	–
221	1.3	1.4	0.1	689	–	–	1, 3	–	–	–	–	2	7
221	1.4	1.5	0.1		–	–	1, 3	–	–	–	–	2, 4	7
221	1.5	1.7	0.2	690	–	–	1, 3	–	–	–	–	2	7
221	1.7	1.8	0.1		–	–	1, 3	–	–	–	–	2	–
221	1.8	1.9	0.1	691	–	–	1, 3	–	–	–	–	2, 3, 4	–
221	1.9	2.0	0.1		–	–	1, 3	–	12	–	–	2, 3, 4	–
221	2.0	2.2	0.2	692, 693	–	–	1, 3	–	12	–	–	3, 8	–
221	2.2	2.3	0.1		2, 4, 7	–	1, 3	–	12	–	5, 7, 11	3, 8	–
221	2.3	2.4	0.1		2, 4, 7	–	–	–	12	–	5, 7, 11	2, 8	–
221	2.4	2.5	0.1	694	–	–	3	–	12	–	–	2, 3, 4, 8	–
221	2.5	2.6	0.1		–	–	1, 3	–	12	–	–	3, 4, 8	–
221	2.6	2.8	0.2	695	–	–	1, 2, 3, 7	–	12	–	–	3, 4, 8	–
221	2.8	3.1	0.3	696, 697	–	–	1, 3	–	12	–	–	3, 4, 8	–
221	3.1	3.4	0.3	698	–	–	1, 3	–	12	–	–	3, 4, 8	–
221	3.4	3.8	0.4	699, 700	–	–	1, 3	–	12	–	–	3, 4, 8	–
221	3.8	3.9	0.1		–	–	1, 3	–	12	–	–	2, 3, 4, 8	–
221	3.9	4.6	0.7	701, 702, 703	–	–	1, 3	–	12	–	–	2, 8	–
221	4.6	4.8	0.2	704	2, 7	–	1, 3	–	12	–	–	2, 8	–
221	4.8	5.0	0.2	705	–	–	1, 3	–	12	–	–	2, 8	–
221	5.0	5.2	0.2	706_E_W_Junction	–	–	1, 3	–	12	–	–	2, 3, 4, 8	–
270	0.0	0.2	0.2		2, 7	–	–	–	–	–	–	–	7
270	0.2	0.3	0.1	E34	2, 4, 7	–	–	–	–	–	–	–	–
270	0.3	0.4	0.1		–	–	–	–	–	–	–	–	–
270	0.4	0.5	0.1	E35	–	–	–	–	–	–	–	–	–
270	0.5	0.6	0.1		–	–	3	–	–	–	–	–	–
270	0.6	0.8	0.2	E36	–	–	–	–	12	–	–	–	–
270	0.8	1.1	0.3	E37, E38	–	–	–	–	12	–	–	–	–
270	1.1	1.2	0.1	E39	–	–	–	–	12	–	1, 2, 7	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
270	1.2	1.3	0.1		–	–	3	–	12	–	1, 2, 7	–	–
270	1.3	1.4	0.1		2, 4, 7	2, 7	–	–	12	–	1, 2, 7	–	7
272	0.0	0.1	0.1	E40	2, 4, 7	2, 7	–	–	12	–	1, 2, 7	8	7
272	0.1	0.2	0.1		–	2, 7	–	–	12	–	1, 2, 7	8	7
272	0.2	0.5	0.3	E41, E42	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	8	7
272	0.5	0.6	0.1		–	–	–	–	12	–	1, 2, 4, 5, 7, 11	3, 4, 8	–
272	0.6	0.9	0.3	E43, E44	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	8	–
272	0.9	1.0	0.1		–	–	–	–	12	–	4, 5, 11	8	–
272	1.0	1.3	0.3	E45, E46	2, 7	–	–	–	12	–	4, 5, 11	8	–
272	1.3	1.4	0.1		2, 7	–	–	–	12	–	1, 2, 4, 5, 7, 11	8	–
272	1.4	1.6	0.2	E47	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	8	–
272	1.6	2.0	0.4	E48, E49, E50	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	8	7
272	2.0	2.2	0.2		2, 4, 7	–	–	–	12	–	1, 2, 4, 5, 7, 11	4, 8	7
272	2.2	2.4	0.2	E51	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	7, 8	7
272	2.4	2.5	0.1		–	–	–	–	12	–	1, 2, 7	8	7
272	2.5	2.6	0.1	E53	2, 4, 7	–	–	Monitoring	12	–	1, 2, 7	8	7
272	2.6	2.7	0.1		2, 4, 7	–	–	Monitoring	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	2.7	2.8	0.1	E54	–	–	–	Monitoring	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	2.8	2.9	0.1		2, 4, 7	–	–	Monitoring	12	–	1, 2, 4, 5, 7, 11	4, 8	7
272	2.9	3.0	0.1		2, 4, 7	–	–	Monitoring	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.0	3.1	0.1	E55	–	–	–	–	12	–	1, 2, 4, 5, 7, 11	4, 8	7
272	3.1	3.3	0.2	E56	–	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.3	3.4	0.1		–	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.4	3.6	0.2	E57	2, 4, 7	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.6	3.8	0.2	E58	–	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.8	3.9	0.1	E59	–	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7
272	3.9	4.0	0.1		2, 4, 7	–	–	–	12	–	1, 2, 4, 5, 7, 10, 11	4, 8	7

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
272	4.0	4.1	0.1	E60	2, 4, 7	–	–	–	12	–	1, 2, 4, 5, 7, 11	4, 8	–
272	4.1	4.3	0.2		–	–	–	–	12	–	1, 2, 4, 5, 7, 11	3, 4, 8	–
272	4.3	4.4	0.1	E61	–	–	–	–	12	–	1, 2, 7	3, 4, 8	–
272	4.4	4.6	0.2	E62	–	–	–	–	12	–	1, 2, 7	3, 4, 8	7
272	4.6	4.9	0.3	E63	–	–	–	–	12	–	–	3, 4, 8	7
272	4.9	5.0	0.1	E64	–	–	–	–	–	–	–	3, 4, 8	–
272	5.0	5.1	0.1	E65	–	–	–	–	–	–	4, 5, 7, 11	3, 4, 8	–
272	5.1	5.2	0.1		–	–	–	–	–	–	–	3, 4, 8	–
272	5.2	5.4	0.2	E66	–	–	–	–	–	–	–	4, 8	–
275	0.0	0.1	0.1	E67	–	–	–	–	12	–	–	3, 4, 8	–
275	0.1	0.2	0.1	RB1	–	–	3	–	12	–	–	3, 4, 8	–
275	0.2	0.3	0.1		–	–	3	–	12	–	–	3, 4, 8	7
275	0.3	0.4	0.1	RB2	–	–	2, 7	–	12	–	–	3, 4, 8	7
275	0.4	0.5	0.1		–	–	–	–	12	–	–	3, 4, 8	–
275	0.5	0.6	0.1		–	–	–	–	12	–	–	3, 8	–
275	0.6	0.7	0.1	RB3	–	–	3	–	12	–	–	3, 4, 8	–
275	0.7	0.9	0.2	RB4	–	–	–	–	12	–	–	3, 4, 8	–
275	0.9	1.0	0.1	RB5	2, 7	–	–	–	12	–	–	3, 4, 8	–
275	1.0	1.1	0.1		–	–	–	–	12	–	–	3, 4, 8	–
275	1.1	1.2	0.1	RB6	–	–	–	–	12	–	–	3, 4, 8	–
275	1.2	1.3	0.1	RB7	–	–	–	–	12	–	4, 5, 7, 11	3, 4, 8	–
275	1.3	1.5	0.2	RB8	–	–	–	–	12	–	4, 5, 7, 11	3, 4, 8	–
275	1.5	1.6	0.1		–	–	1, 3	–	12	–	4, 5, 7, 11	–	–
275	1.6	1.7	0.1	RB9	–	–	1, 3	–	12	–	4, 5, 7, 11	–	–
275	1.7	1.9	0.2		–	–	1, 3	–	12	–	7, 11	–	7
275	1.9	2.0	0.1	RB10	–	–	1, 3	–	12	–	4, 5, 7, 11	–	7
275	2.0	2.2	0.2	RB11	–	–	1, 3	Monitoring	12	–	–	–	–
275	2.2	2.3	0.1	RB12	–	–	3	Monitoring	12	–	–	–	–
275	2.3	2.4	0.1	RB13, RB14	–	–	–	Monitoring	12	–	4, 5, 7, 11	–	–
305	0.0	0.1	0.1	212	2, 7	–	1, 2, 3, 7	–	12	–	7	4	7
305	0.1	0.2	0.1		2, 4, 7	–	1, 2, 3, 7	–	12	–	7	4	–
305	0.2	0.3	0.1	213	2, 4, 7	–	2	–	12	–	7	4	–
305	0.3	0.4	0.1		2, 4, 7	–	1, 2, 3, 7	–	12	–	7	4	–
305	0.4	0.5	0.1	214	–	–	1, 2, 3, 7	–	12	–	7	4	–
305	0.5	0.6	0.1		–	–	1, 2, 3, 7	–	12	–	7	4	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
305	0.6	0.7	0.1	215	–	–	1, 2, 3, 7	–	12	–	7	4	7
305	0.7	0.8	0.1		2, 4, 7	–	1, 2, 3, 7	–	12	–	–	–	7
305	0.8	0.9	0.1	216	2, 4, 7	–	1, 2, 3, 7	–	12	–	–	–	–
305	0.9	1.0	0.1		–	–	–	–	12	–	–	–	–
305	1.0	1.1	0.1		–	–	–	–	12	–	–	–	–
305	1.1	2.2	1.1	217, 218, 219, 220, 221	–	–	–	–	12	–	–	4	–
305	2.2	2.4	0.2	222	–	–	–	–	12	–	–	4	7
305	2.4	2.7	0.3	223, 224	–	–	–	–	12	–	–	4	–
305	2.7	2.9	0.2	225	–	–	–	–	12	–	–	4	7
305	2.9	3.9	1.0	226, 227, 228, 229	–	–	–	–	12	–	–	4	–
320	0.0	0.1	0.1	230	–	–	–	–	12	–	–	–	–
320	0.1	0.3	0.2	231	–	–	–	–	12	–	–	4	–
320	0.3	1.4	1.1	232, 233, 234, 235, 236, 237	–	–	–	–	12	–	–	–	–
320	1.4	4.0	2.6	238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249	–	–	1, 3	–	12	–	–	–	–
320	4.0	4.1	0.1	250	–	–	1, 3	–	12	–	–	–	–
320	4.1	4.3	0.2		–	–	1, 3	–	12	–	–	–	7
320	4.3	4.6	0.3	251, 252	–	–	1, 3	–	12	–	–	–	7
320	4.6	4.8	0.2	253	–	–	1, 3	–	12	–	–	–	–
320	4.8	4.9	0.1		–	–	1, 3	–	12	–	–	–	–
320	4.9	5.1	0.2	254	2, 7	–	1, 3	–	12	–	–	–	–
320	5.1	5.2	0.1		–	–	1, 3	–	12	–	–	–	–
320	5.2	5.5	0.3	255	–	–	1, 3	–	12	–	–	–	7
330	0.0	0.2	0.2	256	–	–	1, 3	–	12	–	–	–	7
330	0.2	0.5	0.3	257, 258	–	–	1, 3	–	12	–	–	–	–
330	0.5	0.9	0.4	258, 259	–	–	1, 2, 3, 7	–	12	–	–	–	7
330	0.9	1.0	0.1	260	–	–	1, 2, 3, 7	–	12	–	–	–	7
330	1.0	1.1	0.1		2, 7	–	1, 3, 13	–	12	–	–	–	7
345	0.0	2.1	2.1	285, 286, 287, 288, 289, 290, 291, 292, 293, 294	–	–	1, 3	–	12	–	–	–	–
345	2.1	2.3	0.2	295	–	–	1, 3	–	12	–	–	–	7

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
345	2.3	2.4	0.1		–	–	1, 3	–	12	–	–	–	–
345	2.4	2.7	0.3	296, 297	–	–	1, 3	–	12	–	–	–	–
345	2.7	3.1	0.4	298	–	–	1, 3	–	12	–	–	–	–
345	3.1	3.3	0.2	299	2, 7	–	1, 3	–	12	–	–	–	–
345	3.3	3.4	0.1	300	2, 7	–	1, 3	–	12	–	–	–	–
345	3.4	3.5	0.1		–	–	1, 3	–	12	–	–	–	–
345	3.5	4.0	0.5	301, 302	2, 7	–	1, 3	–	12	–	–	–	–
345	4.0	4.2	0.2	303	–	–	1, 3	–	12	–	–	–	7
345	4.2	4.9	0.7	304, 305, 306, 307	–	–	1, 3	–	12	–	–	–	–
345	4.9	5.1	0.2		2, 7	–	1, 3	–	12	–	–	–	–
345	5.1	5.3	0.2	308, 309	–	–	1, 3	–	12	–	–	–	–
345	5.3	5.5	0.2		–	–	1, 2, 3	–	12	–	–	–	–
345	5.5	6.4	0.9	310, 311, 312, 313, 314	–	–	1, 3	–	12	–	–	–	–
345	6.4	6.5	0.1		2, 7	–	1, 3	–	12	–	–	–	–
345	6.5	7.4	0.9	315, 316, 317, 318	–	–	1, 3	–	12	–	–	–	–
345	7.4	7.5	0.1		2, 7	–	1, 3	–	12	–	–	–	–
345	7.5	9.1	1.6	319, 320, 321, 322, 323, 324, 325	–	–	1, 3	–	12	–	–	–	–
348	0.0	0.2	0.2	326	–	–	1, 3	–	12	–	–	–	–
348	0.2	0.5	0.3	327, 328	2, 7	–	1, 3	–	12	–	–	1	–
348	0.5	0.7	0.2		–	–	1, 3	–	12	–	–	–	7
348	0.7	0.8	0.1	329	–	–	1, 3	–	12	–	–	1	7
348	0.8	0.9	0.1		2, 7	–	1, 3	–	12	–	–	1	7
348	0.9	1.2	0.3	330, 331	–	2, 7	1, 3	–	12	–	–	1	7
348	1.2	1.3	0.1		–	–	1, 2, 3	–	12	–	–	1	7
348	1.3	1.4	0.1		–	–	1, 2, 3, 7	–	12	–	–	1	7
348	1.4	1.5	0.1	332	–	–	1, 2, 3, 7	–	12	–	–	2, 3, 4	7
348	1.5	1.6	0.1		2, 7	–	1, 2, 3, 7	–	12	–	–	2, 3, 4	7
348	1.6	1.7	0.1	333	–	–	1, 2, 3	–	12	–	–	2, 3, 4	7
348	1.7	2.3	0.6	334, 335	–	–	1, 2, 3	–	12	–	–	1	7
348	2.3	2.9	0.6	336, 337, 338	–	–	1, 2, 3	–	12	–	–	–	7
350	0.0	0.1	0.1	261	2, 7	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	0.1	0.2	0.1		–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	0.2	0.4	0.2	262	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	0.4	0.5	0.1	–	–	–	1, 3, 13	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
350	0.5	0.6	0.1	263	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	0.6	0.7	0.1	–	–	–	1, 3, 13	–	12	–	–	–	–
350	0.7	1.1	0.4	264, 265	–	–	1, 2, 3, 7	–	12	–	–	–	–
350	1.1	1.2	0.1		–	–	1, 3, 13	–	12	–	–	–	–
350	1.2	2.0	0.8	266, 267, 268, 269	–	–	1, 2, 3, 7	–	12	–	–	–	–
350	2.0	2.5	0.5	270, 271, 272	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	2.5	2.7	0.2	273	–	–	1, 3, 13	–	12	–	–	–	–
350	2.7	2.8	0.1		–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	2.8	2.9	0.1	274	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	2.9	3.0	0.1		2, 7	–	1, 3, 13	–	12	–	–	–	–
350	3.0	3.1	0.1	–	2, 7	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	3.1	3.9	0.8	275, 276, 277, 278	–	–	1, 2, 3, 7, 13	–	12	–	–	–	–
350	3.9	4.2	0.3	279, 280	–	–	1, 2, 3, 7, 13	–	12	–	–	–	7
350	4.2	4.5	0.3	281	–	–	1, 3, 13	–	12	–	–	–	–
350	4.5	5.0	0.5	282, 283	–	–	1, 3	–	12	–	–	–	7
350	5.0	5.3	0.3	284	–	–	1, 3	–	12	–	–	–	–
381	0.0	0.8	0.8	386, 387, 388, 389	–	–	1, 3	–	12		–	–	–
381	0.8	0.9	0.1		–	–	1, 3, 13	–	12	–	–	–	–
381	0.9	2.9	2.0	390, 391, 392, 393, 394, 395, 396, 397, 398, 399	–	–	1, 3	–	12	–	–	–	–
381	2.9	3.0	0.1		2, 7	–	1, 3	–	12	–	–	–	–
381	3.0	4.8	1.8	400, 401, 402, 403, 404, 405, 406, 407	–	–	1, 3	–	12	–	–	–	–
381	4.8	5.0	0.2	408, 409	–	–	1, 3, 13	–	12	–	–	–	7
381	5.0	5.1	0.1		–	–	1, 3, 13	–	12	–	–	–	–
381	5.1	5.3	0.2	410	–	–	1, 3, 13	–	12	–	–	–	7
381	5.3	5.5	0.2	411	–	–	1, 2, 3, 13	–	12	–	–	–	–
381	5.5	5.7	0.2	412	–	–	1, 3, 13	–	12	–	–	–	–
381	5.7	5.8	0.1		–	–	1, 3, 13	–	12	–	–	–	7
381	5.8	6.5	0.7	413, 414, 415, 416	–	–	1, 3, 13	–	12	–	–	–	–
381	6.5	7.1	0.6	417, 418	–	–	1, 3, 13	–	12	–	–	2	–
381	7.1	7.3	0.2	419	–	–	1, 3, 13	–	12	–	4, 5, 7, 9, 11	2	–
381	7.3	7.8	0.5	420, 421, 422	–	–	1, 3, 13	–	12	–	–	2	–
381	7.8	8.1	0.3	423	–	–	1, 3, 13	–	12	–	–	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
381	8.1	8.6	0.5	424, 425	–	–	1, 3	–	12	–	–	–	–
385	0.0	1.1	1.1	342, 343, 344, 345, 346	–	–	1, 2, 3	–	12	–	–	–	7
385	1.1	2.8	1.7	347, 348, 349, 350, 351, 352, 353	–	–	1, 2, 3	–	12	–	–	–	–
385	2.8	3.0	0.2	354	2, 7	–	1, 2, 3	–	12	–	–	–	–
385	3.0	4.7	1.7	355, 356, 357, 358, 359, 360, 361, 362	–	–	1, 2, 3	–	12	–	–	–	–
385	4.7	5.0	0.3	363	–	–	1, 2, 3, 13	–	12	–	–	–	–
385	5.0	5.2	0.2	364	–	–	1, 2, 3	–	12	–	–	–	–
385	5.2	5.6	0.4	365, 366	–	2, 7	1, 2, 3	–	12	–	–	–	–
385	5.6	6.0	0.4	367, 368	–	2, 7	1, 2, 3, 13	–	12	–	7	–	–
385	6.0	6.2	0.2	369	2, 7	2, 7	1, 2, 3, 13	–	12	–	7	–	–
386	0.0	0.4	0.4	370	–	2, 7	1, 3, 13	–	12	–	7	–	–
386	0.4	1.0	0.6	371, 372, 373	–	2, 7	1, 3, 13	–	12	–	–	2	–
386	1.0	1.3	0.3	374	–	2, 7	1, 3, 13	–	12	–	–	2	7
386	1.3	1.4	0.1	375	–	2, 7	1, 3, 13	–	12	–	–	2	7
386	1.4	1.6	0.2	376	2, 4, 7	2, 7	1, 3, 13	–	12	–	7	2	7
386	1.6	1.7	0.1		2, 4, 7	2, 7	1, 3, 13	–	12	–	7	2	–
386	1.7	1.8	0.1		2, 4, 7	2, 7	1, 3	–	12	–	7	2	–
386	1.8	1.9	0.1	377	–	2, 7	1, 3, 13	–	12	–	7, 9	2	7
386	1.9	2.0	0.1		–	2, 7	1, 3, 13	–	12	–	9	2	7
386	2.0	2.1	0.1	378	–	2, 7	1, 3, 13	–	12	–	–	2	7
386	2.1	2.2	0.1		–	–	1, 3	–	12	–	–	2	7
386	2.2	2.3	0.1		–	–	1, 3, 13	–	12	–	–	2	7
386	2.3	2.9	0.6	379, 380, 381	–	–	1, 3, 13	–	12	–	–	2	–
386	2.9	3.2	0.3	382, 385	–	–	1, 3, 13	–	12	–	–	–	–
441	0.0	0.3	0.3	W1	–	–	1, 3	–	12	–	–	2	–
441	0.3	0.4	0.1	W2	–	–	1, 2, 3, 7	–	12	–	–	2	–
441	0.4	0.5	0.1	W3	–	–	1, 2, 3, 7	–	12	–	–	2	7
441	0.5	0.6	0.1	W4	–	–	1, 3	–	12	–	–	2	7
441	0.6	0.7	0.1		–	–	1, 3	–	12	–	–	2	–
441	0.7	0.8	0.1	W5	–	–	1, 3	–	12	–	–	2, 8	–
441	0.8	1.0	0.2	W6	–	–	1, 3	–	–	–	9	2, 8	7
441	1.0	1.1	0.1	–	2, 7	–	1, 3	–	12	–	9	2, 8	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
441	1.1	1.2	0.1	W7	2, 7	–	1, 2, 3, 7	–	12	–	9	2, 8	–
441	1.2	1.4	0.2	W8	–	–	1, 2, 3, 7	–	12	–	5, 7, 9, 11	2, 8	–
441	1.4	1.8	0.4	W9	–	–	1, 3	–	12	–	5, 7, 9, 11	2, 8	7
441	1.8	2.1	0.3	W10, W11	–	–	1, 3	–	12	–	5, 7, 11	2, 8	7
441	2.1	2.4	0.3	W12	–	–	1, 2, 3, 7	–	12	–	5, 7, 11	2, 8	7
441	2.4	2.7	0.3	W13, W14	–	–	1, 3	–	12	–	5, 7, 11	2, 8	7
441	2.7	2.9	0.2	W16	2, 7	–	1, 2, 3	–	–	–	5, 7, 11	2, 8	–
441	2.9	3.0	0.1		–	–	1, 2, 3	–	–	–	5, 7, 11	2, 8	–
441	3.0	3.1	0.1	W17	–	–	1, 2, 3	–	–	–	–	2, 8	–
442	0.0	0.1	0.1	–	–	–	1, 3	–	–	–	–	2, 8	–
442	0.1	0.2	0.1	W18	–	–	1, 3	–	–	–	–	2	–
442	0.2	0.3	0.1		–	–	1, 3	–	–	–	–	–	–
442	0.3	0.6	0.3	W19, W20	–	–	1, 2, 3, 7	–	–	–	5, 7, 11	–	–
442	0.6	0.9	0.3	W21	–	–	1, 3	–	–	–	5, 7, 11	–	–
442	0.9	1.0	0.1		–	–	1, 3	–	–	–	4, 5, 7, 11	–	–
442	1.0	1.1	0.1	W22	2, 7	–	1, 3	–	–	–	4, 5, 7, 11	–	–
442	1.1	1.2	0.1		–	–	1, 3	–	–	–	4, 5, 7, 11	–	–
442	1.2	1.4	0.2	W23	–	–	1, 3	–	–	–	5, 7, 11	–	–
442	1.4	1.6	0.2	W24	–	–	1, 3	–	–	–	4, 5, 7, 11	–	–
442	1.6	1.7	0.1	W25	–	–	1, 3	–	–	–	4, 5, 7, 11	3, 8	–
442	1.7	1.8	0.1	–	–	–	1, 3	Monitoring	–	–	4, 5, 7, 11	–	–
445	0.0	0.5	0.5	H3_1, H3_2	–	–	1, 3	Monitoring	–	–	4, 5, 7, 11	3, 8	–
445	0.5	0.6	0.1	H3_3	–	–	1, 3	Monitoring	–	–	4, 5, 7, 11	3, 8	–
445	0.6	0.7	0.1	–	–	–	3	Monitoring	–	–	4, 5, 7, 11	3, 8	–
445	0.7	0.8	0.1	–	–	–	–	Monitoring	–	–	4, 5, 7, 11	3, 8	7
445	0.8	0.9	0.1	H3_4	–	–	–	Monitoring	–	–	4, 5, 7, 11	3, 8	7
445	0.9	1.1	0.2	H3_5	2, 7	–	–	Monitoring	–	–	4, 5, 7, 11	3, 4, 8	7
445	1.1	1.2	0.1	H3_6	–	–	–	–	–	–	4, 5, 7, 11	2, 3, 8	7
445	1.2	1.3	0.1		2, 4, 7	–	–	–	–	–	4, 5, 7, 11	2, 8	7
445	1.3	1.4	0.1	–	–	–	–	–	–	–	4, 5, 7, 11	2, 8	7
445	1.4	1.5	0.1	H3_7	–	–	–	–	–	–	4, 5, 7, 11	2, 3, 4	7
445	1.5	1.6	0.1	H3_8	–	–	3	–	–	–	4, 5, 7, 11	2, 3, 4	7
445	1.6	1.7	0.1		–	–	–	–	–	–	4, 5, 7, 11	2, 3, 4	7
445	1.7	1.8	0.1		2, 7	–	–	–	–	–	4, 5, 7, 11	–	7
445	1.8	1.9	0.1	H3_9	2, 7	–	–	–	–	–	4, 5, 7, 11	–	–

TABLE 5-3
SELECTIVE MITIGATION MEASURES BY LINK AND MILEPOST

Link Number	From Milepost	To Milepost	Miles	Towers	Water Resources		Earth Resources		Biological Resources		Land Use	Visual	Cultural
					Streams and Washes	Wetlands, Springs, and Groundwater	Geology and Soils	Paleontology	Sensitive Wildlife Species	Sensitive Plant Species			
445	1.9	2.0	0.1		–	–	–	–	–	–	4, 5, 7, 11	2, 3, 4	–
445	2.0	2.1	0.1	H3_10	–	–	3	–	–	–	4, 5, 7, 11	2, 3, 4	–
445	2.1	2.2	0.1	H3_11	–	–	–	–	–	–	4, 5, 7, 11	2, 3, 4	–
445	2.2	2.3	0.1	H3_12	–	–	3	–	–	–	4, 5, 7, 11	2, 3, 4	7
445	2.3	2.4	0.1	H3_13	–	–	–	–	–	–	4, 5, 7, 11	–	7
445	2.4	2.5	0.1	H3_14	–	–	–	–	–	–	1, 2, 4, 5, 7, 11	–	7
445	2.5	2.6	0.1	H3_15	–	–	–	–	–	–	1, 2, 4, 5, 7, 11	–	–
445	2.6	2.7	0.1	H3_16	–	–	–	–	–	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
445	2.7	2.8	0.1		–	–	3	–	–	–	1, 2, 4, 5, 7, 11	2, 3, 4	–
445	2.8	2.9	0.1	H3_17	–	–	3	–	–	–	1, 2, 4, 5, 7, 11	2, 3, 4	7
445	2.9	3.0	0.1	E33	–	–	3	–	–	–	4, 5, 7, 11	–	7
455	0.0	0.3	0.3	339, 340, 341	–	2, 7	1, 2, 3	–	12	–	–	–	7
500	0.0	0.1	0.1	RB SUB	–	–	–	Monitoring	12	–	4, 5, 7, 11	–	–

NOTE: [1]Mitigation numbers correspond to Table 5-2.

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A1 – FLAGGING, FENCING, AND SIGNAGE PLAN

A1.1 Introduction

This Flagging, Fencing, and Signage Plan describes the methods that will be used in the field to delineate Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) limits of disturbance and protect sensitive environmental and cultural resources during Project construction. These methods are intended to ensure Rocky Mountain Power's personnel, the Construction Contractor(s), Bureau of Land Management, U.S. Forest Service, Compliance Inspection Contractor (CIC), and other monitors and visitors to the Project construction sites stay on approved access routes and within approved work areas. The measures described in this plan are an integral part of the environmental compliance program for avoiding and minimizing impacts on sensitive resources. The objective of this plan is to provide information on the field markings (i.e., flagging, fencing, and signage) that will be used to identify approved Project travel and work areas, as well as sensitive resource areas where construction or travel is to be excluded.

A1.2 Regulatory Requirements

No federal, state, or local laws, rules, or regulations specifically address flagging, fencing, and signage protocols for construction Projects. However, some of the mitigation measures identified in the Environmental Impact Statement for the Project hinge on adequate field marking of work areas and/or of sensitive resource areas to avoid or reduce impacts. These mitigation measures include flagging or fencing requirements to help protect vegetative cover, water quality, cultural resources, and special-status species and minimize the spread of invasive weeds.

A1.3 Methods

A1.3.1 Demarcating Project Facilities

Standard survey flags and stakes will be installed before the start of Project construction. Structure sites (e.g., tower locations, anchor points, and reference points) will be marked by the Construction Contractor(s). Designated Project access roads, spur roads, parking areas, and pullout areas will be marked to facilitate travel to and from the right-of-way. Wire stringing/pulling sites and material yards will be demarcated as necessary to indicate the limits of the approved work area. The Construction Contractor(s) will stake the boundaries of the maximum area needed for work areas and will provide the dimensions to the CIC. If the delineated work areas exceed the approved dimensions for Project facilities (see Table 3-1 and Section 3.4 – Land Requirements and Construction Disturbance), the Construction Contractor(s) will coordinate with the CIC for approval, and consultation with the Bureau of Land Management and other agencies may be required.

A1.3.2 Environmental Exclusions

Signs, flags, and/or fencing will be used to establish exclusion areas to protect sensitive environmental resources (e.g., biological, cultural, wetland, and paleontological resources) in the vicinity of construction activities. A system of standardized and simplified exclusion markings will be used to reduce potential

confusion during construction and minimize the risk of highlighting types of sensitive resources that could be targeted by vandals (e.g., if exclusion areas protecting archaeological sites were marked differently than those protecting sensitive natural resource areas, the sites would be at a higher risk of unauthorized artifact collecting or other disturbances). Exclusion areas will be set up to protect these areas, but the Construction Contractor(s) will not know if it is for biological, cultural, or paleontological resources.

A1.3.2.1 Signing

Signs will be used to help identify Project features such as approved access roads and certain Project facilities such as "Weed Cleaning Stations." Signs will be a minimum of 8.5 inches by 11 inches on laminated (7 millimeter or greater) color paper. Signs will be installed on metal posts and wooden stakes or attached to exclusion fencing/roping, as appropriate. Background colors will vary to enhance sign recognition from a distance.

Table A1-1 provides some standards for marking Project features that will be needed during Project construction. Figures A1-1, A1-2, A1-3, A1-4, A-5, and A-6 (included at the end of this appendix) show the size and configuration of typical sign layouts. Signs for sensitive resource areas will be oriented for visibility from both directions of likely travel.

TABLE A1-1
FLAGGING SCHEME

Feature	Flagging or Sign Colors	Sign Text	What to do
Project access road	To be decided by Construction Contractor(s)	Project Access Road – Road # (e.g., Road 1/3) – Sigurd to Red Butte No. 2 – 345kV Transmission Project	To be located at points of intersection, additional intermittent flagging may be required. Construction Contractor(s) to verify that right of entry has been obtained before marking these areas.
Temporary work areas (pulling sites, material yards, etc.)	To be decided by Construction Contractor(s)	Not applicable	Construction Contractor(s) to verify that right of entry has been obtained before marking these areas.
Protected animals/plants or sensitive environmental areas	Yellow	Sensitive Resource Area Keep Out	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.
Reclamation project areas	Brown	Restoration in Progress – No Vehicle Traffic Allowed	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.
Invasive weed cleaning stations	Blue	Weed Cleaning Station	Signs will be posted at entry points into weed cleaning stations.
Proposed structure locations	To be decided by Construction Contractor(s)	Not applicable	Do not disturb survey stakes.
Structure offsets	To be decided by Construction Contractor(s)s	Not applicable	Do not disturb survey stakes.
Outside edge of permitted right-of-way or centerline	To be decided by Construction Contractor(s)	Not applicable	Do not drive vehicles or equipment outside of designated corridor.

TABLE A1-1 FLAGGING SCHEME			
Feature	**Flagging or Sign Colors**	**Sign Text**	**What to do**
Cadastral survey monument	To be decided by Construction Contractor(s)	Not applicable	Protect in place.
Non-authorized access road	To be decided by Construction Contractor(s)	Do Not Enter Not an-Authorized Access Road	Do not drive vehicles or equipment on unauthorized roads.

NOTES:

- Staking and flagging will be done by Construction Contractor(s) and verified by CIC, including sensitive resource areas and exclusion zones.
- Construction Contractor(s) shall stake all proposed tower center hub and footer locations, structure locations, and associated reference points and mark the centerline with intervisible stakes not to exceed 500 feet and at all road crossings.
- Construction Contractor(s) shall use staking intervals appropriate to the conditions observed in the field. For example, areas of rough terrain or dense vegetation may require staking intervals less than 500 feet. In all cases, field staking intervals shall be done at a frequency such that each adjacent stake can be easily discernible.
- Maintain (refurbish as necessary) staking over time as conditions require.

A1.3.2.2 Flagging

Survey flagging (i.e., surveyor's ribbon tied to wooden stakes, metal posts, or vegetation) will be used to delineate the limits of work areas such as material yards, disturbance limits (i.e., boundaries of the right-of-way), wire stringing sites, access roads, etc., unless existing fencing or other features clearly indicate the limits of the area. Survey flagging may be used to demarcate sensitive resource locations situated a safe distance from planned construction activities but generally will not be used to define resource exclusion areas close to planned construction activities due to concerns about the visibility and stability of flagging during construction.

The Bureau of Land Management and U.S. Forest Service Authorized Officers or CIC, as needed, will determine whether flagging or fencing (as described below) is the appropriate protective device for a given location. Flagging color will conform to the requirements of Table A1-1.

A1.3.2.3 Fencing

To delineate the limits of construction near sensitive resources requiring a high level of protection from Project disturbance, a combination of one or more of the following fencing materials will be installed by the Construction Contractor(s):

- Rope (¼ inch in diameter in yellow or orange coloring),
- Plastic or fabric tape; and/or
- Safety fencing (plastic orange or red mesh at least 24 inches-wide and at least 18 inches off the ground to facilitate travel by small animals).

Roping with periodic marking by exclusionary signs or lengths of tape is a highly visible and effective exclusion device. Roping, tape, and safety fence will be installed using metal posts for increased durability and in areas with compact or rocky soils. If construction within a wetland is necessary, the boundaries of the approved disturbance area will be demarcated so impacts are limited to the area authorized. In most cases, it is anticipated the exclusion device will be installed at the boundaries of the

sensitive resource (including any required buffers), rather than at the edge of the work area. If a buffer zone encroaches into the work area, only the portions that overlap with the work area will be delineated and signed as an exclusion zone.

A1.4 Installation, Monitoring, and Maintenance of Fencing, Flagging, and Signage

The objectives of this Flagging, Fencing, and Signage Plan hinge on the proper installation, monitoring, and maintenance of protective devices. The Construction Contractor(s) will be responsible for the installation and maintenance of the field marking of construction features (e.g., towers, wire pulling sites, substations, etc.). These markings will be installed in advance of construction activities in the area, maintained during the course of construction (as necessary), and removed after Project cleanup and reclamation activities. Environmental exclusion (e.g., signs, flags, and fencing) will be installed by the Construction Contractor in coordination with the CIC to denote exclusionary zones along with the assistance of appropriate monitors (e.g., botanists, biologists, archaeologists) as needed. These environmental exclusions will be installed prior to the start of construction within a Project work area. The CIC will be consulted if there is uncertainty as to the type or location of needed exclusion devices for botanical, wildlife, wetlands, streams, or archaeological sites.

Routine Project monitoring by the CIC and Construction Contractor's environmental monitors will include an on-going assessment of the need for replacement or repair of exclusionary flagging or fencing. Maintenance needs related to exclusionary devices will either be corrected at the time of observation by the CIC, or will be documented as a future maintenance need. If maintenance of an exclusionary device is needed within an active construction area, corrective action will be taken within one workday. Maintenance of signs, flagging, and fencing within inactive work areas will be implemented as necessary. All exclusionary devices (e.g., signs, flagging, and fencing) will be removed after Project cleanup and reclamation activities by the Construction Contractor(s).

PROJECT
ACCESS ROAD
ROAD #

SIGURD TO RED BUTTE NO. 2 – 345kV TRANSMISSION PROJECT

Figure A1-1. Typical Sign – PROJECT ACCESS ROAD

SENSITIVE
RESOURCE AREA

KEEP OUT

Figure A1-2. Typical Sign – SENSITIVE RESOURCE AREA KEEP OUT

Restoration in Progress – No Vehicle Traffic Allowed

Figure A1-3. Typical Sign – Restoration in Progress – No Vehicle Traffic Allowed

NO REFUELING

WITHIN 100 METERS OF

WETLANDS

AND

STREAM BANKS

Figure A1-4. Typical Sign — NO REFUELING

DO NOT ENTER

NOT AN
AUTHORIZED
ACCESS ROAD

Figure A1-5. Typical Sign — DO NOT ENTER

WEED CLEANING STATION #

SIGURD TO RED BUTTE NO. 2 – 345kV TRANSMISSION PROJECT

Figure A1-6. Typical Sign — WEED CLEANING STATION #

Appendix A2 – Geotechnical Investigation

A2 – GEOTECHNICAL INVESTIGATION

A temporary right-of-way grant (UTU 83067-01) and a special-use authorization (BEA160) for the geotechnical investigation were granted by Bureau of Land Management (BLM) and U.S. Forest Service (USFS) on September 7, 2010, and September 3, 2010, respectively. The geotechnical investigation was proposed by PacifiCorp, doing business as Rocky Mountain Power (Proponent), to collect hydrogeologic and geotechnical soil properties and geophysical data to support the design of foundations and structures for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project).

A Plan of Development (POD) for the geotechnical investigation, dated September 2010, was approved by BLM and USFS. The POD for the geotechnical investigation includes detailed information on the geotechnical exploration program, including procedures the Proponent implemented during geotechnical exploration activities, and outlines the stipulations and mitigation measures adopted by the Proponent to minimize potential impacts on resources and to ensure regulatory compliance. Conforming to the POD for the geotechnical investigation is a provision of the BLM right-of-way grant and USFS special-use authorization for that activity.

Additional geotechnical investigations may be required as part of the final engineering design as determined by the Construction Contractor(s). The purpose of geotechnical investigations is to collect information regarding subsurface soil stability, which will be used in the final design of each transmission tower foundation. This activity helps to ensure the system is designed and constructed to be safe, reliable, and cost efficient and can reduce the overall environmental disturbance during initial build and over the life of the Project. Refer to Appendix A3.4.1 – Geotechnical Investigations and Soil Boring for additional information on geotechnical investigations that may be performed by the Construction Contractor(s).

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Appendix A3 – Project Construction

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A3 – PROJECT CONSTRUCTION

This section contains an overview of construction activities associated with the transmission line facilities. Volume II – Map Sets 1 and 2 of the Plan of Development (POD) will identify the transmission line route and environmental resources located within or adjacent to the transmission line corridor based on preconstruction surveys conducted prior to issuance of the right-of-way grant.

Volume II – POD Map Set 3 will identify, in more detail, access roads that will be used to access the construction right-of-way.

A3.1 Construction Schedule

The Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) construction schedule is included as Attachment A. Rocky Mountain Power will provide regular updates of the schedule.

Construction activities have been scheduled to avoid particular areas during critical wildlife seasons (e.g., mule deer winter range). These seasonal avoidance areas are shown in Volume II – POD Map Sets 1 and 2 of the POD and explained further in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan. The approval process to subsequently change these seasonal and spatial avoidance areas is described in the Adaptive Wildlife Management Plan, Attachment C of Appendix B6.

A3.1.1 Preconstruction Activities

A3.1.1.1 Surveying and Staking

The initial activity prior to construction will be the engineering survey and staking of Project facilities. This will include marking tower locations, anchor sites, multi-purpose construction and material yards (if known), wire pulling sites, and access roads.

In addition, signs, flags, and/or fencing will be used to delineate Project features, such as access and sensitive resource areas (refer to Appendix A1 – Flagging, Fencing, and Signage Plan for more specific details). Additional staking may be required just prior to construction to refresh previously installed stakes and flagging and/or delineate any new sensitive resource areas identified by the preconstruction field surveys described below. Any proposed new disturbance not previously identified and analyzed in the Environmental Impact Statement will require resource surveys, as well as review and approval by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) prior to construction.

A3.1.1.2 Preconstruction Resource Surveys

Prior to starting construction, PacifiCorp, doing business as Rocky Mountain Power (Proponent), is required to conduct a number of resource surveys. These include both surveys performed to identify locations of sensitive resources where mitigation measures will be applied to reduce impacts on these and those surveys that must be performed within a specified amount of time before construction begins (preconstruction surveys). Many of the surveys performed to identify locations of sensitive resources and specify locations where mitigation measures will be applied were completed prior to preparation of the POD. Preconstruction resource surveys will be completed by qualified individuals retained by the

Construction Contractor(s). Qualifications for individuals performing preconstruction surveys are described in Appendix A6 – Environmental Compliance Management Plan. Individuals performing preconstruction surveys must be approved by BLM and/or USFS, as appropriate.

Table A3-1 provides a list of surveys conducted to identify locations of sensitive resources and specify locations where mitigation measures will be applied, the dates these surveys were performed, and preconstruction surveys required prior to ground disturbing activities. Some of these surveys are seasonally-dependent. Based on the timing of the Notice to Proceed (NTP), the Proponent may not be able to complete some surveys prior to initiation of construction. For example, if the NTP is issued in August, the surveys that need to be conducted in the spring would not be performed prior to initiation of construction. In such cases, construction will be conducted in areas where preconstruction surveys have been completed or are not required until the preconstruction surveys identified in Table A3-1 have been completed. Table A3-1 also refers to the corresponding plans in the POD which provide a description of the applicable mitigation measures, including avoidance techniques.

The results of these surveys as they apply to construction, operation, and maintenance activities; monitoring of construction; and mitigation measures, will be included as applicable in Volume II – POD Map Sets 1, 2, and 3.

TABLE A3-1
PRECONSTRUCTION RESOURCE SURVEYS

Survey Type and Resources	Plan Reference	Date Completed	Additional Surveys to be Completed
Vegetation and Wetlands			
Special-status plants	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	May to June 2011 May to June 2012	Not applicable
Wetland delineation	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan	August to September 2011 November 2011 March 2012	Not applicable
Noxious weeds	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan Appendix B10 – Noxious Weed Management Plan	May to June 2011 May to June 2012	Not applicable
Water Resources			
Water course crossing inventory	Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan	August to September 2011 November 2011 March 2012	Not applicable
Springs/wells	Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan	August to September 2011 November 2011 March 2012	Not applicable

TABLE A3-1 PRECONSTRUCTION RESOURCE SURVEYS			
Survey Type and Resources	**Plan Reference**	**Date Completed**	**Additional Surveys to be Completed**
Wildlife Resources			
Utah prairie dog	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	May to August 2010	Low intensity surveys required at least 2 weeks prior to surface disturbance. Surveys must be conducted during the active season. Refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan for more information.
Southwestern willow flycatcher	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	May to July 2010	Not applicable
Raptors and nests	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	April to May 2012	Nest surveys and monitoring are required prior to and during construction to verify current status of nests. Refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan for more information.
Migratory bird nests	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	Not applicable	Required within 72 hours of construction activities between February 15 and July 15.
Pygmy rabbit and kit fox	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	April to June 2012	Not applicable
Greater sage-grouse leks	Appendix B6 – Plant and Wildlife Species Conservation Measures Plan	March 2010 March 2012	Not applicable
Cultural Resources			
Literature search and Class III inventory	Appendix B4 – Historic Property Treatment Plan	September 2010 to March 2012 July to August 2012	Not applicable
Paleontological Resources			
Paleontological resources	Appendix B13 – Paleontological Resources Treatment Plan	June 19 to 31, 2012	Not applicable

A3.1.1.3 Right-of-Way Preparation

Right-of-way preparation includes general site preparation involving flagging of the right-of-way boundaries and construction areas (refer to Appendix A1 – Flagging, Fencing, and Signage Plan). It also includes identification of avoidance areas such as, but not limited to, sensitive resource areas and weed infested areas. Post-construction sites for monitoring reclamation success will also be established during

preconstruction activities, as described in Section B14.7 – Reclamation Success Standards, Monitoring, and Maintenance.

Preconstruction actions focus on protection of sensitive areas and resources identified for preservation. Disturbance related to Project construction may begin after all right-of-way preparation and preconstruction actions have been completed for that segment.

Preconstruction actions identified for the Project are outlined below:

- Implementation of design features identified in the Stormwater Pollution Prevention Plan(s)
- Demarcation of avoidance areas
- Posting of access road signage
- Implementation of preconstruction Noxious Weed Management Plan activities
- Selection of monitoring transect locations
- Identification of wells and springs in known blasting areas
- Segregation of topsoil
- Implementation of windrow vertical mulch

Specific monitoring requirements, including the quantitative transect monitoring protocol, will be developed by the CIC in cooperation with the BLM/USFS prior to start of construction activities. Further discussion on the right-of-way preparation preconstruction activities can be found in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan and Section B14.6.1 – Right-of-Way Preparation and Preconstruction Actions

A3.1.1.4 Preconstruction Meeting

The Proponent will schedule and conduct a preconstruction meeting with the BLM and USFS Authorized Officers or his/her designated representatives a minimum of 14 days prior to commencing construction and surface disturbing activities at the substation sites or on the transmission line right-of-way. The Construction Contractor(s) involved with the Project will attend this meeting to review construction stipulations, including the POD. The Compliance Inspection Contractor (CIC) will preside over the meeting and review the key environmental issues associated with the Project and the required mitigation measures that will be followed. Environmental and safety training will also be presented by the Construction Contractor(s) at the preconstruction meeting to ensure all appropriate parties are aware of the established protocol (refer to Appendix A5 – Construction Workforce).

A3.1.1.5 Notice to Proceed (BLM-Administered Lands Only)

Once right-of-way documents have been approved by BLM, actual on-site construction or other surface disturbing activities on BLM-administered lands will be authorized by the issuance of a written NTP by the BLM Authorized Officer. The NTP will specify authorized activities, location of the authorized activities, and the timing of the authorized activities. Should non-compliance issues, environmental issues, or other problems be encountered during authorized activities, the BLM Authorized Officer may amend or rescind the NTP previously issued as described in Appendix A6 – Environmental Compliance Management Plan.

A3.1.1.6 USFS Special-use Authorization

Receipt of the USFS special-use authorization will be permission for work to begin on USFS-administered land. The USFS authorization requires compliance with receipt of the reclamation and cultural bonds to be described in BLM's NTP.

A3.2 Multi-use Construction Yards

Construction of the Project will begin with the establishment of multi-use construction yards. The multi-use construction yards can serve as field offices; reporting locations for workers; parking space for vehicles and equipment; and sites for material storage, fabrication assembly, and stations for equipment maintenance. Multi-use construction yards will not be located within the right-of-way.

Multi-use construction yards will be located near each end of the transmission line right-of-way. The exact locations of intermediate multi-use construction yards will be determined prior to construction. Intermediate multi-use construction yards will generally consist of a 12- to 20-acre site every 35 to 50 miles along the route.

One or more batch plants may be required for supplying concrete and will be located within the approved multi-use construction yards. Refer to Section 3..4.2 – Temporary and Permanent (Long-term) Construction Disturbance for more information. Multi-use construction yards will be fenced, typically with chain-link fencing, and their gates locked. Security guards will be stationed where needed. Multi-use construction yard locations will be finalized following discussion with the land-management agency or negotiations with landowners.

In some areas, the multi-use construction yard may need to be scraped by a bulldozer and a temporary layer of rock laid to provide an all-weather surface. Unless otherwise directed by the land-management agency or landowner, the rock will be removed from the multi-use construction yard on completion of construction. The area will be reclaimed using reclamation measures identified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. In locating multi-use construction yards, the preference is for relatively flat areas with easy existing access to minimize site grading and new road construction. The multi-use construction yards will be located in previously disturbed sites or in areas of minimal vegetative cover wherever possible. Since the location of these multi-use construction yards has yet to be determined, these multi-use construction yards will need to be surveyed for cultural and biological resources prior to ground disturbance activities.

The following activities should be considered during the cultural resource survey process:

- A Project Authorization Request form will be submitted to the Project lead's BLM archaeologist prior to any cultural resource surveys occurring
- Through agency-permitted archaeologists, the Construction Contractor(s) will conduct these cultural resource surveys and provide the results to the Proponent
- The Proponent will provide results to the BLM/CIC
- The BLM will review results for 15 to 30 days
- BLM will submit the results to SHPO for their 30-day review and consultation

Only after these actions occur will the Construction Contractor(s) be permitted for ground disturbance activities.

A3.3 Access Roads

Roads enable access to the right-of-way and tower sites for both construction and long-term maintenance of the transmission lines. Access roads must be sufficient to bear the weight and endure heavy construction vehicle use. All roads would be upgraded or constructed according to PacifiCorp's published standards for road construction (included as Appendix C1 – PacifiCorp's Transmission Construction Standards); BLM (BLM Manual 9113), USFS, state, and/or local requirements for road construction; or private landowner agreements to be outlined in the POD. In the event PacifiCorp's published standards for road construction conflict with BLM, USFS, state, or local requirements, the Construction Contractor(s) will coordinate with the CIC (or appropriate land-management agency representative in areas where the CIC does not have authority) to resolve the conflicting standards. However, existing paved and unpaved highways and roads would be used, where possible, for the transportation of materials and equipment from the storage yards to the areas where they would be needed along the transmission line right-of-way.

The Environmental Impact Statement identifies an average typical transmission tower span of 800 to 1,000 feet. To limit the amount of new road construction for the Project, authorized existing roads within 500 feet of the Project centerline will be used for access to the Project right-of-way and Project facilities, where practicable. The BLM considers authorized existing roads to be a travel surface that has been modified from its natural condition (i.e., graded, bermed, complete vegetation removal, etc.) specifically for access purposes. Similarly, USFS considers authorized existing roads to be those identified in their current Travel Management Plan. Unauthorized roads or two-tracks that do not meet these criteria on BLM or USFS lands will require approval from the appropriate land-management agency to be used for construction, operation, or maintenance purposes. In some cases, the BLM or USFS may prefer new access be built rather than using or improving unauthorized access routes.

Where existing roads could be used for construction, operation, and maintenance purposes, only spur roads to transmission tower sites may be needed. Beyond 500 feet from the Project centerline, constructing a new road from tower-to-tower will typically result in less ground disturbance than building spur roads from existing roads to each tower site or Project work area. The number of new spur roads will be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning). Some existing roads could require upgrading to meet the PacifiCorp, BLM, or USFS published standards for road construction. All existing roads will be left in a condition equal to, or better than, their condition prior to construction, in accordance with BLM, USFS, state, and/or local road standards or private landowner agreements.

Where new roads are required to meet the access needs of the Project, roads may be built as either temporary or permanent access. Where required for construction purposes only, or in temporary work areas (e.g., wire pulling and tensioning sites, concrete batch plants, etc.), temporary roads may be needed. Temporary roads serve the needs for Project access during the construction phase, but are not anticipated to be necessary for operation and maintenance purposes. On completion of construction activities, temporary access roads will be reclaimed according to the procedures specified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. Conversely, where required for construction, operation, and maintenance purposes, or where landowners or land-management agencies require, access roads would be constructed for permanent use.

All new and improved access roads, temporary or permanent, would be built with a standard travel-surface width of 14 feet, except in rare circumstances where, in steeper terrain, the travel surface width could be a maximum of 22 feet for radius of curves, depending on site-specific conditions and as specified in the POD (refer to Appendix B1 – Traffic and Transportation Management Plan). The

Construction Contractor(s) will coordinate with the CIC in all instances where new roads will exceed a 14-foot travel surface width, before the new roads are constructed. Turnout areas and curves would require a wider surface. Turnout areas (100 feet long by 10 feet wide) will be required for every 1,000 feet of new access road during the construction phase of the Project. On completion of construction, these turnout areas will be reclaimed according to the procedures specified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

Cattle guards with access gates or access gates will be installed where permanent access roads cross fence lines as required by the BLM, USFS or landowner and in accordance with the Proponents standards (PacifiCorp TA 520). Cattle guards on BLM lands will be all steel with no cleanout, 14 feet by 8 feet by 8 feet painted yellow, set on rough sawn pressure treated timbers (No. 2 or better grade) 12 inches by 12 inches by 16 feet.

New roads that must be graded for access along steep slopes (side-hill roads) could exceed a 14-foot travel surface width, with the total disturbed width varying depending on the amount of displaced soil (refer to Appendix B1 – Traffic and Transportation Management Plan) . The Construction Contractor(s) will coordinate with the CIC in all instances where new roads along steep slopes will exceed a 14-foot width, before the new roads are constructed. In addition, roads may be routed around specific areas due to topography or to avoid sensitive resources. Helicopters may be used for structure placement in limited areas where there are environmental constraints (i.e., where access is difficult due to rough terrain), or where it is economically practical; however, with the exception of inventoried roadless areas (IRAs) where only helicopter-only construction methods assisted by overland travel will be allowed, access roads to each structure location would be required. Typically, an improved ditch drainage system will not be required for new or improved access roads.

Erosion- and sedimentation-control measures such as water bars, culverts, sediment basins, or perimeter control will be installed for new and improved roads as required to minimize erosion during, and subsequent to, construction of the Project. These features would be constructed in accordance with the Proponent's standards (PacifiCorp TA 503 and TA 504) as approved by the agencies. To the maximum extent possible, drainages would be crossed at grade. Where such crossings are not feasible, culverts may be constructed (some of which may be temporary).

Where a permanent crossing is not required and allowed by the canal operator, temporary crossings may be completed using a portable bridge or fill. The bridge or fill and all crossing appurtenances shall be completely removed, the embankments restored and revegetated to the satisfaction of the canal operator on completion of the construction. Whenever possible, these crossings shall be done during canal off season. A culvert may be used if construction is to take place during periods where the canal is expected to be in operation. The culvert shall be sized to pass the entire capacity of the canal without obstruction. The Construction Contractor(s) shall coordinate with the canal operator to obtain required crossing permits and specific requirements.

If a riparian crossing were required during wet periods with saturated soil conditions, vehicles will not be allowed to travel when soils are moist enough for deep rutting (4 or more inches deep) to occur unless prefabricated equipment pads are installed over the saturated areas or other measures were implemented to prevent rutting. Rutting and other similar damage to overland access shall not exceed 4 inches in depth and shall be repaired and reseeded with approved seed mixes as soon as ground conditions permit. Equipment with low-ground-pressure tires, wide tracks, or balloon tires will be used when possible. In addition, during wet road conditions, the BLM or USFS Authorized Officer shall be notified if Project activities create any ruts deeper than 4 inches on existing roads. Such ruts will be repaired by the Construction Contractor(s) at BLM or USFS discretion. In addition, the Forest Supervisor will stipulate in the special-use authorization when ruts will be repaired.

A3.3.1 Snow Removal

Prior to any snow removal, the BLM or USFS Authorized Officer or his/her designated representative must be contacted to obtain approval. Snow removal will not be performed on overland access routes. If snow removal is authorized, at a minimum the following will be required:

- Snow will typically be bladed or pushed off the roads and construction area but within the right-of-way.
- The storage of snow (i.e. snow piles) will be confined to areas approved for disturbance and where appropriate surveys (e.g., biological, cultural, paleontological) have been completed. Snow removal will be done typically with a motor grader, snowplow, or dozer. Care will be taken when removing snow to minimize mixing of soil with snow. Tracked equipment used for snow removal operations shall be equipped with shoes to keep the blade 2 inches off the ground.
- The Construction Contractor(s) shall take special precautions where the surface of the ground is uneven and at drainage crossings to ensure equipment blades do not destroy vegetation.
- In areas where snow fills trenches or holes, the Construction Contractor(s) will be responsible for removing it to allow visual inspection of the trench or holes prior to installing Project facilities and backfilling.
- The Construction Contractor(s) will backfill trenches with unfrozen soils to the extent practicable to minimize the potential for ditchline settlement resulting from voids between frozen chunks of backfill.

As directed by the BLM or USFS Authorized Officer or his/her designated representative, all access roads (excluding overland access routes) shall be winterized by providing a well-drained roadway. This may be achieved by using water bars, maintaining drainage, and using any additional measures necessary to minimize erosion and other damage to the roadway or the surrounding public lands.

No snow removal is to occur on overland access without the approval of the BLM or USFS Authorized Officer.

A3.3.2 BLM and USFS Access Road Requirements

The BLM and USFS will require the following for access to and across lands they administer.

- Existing paved highways and improved unpaved roads, where possible, will be used for the transportation of materials and equipment from the storage yards to the areas where they will be needed along the transmission line right-of-way. These improved roads are better suited to the transportation of large construction vehicles and heavy equipment.
- In areas where no grading will be needed to access work areas, the Construction Contractor(s) will use the overland drive-and crush method to access the site in areas that are relatively level and that have low growing grasses and shrubs to the greatest extent possible. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed.

- In areas where no grading will be needed to access work areas, but vegetation is large and/or dense, the Construction Contractor(s) will use the overland clear-and-cut method to provide access along the approved construction zone to the greatest extent possible. Clear-and-cut is the removal of vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail-type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soil is compacted, but no surface soil is removed.

- In areas where road improvement/construction is needed due to topography and slope considerations, the Construction Contractor(s) will make any such improvements according to BLM's requirements for road construction as contained in BLM Manual 9113 or USFS road construction requirements. The BLM requires all temporary access roads be fully reclaimed on BLM-administered lands. In certain areas, it could be necessary to close roads after construction to restrict future access for general and undesired use. Such areas would be identified through negotiations with the landowner or land-management agency. Methods for road closure or management may include implementing physical barriers, such as locking gates, obstructing the path with earthen berms or boulders, ripping the road bed, or depositing construction material on the road surface, in a manner consistent with reclamation practices to be identified in the POD. Closed access routes would have to be reopened where right-of-access is impeded for maintenance and emergency restoration repairs.

A3.3.3 Ground Disturbance/Access Levels

To reasonably predict the anticipated amount of disturbance resulting from construction of the Project, access levels based predominantly on slope characteristics were developed during the EIS process and used to identify impacts to environmental resources. Specifically, five levels of access have been identified for the Project, and the amount of predicted ground disturbance associated with each level of access is identified in Table A3-2. These five access levels are further comprised of ten specific access types to construct, operate, and maintain the Project. Appendix B1 – Traffic and Transportation Management Plan provides a detailed discussion on the ten types of access to be used for construction, operation, and maintenance of the Project.

TABLE A3-2
GROUND DISTURBANCE/ACCESS LEVELS

Access Levels	Description	Access Type
Level 1	**Use existing roads** Existing roads will be used if they are located within 500 feet of the identified reference centerline, are paved or graded gravel roads with a travel surface at least 14 feet wide, and are approved for use by the applicable right-of-way holder. Typically, construction of spur roads will be required to access each of the towers. Approximately five spur roads per mile will be required, with a typical disturbance width of 16 feet and length dependent on distance from the reference centerline and slope. Spur roads typically will have a 14-foot-wide travel surface and require approximately 2 feet of disturbance for necessary grading and drainage features, resulting in a typical disturbance width of approximately 16 feet. In areas of steeper terrain, spur road surface width could be a maximum of 22 feet, depending on radius of curves and corners and slope of terrain, and total disturbance could exceed 22 feet due to requirements for drainage features and grading (e.g., cut-and-fill). Estimated disturbance associated with this access level assumes 0.5 mile of spur roads will be required for each mile of transmission line route.	**Type 1, Type 2**

TABLE A3-2 GROUND DISTURBANCE/ACCESS LEVELS		
Level 2	**Improve existing roads** Existing roads within 500 feet of the reference centerline will be improved if they do not meet Proponent, BLM, or USFS standards to accommodate the vehicles and traffic flows necessary to construct the Project. This will include single- and two-track roads typically used by recreational vehicles and/or agricultural equipment, but not for regular commercial traffic. Some of these roads may not be recognized by the appropriate land-management agency as an authorized access route, and would need agency approval prior to their use and improvement for Project access needs. This assessment assumes 6 feet of improvement width will be required for existing roads requiring improvements to meet Proponent, BLM, and USFS standards for road construction.. In addition to road improvements, construction of spur roads will be required to access each of the towers. Approximately five spur roads per mile will be required, with a typical disturbance width of 16 feet and length dependent on distance from the transmission structures and slope. Improved roads and spur roads typically will have a 14-foot-wide travel surface and require an average of 2 feet of disturbance for grading (e.g., cut-and-fill slopes) and drainage features, resulting in a typical disturbance width of approximately 16 feet. In areas of steeper terrain, road travel surface width could be a maximum of 22 feet, depending on radius of curves and corners and slope of terrain, and total disturbance could exceed 22 feet due to requirements for drainage features and grading (e.g., (cut-and-fill). Estimated disturbance associated with this access level assumes 0.5 mile of spur roads will be required for each mile of transmission line route.	**Type 3**
Level 3	**Construct new access, flat to rolling terrain (0 to 8 percent slopes)** New access roads constructed on flat- to-rolling terrain should not require switchbacks. Approximately 1.0 mile of new road with periodic pullouts of approximately 100 feet long by 10 feet wide with a 50-foot taper on both ends will be required for each 1.0 mile of transmission line in flat- to-rolling terrain. However, in areas where environmentally sensitive features occur (e.g., archaeological sites, biological or paleontological resources, etc.), up to 1.5 miles of new roads with periodic pullouts, approximately 100 feet long by 10 feet wide, may be required to avoid sensitive resources. New roads in flat to rolling terrain typically will have a 14-foot-wide travel surface and require approximately 6 feet of disturbance for necessary grading and drainage features, resulting in a typical disturbance width of approximately 20 feet.	**Type 4,** **Type 5,** **Type 6,** **Type 7,** **Type 8,** **Type 9** **Type 10**
Level 4	**Construct new access, rolling terrain (8 to 15 percent slopes)** It is anticipated new access roads constructed on moderately steep, rolling terrain will require occasional switchbacks to accommodate construction vehicles. Approximately 1.5 miles of new road with periodic pullouts, approximately 100 feet long by 10 feet wide with a 50-foot taper on both ends, will be required for each 1.0 mile of transmission line in rolling terrain. New roads in moderately steep, rolling terrain typically will have a 14-foot wide travel surface and require approximately 10 feet of disturbance for grading (e.g., cut and fill slopes) and drainage features, resulting in a typical disturbance width of approximately 24 feet. In areas of steeper terrain, road travel surface width could be a maximum of 22 feet, depending on radius of curves and corners and slope of the terrain and total disturbance could exceed 24 feet due to cut-and-fill requirements.	**Type 4,** **Type 5,** **Type 10**
Level 5	**Construct new access, steep terrain (greater than 15 percent slopes)** New access roads constructed in steep terrain will require a substantial number of switchbacks to accommodate construction vehicles. Approximately 2.0 miles of new road with periodic pullouts, approximately 100 feet long by 10 feet wide with a 50-foot taper on both ends, will be required for each 1.0 mile of transmission line in steep terrain. New roads in steep terrain typically will have a 14-foot wide travel surface and require approximately 15 feet of disturbance for grading (e.g., cut-and-fill	**Type 4,** **Type 5,** **Type 10**

TABLE A3-2 GROUND DISTURBANCE/ACCESS LEVELS		
	slopes) and drainage features, resulting in a typical disturbance width of approximately 29 feet. In areas of steeper terrain, road travel surface width could be a maximum of 22 feet, depending on radius of curves and corners and slope of terrain and total disturbance could exceed 29 feet due to cut-and-fill requirements.	

Table A3-3 summarizes the expected ground disturbance in acres associated with the construction of the Project. Temporary ground disturbance during construction would be associated with structure work areas; lay-down and multi-use construction yards; wire splicing, pulling, and tensioning sites; and access roads needed only for the construction phase of the Project. Permanent ground disturbance would occur as a result of structure base areas, access roads needed for the operation and maintenance phase of the Project, and substation sites.

TABLE A3-3
SUMMARY OF GROUND DISTURBANCE AND VEGETATION CLEARING

	Temporary Disturbance (acres)[1, 4]	Permanent Disturbance (acres)[2, 4]	Total Disturbance (acres)[4]	Right-of-way Vegetation Clearing (acres)[3, 4]
Total for selected route	**1,608.8**	**508.4**	**2,117.2**	**938.1**

NOTES:
[1]Temporary disturbance: Estimated area of disturbance associated with structure work areas (not including base area); wire splicing sites, wire pulling sites, wire tensioning sites, multi-use construction yards, staging areas, helicopter refueling sites, guard structures, and temporary access roads (refer to Table 3-1).
[2]Permanent disturbance: Estimated area of disturbance associated with H-frame and lattice structure base areas, communication regeneration stations and associated fiber optic and power lines, and permanent access roads (refer to Tables 3-2 and 3-3).
[3]Right-of-way vegetation clearing: Vegetation clearing was estimated for the full area of the right-of-way and the area of tree clearing outside of the right-of-way associated with temporary and permanent access roads and other temporary and permanent Project facilities where vegetation communities within the right-of-way only. Calculations include vegetation types with the potential to grow 12 feet tall (aspen, mountain shrub, pinyon-juniper, and riparian) occur.
[4]A 5 percent contingency has been added to the total calculated acreage.

A3.4 Transmission Line Construction

The following sections detail the transmission line construction activities and procedures for the proposed Project. Substation expansion construction is described in Section A3.5 – Substation Construction. Construction equipment and work force requirements are described in Appendix A5 – Construction Workforce. Various construction activities will occur during the construction process with several construction crews operating simultaneously at different locations.

A3.4.1 Geotechnical Investigations and Soil Boring

Geotechnical investigations may be required as part of the final engineering design as determined by the Construction Contractor(s). The purpose of geotechnical investigations is to collect information regarding subsurface soil stability, which will be used in the final design of each transmission tower foundation. This activity helps to ensure the system is designed and constructed to be safe, reliable, and cost efficient and can reduce the overall environmental disturbance during initial build and over the life of the Project. The geotechnical investigation would consist of the drilling and sampling of soils to a typical depth of 50 feet below the existing ground; however, borehole depth may exceed 50 feet depending on soil conditions. The boreholes will have a diameter of approximately 8 inches and will be backfilled with

auger cuttings and onsite soils. Geotechnical investigations would be conducted using a variety of field equipment, including conventional rubber-tired and/or tracked drilling rigs. Access for geotechnical investigations by the Construction Contractor(s) will be governed under the requirements of this POD.

Helicopter-transported drill rigs or manually transported rigs may be used for geotechnical exploration in areas where existing roads do not provide adequate access or where overland travel is expressly prohibited. Geophysical exploration techniques may be employed in areas where drilling is impractical to assist in subsurface characterization. Geophysical exploration techniques, such as ReMi, may also be used. ReMi uses instrumentation combined with surficial actuation to identify subsurface soil and rock stratification.

ReMi surveys pick up low-frequency background movement (e.g., walking, blowing of trees, or nearby stream water flow) in the vicinity of the recording line. However, high-impulse energy may be employed to expand the frequency bandwidth so as to improve overall data quality. This higher energy source will be obtained by simply jumping up and down and/or picking up and dropping large rocks into the ground with minimal noise and surface soil or vegetation disturbance. Readings from the ReMi equipment can be erroneously impacted by non-continuous soil and rock conditions such as thick vegetation root mass and animal burrows, so these areas will be avoided.

Equipment to be used in conducting the ReMi survey includes a multichannel seismograph, low- and high-frequency geophones laid out from 10-foot to 50-foot intervals. Ten-foot intervals between geophones with a 120-foot array will provide 30 to 40 feet of penetration and are anticipated to be sufficient. Geophones that are 3 inches long will be hand-pushed into the ground and removed after the readings are taken. In hard ground conditions, hand placement of geophones can be aided by pre-drilling probe holes with a hand-held, battery-operated drill using a 3/8-inch diameter bit and penetrating 2 to 3 inches into the ground.

A3.4.2 Site Access and Preparation

Construction of the transmission lines will begin with clearing and grading of unpaved access roads to allow entry to individual structure locations. After the access roads are cleared and/or graded, individual structure sites will be cleared and/or graded to install the transmission line support structures and facilitate access for future transmission line and structure maintenance and grading.

Individual structure sites will be cleared using the appropriate equipment, which could range from a brush hog flail-type mower to a bulldozer to blade the area required, to provide a safe working space for placing equipment, vehicles, and materials for tower assembly and erection. Each structure will require a temporary disturbance area of approximately 150 feet by 200 feet, typically assumed for each nonlattice structure work area, and a temporary disturbance area of 250 feet by 250 feet for each lattice structure work area, as defined in Tables 3-2 and 3-3 in Section 3.2.2 – Typical Structure Foundations.

Within the work areas described above, the permanent disturbance associated with the tower footings will be up to 40 square feet for H-frame structures, 80 square feet for lattice deadend structures, and 116 square feet for three-pole running angle structures. The work area will be cleared of vegetation only to the extent necessary. After transmission line construction, all work areas identified as temporary disturbance will be reclaimed in accordance with the Reclamation, Revegetation, and Monitoring Framework Plan (Appendix B14).

Additional equipment may be required if solid rock is encountered at a structure location and cannot be removed with conventional equipment. Rock-hauling, hammering, or blasting may be required to remove

the rock. Excess rock that is too large in size or volume to be spread at the sites will be hauled away and disposed of at approved landfills or at a location specified by the landowner. The Construction Contractor(s) will be required to provide the Proponent with documentation related to appropriate rock disposal to approved landfills or landowner approval if the landowner has agreed to leave onsite.

A3.4.2.1 BLM and USFS Site Preparation Requirements

The BLM and USFS will require the following for preparation on lands they administer. In addition, Section A3.3.2 – BLM and USFS Access Road Requirements identifies the requirements for site access across BLM- and USFS-administered lands.

- In areas where no grading will be needed to prepare the sites, the Construction Contractor(s) will use the overland drive-and-crush method to prepare the site in areas that are relatively level and that have low growing grasses and shrubs to the greatest extent possible. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed except for foundation preparation.

- In areas where no grading will be needed to prepare the site but vegetation is large and/or dense, the Construction Contractor(s) will use the overland clear-and-cut method to prepare the site to the greatest extent possible. Clear-and-cut is the removal of vegetation to improve or provide suitable access for equipment. Vegetation is removed using aboveground cutting methods that leave the root crown intact such as with a brush hog or hand tools. Soil is compacted, but no surface soil is removed except for foundation preparation.

- In areas where structure sites must be graded to provide a safe, level working space for structure installation, the Construction Contractor(s) will segregate topsoil and then spread the topsoil back over the site to provide a suitable seed bed for reclamation efforts. Excess soil from foundation hole excavation will be placed around the base of each structure to provide positive drainage away from the structure. The BLM and USFS require that, where possible, structure sites on BLM- and USFS-administered lands be reclaimed.

- In areas where topography and slope require cut and fill methods to provide a safe, level working space for structure installation, the Construction Contractor(s) will limit disturbance to the smallest possible area by planning to safely work the site with a minimal amount of equipment and equipment movements. Site specific grading plans depicting terracing for drill rig and/or crane pads and access may be required as determined by the Construction Contractor(s) in coordination with the BLM/USFS. After construction is complete, these sites will be re-contoured and reclaimed to the greatest extent possible. The size of the pad will be reduced as much as possible and reseeding and revegetation will be required to soften the appearance of the site.

The USFS will also require the following for site preparation on USFS-administered lands.

- Accessing the right-of-way within IRAs for construction at structure sites will be accomplished via helicopter supported by overland travel using low-impact vehicles (i.e., transport vehicles with rubber treading, low pressure tires, or specialized mechanical movement to accommodate the terrain and landscape) all-terrain vehicles (ATV) or utility-terrain vehicles). No blade work will be allowed to assist overland travel within the IRAs.

A3.4.3 Install Structure Foundations

Excavations for foundations will be made with power equipment or blasting techniques, where required. Where the soil permits, a vehicle-mounted power auger will be used. In rocky areas, the foundation holes may be excavated by drilling. Blasting may be used where required to loosen competent material, enabling excavation using traditional techniques. Alternatively, special rock anchors may be installed. In extremely sandy areas, soil stabilization by water or a BLM- or USFS-approved gelling agent may be used during excavation. The required water will be procured from municipal sources and/or from landowners. All procured water will require written landowner approval, which will include how much water will be used as well as a map and shapefile showing the location of the procurement site. This written approval must be provided to the CIC prior to procuring the water. No new water rights will be required. The CIC, BLM, and USFS will be notified in advance of any required blasting, so the area can be cleared and sensitive resources can be protected (refer to Blasting Plan Framework in Appendix B5).

After excavations are completed, cast-in-place footings will be installed. The cast-in-place footings for lattice towers will be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Excess concrete or concrete washout may not be located anywhere onsite except temporarily on spoil stockpiles.

Spoil material can be used for fill where suitable (e.g., permanent access roads) but cannot be used as topsoil (i.e., spoil material is not an appropriate seedbed). The excavation and installation of the foundation will require access to the site by a power auger or drill, a crane, material trucks, and concrete trucks using the access roads. In environmentally sensitive areas or areas of steep terrain, excavation and installation of the foundation may use a power auger or drill brought in by ATV, track unit, or similar device, provided the use of this equipment does not exceed the disturbances allowed for these areas.

Foundation holes left open or unguarded will be covered to protect the public and wildlife. If practical, temporary safety fencing may be used.

Soil removed from foundation holes will be stockpiled on the work area for either of the two uses described below. The Construction Contractor(s) will identify which use will be required at each structure site and will inform the CIC which method will be implemented for each structure work area.

(1) The first 6 inches of topsoil will be removed from the structure base area (not just the structure foundation holes), placed in a designated segregated pile within the structure work area, and clearly labeled. The structure foundations will be excavated and the spoils will be stockpiled in a designated location within the structure work area until the foundations are complete. Once the foundations are complete, the spoils will be spread over the structure base area to create a mound, which would be graded to meet PacifiCorp standards for water drainage away from the structure foundations. Once this is complete, the segregated topsoil will be placed over the top of the spoils mound.

(2) An approximately 50-foot by 100-foot area adjacent to the structure base area will have the first 6 inches of topsoil removed, placed in a designated segregated pile within the structure work area, and clearly labeled. The structure foundations will be excavated and the spoils will be placed evenly over the 50-foot by 100-foot area. The result is a crane pad to be used for the erection of the structure. Once structure foundation excavations and tower erection are complete, the topsoil would be placed over the top of the spoils.

Excess concrete from the concrete chute will be washed into the non-topsoil stockpiles, and then the soil will be replaced in the same order it was removed, thereby salvaging the seed bank. The stockpiles will be

used to backfill the foundation holes and the remaining topsoil will be spread on the access road. This will ensure the best possible topsoil for reseeding is not covered by auger cuttings during the rehabilitation of the site. Some large rocks may be left onsite to help blend the area in with the surrounding landscape.

A3.4.4 Erect Support Structures

Bundles of steel members and associated hardware will be shipped to each tower site by truck or delivered by helicopter. Steel members will be preassembled at the tower sites or construction yards into subsections of convenient size and weight. The assembled subsections will be hoisted into place by a large crane and then fastened together to form a complete tower (Figure A3-1).

As described previously, helicopters may also be used to assist assembly and erection of towers in rough or steep terrain or in areas of environmental constraints. (Note: Within IRAs, only helicopter-only construction methods assisted by overland travel will be allowed.)

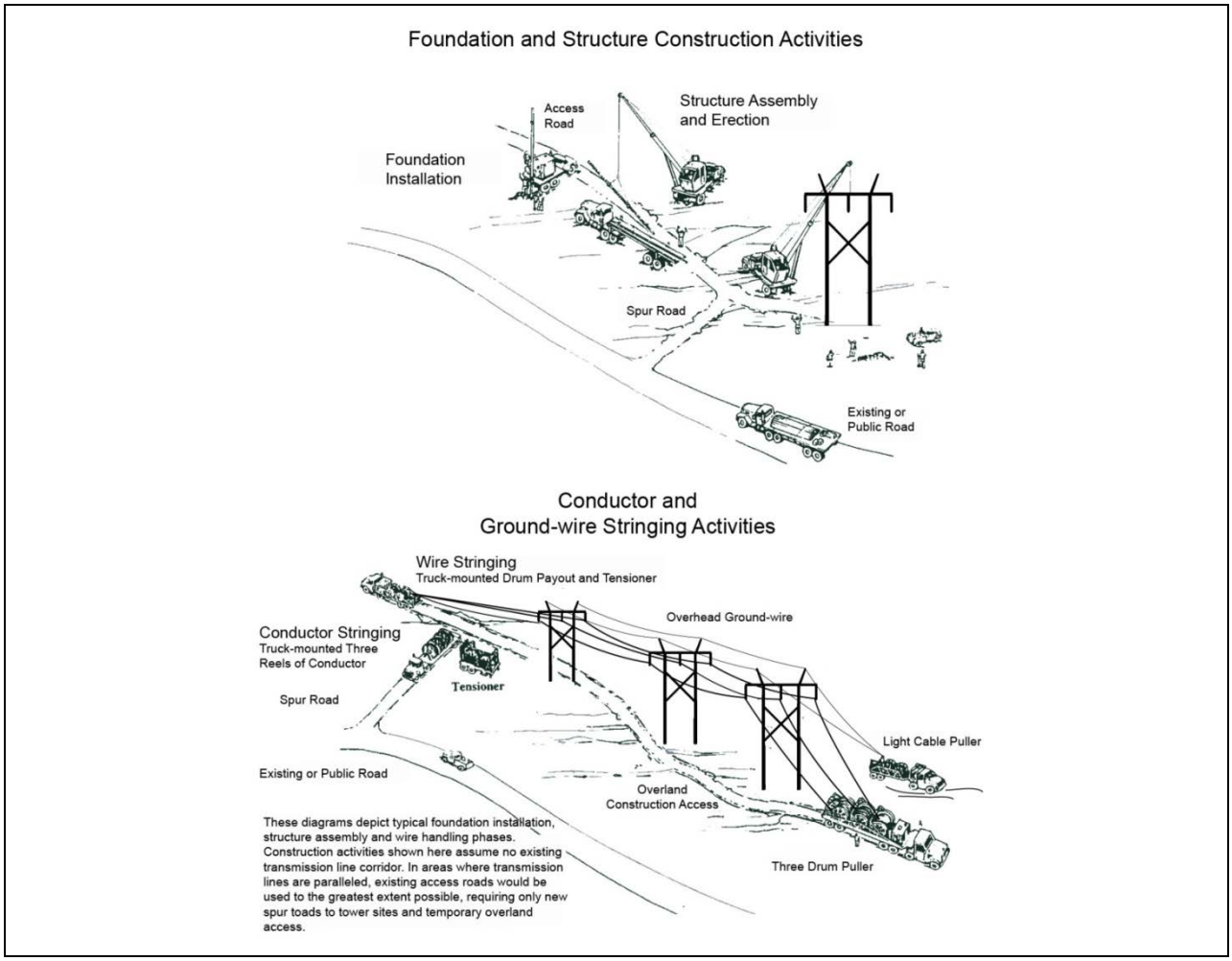


Figure A3-1 Typical Construction Activities

A3.4.5 String Conductors, Shield Wire, and Fiber Optic Ground Wire

Conductors, insulators, hardware, and stringing sheaves will be delivered to each tower site for installation. The towers and poles will then be rigged with insulator strings and stringing sheaves at each shield wire and conductor position; however, some structures could be erected with insulators and travelers already installed.

For all public protection during wire installation, guard structures will be erected over highways, railroads, powerlines, structures, and other obstacles. Guard structures consist of H-frame poles and aerial equipment placed on either side of an obstacle. These structures prevent shield wire, conductors, or equipment from falling on an underlying obstacle.

All guard structures will be located within the Project right-of-way. The temporary disturbance associated with installation of guard structures would consist of an approximately 75-foot by 150-foot work area at the base of each guard structure and two holes approximately 3 feet in diameter. The installation method of the guard structures will be direct embed with crushed rock and excavated material. All excavated material for the guard structures will be used to backfill these guard structures. As such, no excavated material will require offsite removal.

All topsoil would be salvaged, stockpiled, and replaced on removal of the guard structures and initiation of reclamation activities.

Equipment for erecting guard structures includes augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads or may be accommodated by line trucks. On such occasions, other safety measures such as barriers, flagmen, or other traffic control will be used.

A pilot line will be pulled (strung) from tower to tower (or pole to pole) by helicopter, truck, or ATV and threaded through the stringing sheaves at each structure. A stronger line that is larger in diameter will then be attached to the pilot line and strung. This is called the pulling line. This process is repeated until the shield wire and conductor are pulled through all sheaves. Shield wire and conductor will be strung, using powered pulling equipment at one end and powered braking or tensioning equipment at the other end.

Sites for tensioning equipment and pulling equipment are typically areas approximately 150 feet by 700 feet and will extend beyond the transmission line right-of-way in some angle locations. However, when construction occurs in the steep and rough terrain, these sites may require larger, less symmetrical pulling and tensioning areas.

BLM and USFS ground disturbance requirements identified in Section A3.4.2.1 – BLM and USFS Site Preparation Requirements will apply to pulling and tensioning sites, as well as any areas that have the potential for ground disturbance. All temporary work areas not required for ongoing operation and maintenance will be reclaimed by recontouring, spreading segregated topsoil over the area to prepare a seed bed, reseeding, and installing erosion control devices, as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. In coordination with the CIC, the Construction Contractor(s) will delineate the boundaries of the long-term work areas based on site-specific conditions.

A3.4.6 Sagging and Clipping

Following the initial stringing operation, pulling and tensioning the line would be required to achieve the correct sagging of the transmission lines between support structures. The tension and sag of conductors shall be installed in accordance with the engineering design requirements, stringing sheaves would be removed, and the conductors would be permanently attached to the insulators (clipping) at the support structures.

At the tangent and small angle structures, the conductors would be attached to the insulators using clamps to "suspend" the conductors from the bottom of the insulators. At the larger angle deadend structures, the conductors cannot be pulled through and so are cut and attached to the insulator assemblies at the structure, thus "dead ending" the conductors. There are two primary methods to attach the conductor to the insulator assembly at the deadend structure. The first method, hydraulic compression fittings, uses a large press and pump that closes a metal clamp or sleeve onto the conductor. The second method, implosive fittings, uses explosives to compress the metal together. Both methods require heavy equipment to install and both methods result in a secure connection between the conductor and the sleeve.

The 345kV single-circuit line will use a two-conductor bundle for each phase. Each 345kV deadend structure would require 12 implosive or compression type sleeves to deadend the conductors and 12 sleeves to fabricate the jumpers, for a total of 24 sleeves at each deadend structure. The 24 implosive sleeves will be rigged and detonated in one implosion, thereby minimizing the amount of noise disturbance during construction in comparison to detonating each sleeve individually. Coordination with local authorities will be required according to the Project blasting plan.

A3.4.7 Cleanup and Site Reclamation

In construction areas (e.g., multi-use construction yards, structure work areas, spur roads from existing access roads) where ground disturbance exists or where recontouring is required, surface reclamation will occur as required by the landowner or land-management agency and as required by the Reclamation, Revegetation, and Monitoring Framework Plan (refer to Appendix B14). The method of reclamation will normally consist of but is not limited to, returning disturbed areas back to their natural contour (except within the limits of permanent tower pad areas), reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches. Reclaimed areas will be left with a rough surface to discourage off-road vehicle use and limit wind and water erosion.

Areas on BLM- or USFS-administered public lands disturbed as a part of the construction and/or maintenance of the proposed transmission line will be seeded in accordance with the recommendations of Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD and with a seed mixture appropriate for those areas. The BLM or USFS will prescribe a seed mixture that fits each range site. Seeding methods will typically include drill seeding, where practicable; however, the BLM or USFS may recommend broadcast seeding as an alternative method in some cases. Drill seeding for all Project areas outside the jurisdiction of the BLM Cedar City Field Office will be performed during September 1 through December 15 to maximize the chance for success. Within the jurisdiction of the BLM Cedar City Field Office, drill seeding will be performed during October 15 through December 15. Where broadcast seeding is implemented, seed will be applied at 1½ to 2 times the rate of drill seeding application, and the seed will be covered by a method such as harrowing or raking. In cultivated agricultural areas, soil compacted by construction activities will be decompacted.

Construction sites, material storage yards, and access roads will be kept in an orderly condition and free of trash throughout the construction period. Refuse and trash will be collected at the temporary material

multi-use construction yards, pulling and tensioning sites, and other fixed construction sites in a closeable container until removed from the sites and disposed of in an approved manner. Oils and fuels will not be dumped on the right-of-way. Waste oils or chemicals will be hauled to an approved site for disposal by the Proponent, as required by the Spill Prevention, Containment, and Countermeasures Plan Framework (refer to Appendix B3).

At locations where the right-of-way crosses major access roads (identified on Map Sets 2 and 3 of Volume II), a fence will be installed across the entire width of the right-of-way on both sides of the major access road in an attempt to prevent the reclaimed right-of-way being used by off-highway vehicles. Signs indicating restricted travel also will be posted.

Disturbed areas not required for access roads or maintenance will be reclaimed and revegetated in accordance with the procedures identified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. All means prescribed in the POD (refer to Appendices B1 through 14) will be made where appropriate to reclaim the land to its original contour and to reclaim natural drainage patterns along the right-of-way.

A3.5 Substation Construction

New substation equipment will be needed at the terminus points to interconnect the transmission line with the existing Sigurd and Red Butte substations, as described in Section 3.2.7 – Substation Upgrades and Expansions. The following discussion is an overview of the types of construction activities that will take place at the substations.

A3.5.1 Access Roads

Permanent all weather access roads are required at substation site locations to provide access for personnel, material deliveries, vehicles, trucks, heavy equipment, low-boy tractor trailer rigs (used for moving large transformers), and ongoing maintenance activities at the site. Substation access roads are normally well compacted, graded gravel roads a minimum of 20 feet in width (a maximum of 27 feet with ditches on each side included). Existing permanent roads for both the Sigurd and Red Butte substations will fulfill the access requirements for Project substation upgrade and expansion activities.

A3.5.2 Clearing and Grading

Since the Project activities will take place within the existing substations, no clearing or grading activities are anticipated.

A3.5.3 Foundation Installation

Most of the tangent structures will be directly embedded into excavations at sufficient depth to ensure the required capacity. Two types of concrete foundations for supporting structures may be used for the Project, spread footings or drilled piers. Spread footings are placed by excavating the foundation area, placing forms and reinforced-steel and anchor bolts, and pouring concrete into the forms. After the foundation has been poured, the forms will be removed, and the surface of the foundation dressed. Pier foundations are placed in a hole generally made by a track-mounted auger. Reinforced-steel and anchor

bolts are placed into the hole using a track-mounted crane. The portion of the foundation aboveground will be formed. The portion below ground uses the undisturbed earth of the augured hole as the form. After the foundation has been poured, the forms will be removed, the excavation will be backfilled, and the surface of the foundation dressed. Equipment foundations for circuit breakers and transformers will be slab-on-grade. These foundations are installed by excavating the foundation area, placing forms, placing reinforced-steel and anchor bolts (if required), and placing concrete into the forms. After the foundations have been poured, the forms will be removed, and the surface of the foundation dressed. Where necessary, provision will be made in the design of the foundations to mitigate potential problems due to frost. Reinforced-steel and anchor bolts will be transported to each site by truck, either as a prefabricated cage or loose pieces, which will then be fabricated into cages on the site. Concrete will be hauled to the site in concrete trucks. Excavated material will be spread at the site or disposed of in accordance with local ordinances. Structures and equipment will be attached to the foundations by means of threaded anchor bolts embedded in the concrete.

A3.5.4 Oil Containment

Some types of electrical equipment, such as transformers and some types of reactors and circuit breakers, are filled with an insulating mineral oil. Containment structures are required to prevent oil from this equipment from getting into the ground or water bodies in the event of a rupture or leak. These structures take many forms depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is a pit of a calculated capacity under the oil-filled equipment that has an oil impervious liner. The pit may use grates to facilitate access to the equipment. In the event of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment systems can be installed. This may take the form of an onsite or offsite storage tank and/or oil-water separator equipment, depending on site requirements.

A3.5.5 Structure and Equipment Erection/Installation

Supporting steel structures will be placed in the excavation, plumbed and backfilled, or erected on concrete foundations as noted above. These are set with a track-mounted crane and attached to the foundation anchor bolts by means of a steel base plate. These structures will be used to support the energized conductors and certain types of equipment. This equipment is lifted onto the structure by means of a track-mounted crane and bolted to the structures; electrical connections are then made. Some equipment, such as transformers, reactors, and circuit breakers, are mounted directly to the foundations without supporting structures and set in place by means of a track-mounted crane. Some of this equipment requires assembly and testing on the pad. Electrical connections to the equipment are then made.

A3.5.6 Conduit and Control Cable Installation

Most substation equipment requires low-voltage connections to protective relaying and control circuits. These circuits allow metering, protective functions, and control (both remote and local) of the power system. Connections are made from the control building to the equipment through multi-conductor control cables installed in conduits and/or precast concrete cable trench system.

A3.5.7 Landscaping and Construction Cleanup

The cleanup operation will be performed after construction activities are completed. All waste and scrap material will be removed from the site and deposited in local permitted landfills in accordance with local ordinances. Ruts and holes outside the substation fence due to construction activities will be filled and regraded. Revegetation and reclamation will be conducted as required. If landscaping is required by the permitting agency, drought-tolerant and primarily native plant materials will be used for landscaping.

Attachment A
Construction Schedule

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Project ID: S2RB-TL-4

Project Name: SRB-T/L Sigurd-Red Butte 345kV SBS-11-06-12-MJ Preliminary

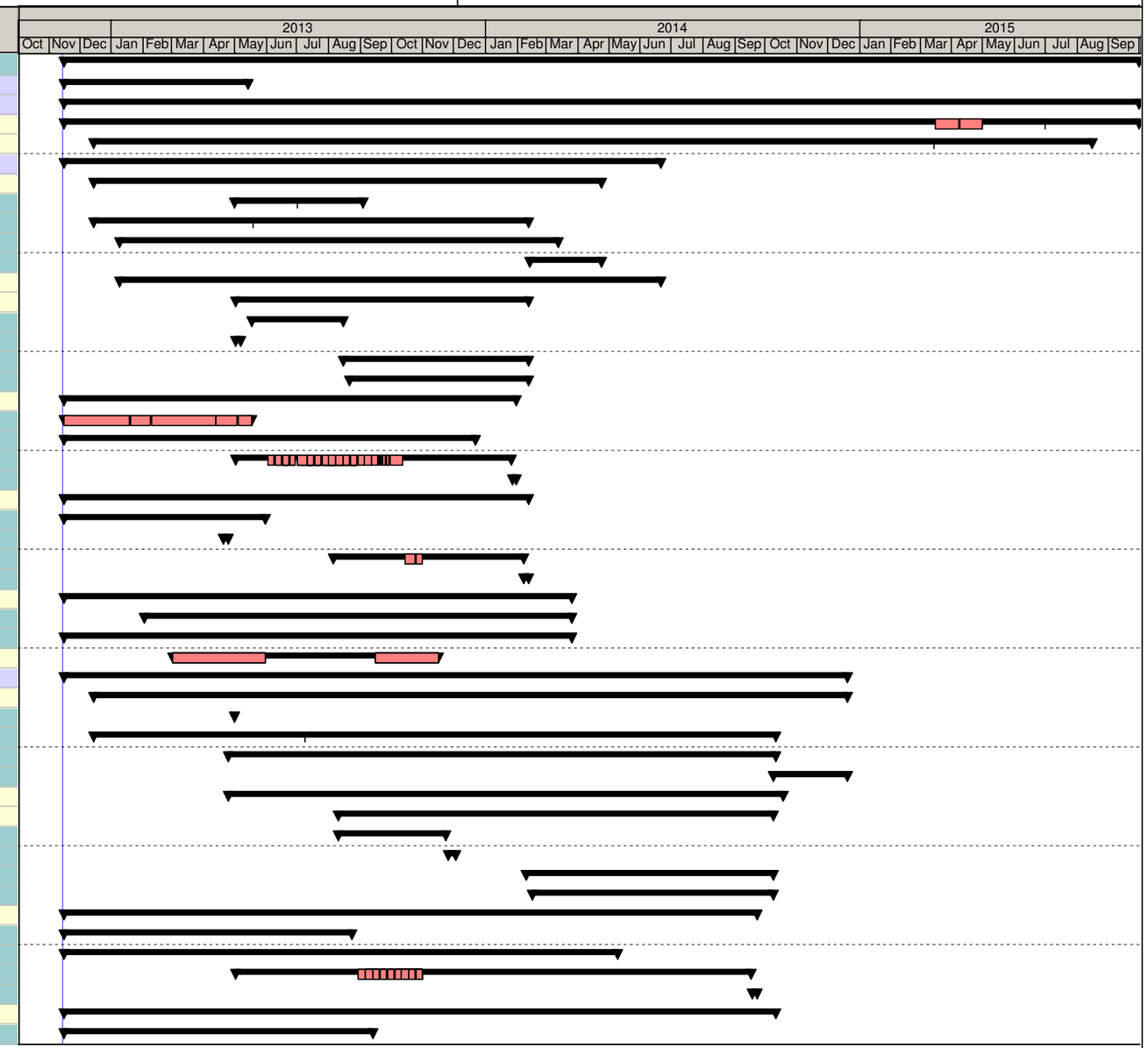
In-Service Date: 30-Jun-15

Project Manager: Smith, Brandon -Smith, Nancy

PCS: Johnson, Mike - Pearce, Suzanne

Print Date: 20-Nov-12

Activity ID	Activity Name	Orig Dur	Start	Finish
SRB-T/L Sigurd-Red Butte 345kV SBS-11-06-12-MJ Preliminary		1055.0d	15-Nov-12	30-Sep-15
Project Planning		175.0d	15-Nov-12	14-May-13
Milestones		1055.0d	15-Nov-12	30-Sep-15
Contractor Project Milestones - Attachment 3		1055.0d	15-Nov-12	30-Sep-15
Project Interim Progress Milestones - Attachment 9		976.3d	15-Dec-12	15-Aug-15
Segment 1 - +/-38.8 miles Sigurd SS - 183		578.8d	15-Nov-12	20-Jun-14
Project Management		488.8d	15-Dec-12	23-Apr-14
Owner-Milestones		126.3d	01-May-13	03-Sep-13
Contractor-Milestones		413.8d	15-Dec-12	12-Feb-14
Interim Progress Milestones		432.5d	09-Jan-13	12-Mar-14
Close-Out Activities		75.0d	13-Feb-14	23-Apr-14
Permitting/Environmental/Property		538.8d	09-Jan-13	20-Jun-14
Access Roads		281.3d	02-May-13	12-Feb-14
Engineering - Access Roads		90.0d	18-May-13	14-Aug-13
Procurement - Access Roads		5.0d	02-May-13	06-May-13
Construction - Access Roads		173.8d	15-Aug-13	12-Feb-14
Inspections and Acceptance- Access Roads		166.3d	21-Aug-13	12-Feb-14
Transmission Lines		428.8d	15-Nov-12	30-Jan-14
Engineering - T-Line		178.8d	15-Nov-12	17-May-13
Procurement - T-Line		402.5d	15-Nov-12	21-Dec-13
Construction - T-Line		262.5d	02-May-13	25-Jan-14
Testing & Commissioning - T-Line		5.0d	27-Jan-14	30-Jan-14
Communications Line (Seg 1)		441.3d	15-Nov-12	11-Feb-14
Engineering - C-Line		192.5d	15-Nov-12	31-May-13
Procurement - C-Line		5.0d	20-Apr-13	24-Apr-13
Construction - C-Line		178.8d	05-Aug-13	06-Feb-14
Testing & Commissioning - C-Line		5.0d	07-Feb-14	11-Feb-14
ADSS Sigurd SS		486.3d	15-Nov-12	25-Mar-14
Project Management		420.0d	02-Feb-13	25-Mar-14
Communications Line		486.3d	15-Nov-12	25-Mar-14
Outages		260.0d	01-Mar-13	15-Nov-13
Segment 2 - +/- 26.9 miles 184 - 309		767.5d	15-Nov-12	20-Dec-14
Project Management		738.8d	15-Dec-12	20-Dec-14
Owner-Milestones		0.0d	01-May-13	01-May-13
Contractor-Milestones		667.5d	15-Dec-12	11-Oct-14
Interim Progress Milestones		542.5d	25-Apr-13	11-Oct-14
Close-Out Activities		75.0d	09-Oct-14	20-Dec-14
Permitting/Environmental/Property		550.0d	25-Apr-13	18-Oct-14
Access Roads		428.8d	10-Aug-13	08-Oct-14
Engineering - Access Roads		112.5d	10-Aug-13	23-Nov-13
Procurement - Access Roads		5.0d	25-Nov-13	02-Dec-13
Construction - Access Roads		253.8d	10-Feb-14	08-Oct-14
Inspections and Acceptance- Access Roads		246.3d	15-Feb-14	08-Oct-14
Transmission Lines		675.0d	15-Nov-12	22-Sep-14
Engineering - T-Line		278.8d	15-Nov-12	23-Aug-13
Procurement - T-Line		535.0d	15-Nov-12	09-May-14
Construction - T-Line		508.8d	02-May-13	17-Sep-14
Testing & Commissioning - T-Line		5.0d	18-Sep-14	22-Sep-14
Communications Line (Seg 2)		695.0d	15-Nov-12	10-Oct-14
Engineering - C-Line		300.0d	15-Nov-12	13-Sep-13



Actual Work
Goal
Remaining Work
Critical Remaining Work
Milestone
Act Milestone
Neg Float bar
Summary
Remaining Level of Effort
Actual Level of Effort

Data Date: 15-Nov-12

Baseline:

TASK filter: All Activities

Layout: SRB - WBS-All Activities

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Project ID: S2RB-TL-4

Project Name: SRB-T/L Sigurd-Red Butte 345kV SBS-11-06-12-MJ Preliminary

In-Service Date: 30-Jun-15

Project Manager: Smith, Brandon -Smith, Nancy

PCS: Johnson, Mike - Pearce, Suzanne

Print Date: 20-Nov-12

Activity ID	Activity Name	Orig Dur	Start	Finish
	Procurement - C-Line	5.0d	10-Jul-13	13-Jul-13
	Construction - C-Line	255.0d	06-Feb-14	06-Oct-14
	Testing & Commissioning - C-Line	5.0d	07-Oct-14	10-Oct-14
	Outages	260.0d	01-Mar-13	15-Nov-13
	Segment 3 - +/- 43.1 miles 310 - 509	713.8d	15-Nov-12	28-Oct-14
	Project Management	685.0d	15-Dec-12	28-Oct-14
	Owner Milestones	126.3d	01-May-13	03-Sep-13
	Contractor-Milestones	621.3d	15-Dec-12	28-Aug-14
	Interim Progress Milestones	481.3d	08-May-13	28-Aug-14
	Close-Out Activities	75.0d	19-Aug-14	28-Oct-14
	Permitting/Environmental/Property	417.5d	12-Jul-13	28-Aug-14
	Access Roads	316.3d	05-Oct-13	18-Aug-14
	Engineering - Access Roads	112.5d	05-Oct-13	05-Feb-14
	Procurement - Access Roads	5.0d	06-Feb-14	10-Feb-14
	Construction - Access Roads	181.3d	27-Feb-14	18-Aug-14
	Inspections and Acceptance- Access Roads	173.8d	05-Mar-14	18-Aug-14
	Transmission Lines	621.3d	15-Nov-12	01-Aug-14
	Engineering - T-Line	386.3d	15-Nov-12	06-Dec-13
	Procurement - T-Line	467.5d	15-Nov-12	07-Mar-14
	Construction - T-Line	312.5d	18-Sep-13	28-Jul-14
	Testing & Commissioning - T-Line	5.0d	29-Jul-14	01-Aug-14
	Communications Line (Seg 3)	631.3d	15-Nov-12	11-Aug-14
	Engineering - C-Line	402.5d	15-Nov-12	21-Dec-13
	Procurement - C-Line	5.0d	10-Jul-13	13-Jul-13
	Construction - C-Line	188.8d	13-Feb-14	11-Aug-14
	Testing & Commissioning - C-Line	5.0d	06-Aug-14	09-Aug-14
	ADSS Milford SS	410.8d	19-Dec-12	13-Feb-14
	Project Management	314.5d	02-Apr-13	13-Feb-14
	Communications Line	410.8d	19-Dec-12	13-Feb-14
	Segment 4 - +/- 42.2 miles 510 - 700	783.8d	15-Nov-12	19-Jan-15
	Project Management	755.0d	15-Dec-12	19-Jan-15
	Owner-Milestones	126.3d	01-May-13	03-Sep-13
	Contractor-Milestones	680.0d	15-Dec-12	23-Oct-14
	Interim Progress Milestones	675.0d	14-Jan-13	03-Nov-14
	Close-Out Activities	75.0d	24-Oct-14	19-Jan-15
	Permitting/Environmental/Property	720.0d	15-Nov-12	03-Nov-14
	Access Roads	475.0d	13-Jul-13	23-Oct-14
	Engineering - Access Roads	112.5d	13-Jul-13	26-Oct-13
	Procurement - Access Roads	5.0d	28-Oct-13	31-Oct-13
	Construction - Access Roads	392.5d	30-Sep-13	23-Oct-14
	Inspections and Acceptance- Access Roads	385.0d	05-Oct-13	23-Oct-14
	Transmission Lines	701.3d	15-Nov-12	16-Oct-14
	Engineering - T-Line	233.8d	15-Nov-12	12-Jul-13
	Procurement - T-Line	651.3d	15-Nov-12	29-Aug-14
	Construction - T-Line	487.5d	17-Jun-13	11-Oct-14
	Testing & Commissioning - T-Line	5.0d	13-Oct-14	16-Oct-14
	Communications Line (Seg 4)	701.3d	15-Nov-12	16-Oct-14
	Engineering - C-Line	248.8d	15-Nov-12	26-Jul-13
	Procurement - C-Line	5.0d	10-Jun-13	13-Jun-13
	Construction - C-Line	701.3d	15-Nov-12	16-Oct-14

Actual Work
Goal
Remaining Work
Critical Remaining Work
Milestone
Act Milestone
Neg Float bar
Summary
Remaining Level of Effort
Actual Level of Effort

Data Date: 15-Nov-12

Baseline:

TASK filter: All Activities

Layout: SRB - WBS-All Activities

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Project ID: S2RB-TL-4

Project Name: SRB-T/L Sigurd-Red Butte 345kV SBS-11-06-12-MJ Preliminary

In-Service Date: 30-Jun-15

Project Manager: Smith, Brandon -Smith, Nancy

PCS: Johnson, Mike - Pearce, Suzanne

Print Date: 20-Nov-12

Activity ID	Activity Name	Orig Dur	Start	Finish
	Testing & Commissioning - C-Line	5.0d	10-Oct-14	14-Oct-14
	Outages	260.0d	01-Mar-13	15-Nov-13
	Segment 5 - +/- 18.5 miles 701 - Red Butte SS	925.0d	15-Nov-12	30-May-15
	Project Management	893.1d	14-Dec-12	27-May-15
	Owner-Milestones	0.0d	03-Sep-13	03-Sep-13
	Contractor-Milestones	691.3d	15-Dec-12	03-Nov-14
	Interim Progress Milestones	893.1d	14-Dec-12	27-May-15
	Close-Out Activities	75.0d	04-Nov-14	29-Jan-15
	Permitting/Environmental/Property	896.9d	14-Dec-12	30-May-15
	Access Roads	486.3d	13-Jul-13	03-Nov-14
	Engineering - Access Roads	112.5d	13-Jul-13	26-Oct-13
	Procurement - Access Roads	5.0d	28-Oct-13	31-Oct-13
	Construction - Access Roads	367.5d	29-Oct-13	29-Oct-14
	Inspections and Acceptance- Access Roads	365.0d	04-Nov-13	03-Nov-14
	Transmission Lines	697.5d	15-Nov-12	13-Oct-14
	Engineering - T-Line	233.8d	15-Nov-12	12-Jul-13
	Procurement - T-Line	307.5d	15-Nov-12	20-Sep-13
	Construction - T-Line	403.8d	04-Sep-13	08-Oct-14
	Testing & Commissioning - T-Line	5.0d	09-Oct-14	13-Oct-14
	Communications Line (Seg 5)	717.5d	15-Nov-12	31-Oct-14
	Engineering - C-Line	248.8d	15-Nov-12	26-Jul-13
	Procurement - C-Line	5.0d	10-Jun-13	13-Jun-13
	Construction - C-Line	372.5d	22-Oct-13	27-Oct-14
	Testing & Commissioning - C-Line	5.0d	28-Oct-14	31-Oct-14
	ADSS Red Butte SS	348.5d	01-Feb-13	15-Jan-14
	Project Management	152.5d	14-Jun-13	07-Nov-13
	Communications Line	348.5d	01-Feb-13	15-Jan-14
	Outages	260.0d	01-Mar-13	15-Nov-13

Actual Work
Goal
Remaining Work
Critical Remaining Work
Milestone
Act Milestone
Neg Float bar
Summary
Remaining Level of Effort
Actual Level of Effort

Data Date: 15-Nov-12

Baseline:

TASK filter: All Activities

Layout: SRB - WBS-All Activities

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Appendix A4 – Special Construction Techniques

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A4 – SPECIAL CONSTRUCTION TECHNIQUES

This section provides an overview of special construction techniques that may be used on the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) depending on location and Construction Contractor's determination.

A4.1 Blasting

Some roads and work areas that may potentially require blasting are situated in rocky outcrops. All applicable state, local, and federal laws concerning the use of blasting materials will be followed by the licensed Blasting Contractor in the handling and storage of explosives. PacifiCorp, doing business as Rocky Mountain Power (Proponent) or the Construction Contractor(s), will obtain a permit from the appropriate county for the period when blasting may occur and will comply with the following requirements developed by Bureau of Land Management and U.S. Forest Service:

1. The license holder shall publish a proposed blasting schedule in the local newspaper one week prior to any blasting taking place. The schedule shall identify the location, dates, and times blasting will occur. No blasting shall occur outside of the published schedule, except in emergency situations.

2. The license holder shall post warning signs at all entry points for the Project. Warning signs shall provide information on blasting, including the general hours blasting might take place and audible signals to be used for warning of impending blasting and to indicate the site is all clear.

3. Access points to areas where blasting will take place will be blocked to prevent access by the public at least 30 minutes prior to blasting. The site shall be swept 5 minutes prior to blasting to ensure no unauthorized personnel have wandered onto the site. An audible warning signal, capable of carrying for 0.5 mile, shall be used at least 2 minutes prior to blasting. An "all clear" signal will be given once it has been determined the area is safe.

4. Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as needed.

5. Damages that result solely from the blasting activity will be repaired or the owner fairly compensated.

As described in Section 3.2.2 – Typical Structure Foundations of the Plan of Development, tower foundations will normally be installed using drilled shafts or piers. If hard rock is encountered within the planned drilling depth, blasting may be required to loosen or fracture the rock to reach the required depth to install the structure foundations. Areas where blasting likely will occur will be identified based on the geologic setting of the proposed alignment as identified in the geotechnical investigation for the Project.

The Construction Contractor(s) will be required to prepare a Blasting Plan for the Project based on Appendix B5 – Blasting Plan Framework, subject to the approval of the Proponent. The Blasting Plan will detail the Construction Contractor's proposals for compliance with the Proponent's blasting specifications and will detail the general concepts proposed to achieve the desired excavations using individual shot plans. In addition, the plan will address proposed methods for controlling fly rock, blasting warnings, and using nonelectrical blasting systems. The Construction Contractor will be required

to provide data to support the adequacy of the proposed efforts regarding the safety of structures and slopes and to ensure an adequate foundation is obtained. When utilized, blasting will take place between sunrise and sunset.

The shot plans, including sketches, will detail the drilling and blasting procedures; the number, location, diameter, and inclination of drill holes; the amount, type, and distribution of explosive per hole and delay; and pounds of explosive per square foot for pre-splitting and smooth blasting. The Construction Contractor will be required to maintain explosive logs.

Blasting near buildings, structures, and other facilities susceptible to vibration or air blast damage will be carefully planned by the Construction Contractor(s), submitted to the Proponent for their approval, and controlled to eliminate the possibility of damage to such facilities and structures. The Blasting Plan will include provisions for controls to eliminate vibration, fly rock, and air blast damage.

Blasting will be very brief in duration (milliseconds), and the noise will dissipate with distance. Blasting produces less noise and vibration than comparable nonblasting methods in the removal of hard rock. Nonblasting methods include track-rig drills, rock breakers, jack hammers, rotary percussion drills, core barrels, and rotary rock drills with rock bits, all of which require much longer durations to excavate approximately the same amount of rock as blasting.

A4.2 Helicopter Activities

A small helicopter could be used throughout the Project area for such purposes as transporting personnel or installing pulling lines (called sock lines) to facilitate installation of the conductor. In rough terrain where access is difficult or where access through environmentally sensitive areas can be avoided, larger, heavy lift helicopters could be used to ferry construction equipment, concrete, or towers to a specific site. Project construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; and hardware installation. Helicopters may also be used to support the administration and management of the Project by the Construction Contractor(s) or Proponent.

Helicopters will set down in areas identified to receive temporary disturbance. The operating area of the helicopters will be limited to helicopter staging areas, material and equipment yards, and positions along the utility corridors previously identified for this purpose and are safe locations for landing. When a portion of the transmission line Project is required to be constructed using helicopter support, these yards will also serve as a helicopter support yard for fueling, maintenance, and transporting both material and personnel to and from the structure site locations.

Final siting of all helicopter staging and support yards will be conducted with the input of the helicopter contractor, and affected private landowners and land management agencies, such as the U.S. Forest Service. The size of each helicopter staging and support yard will be dependent on the size and number of towers to be installed within safe flying range.

The area required for these staging/assembly yards can range in size and depends on road access and topography. The yards should be as level as possible, and be located strategically throughout the area of helicopter supported construction activity. In some instances, because of the presence of vegetation and/or an uneven surface, the area required for a specific yard may need to be brushed, grubbed, and/or graded, including removal of trees in some instances. Ideally they should be located at a higher elevation than the structure sites they will support because it is safer and more fuel efficient to fly down toward the tower site with heavy loads than it is to fly up to the tower site. Additionally, the assembly yard must be

accessible by road to facilitate the delivery of tower steel, rebar, concrete, construction tools, equipment, and other materials used in the construction of the foundations and the structures.

The following are activities that can take place at helicopter staging/support yards:

- Tower sections preassembled using a rough terrain crane
- Rebar for assembling cages and/or preassembled rebar cages for structure foundations delivered then flown out of this yard to each structure site
- Concrete staged by truck delivery or batch plant that would generate the required concrete to be loaded into a concrete transport bucket attached to a helicopter and flown out to the structure sites
- The refueling of the helicopter and necessary light maintenance (A fuel truck and a mechanics truck will be located at these yards.)
- The transportation of personnel, tools, and small equipment by helicopter to and from the yards and the construction sites
- Temporary parking for a fuel truck, a mechanics truck, and transport vehicles for personnel.
- Yards serving as a safe landing area for the helicopter in case of an emergency

The specific types of helicopters used will be based on the Project need, the weight of the load being transported, and the altitude of the tower location. The various needs will range from light loads (crew/inspector transportation, and conductor stringing) to medium to heavy loads (tool and material delivery/removal, and tower removal/construction activities). The specific helicopters used will also vary, depending on availability and Project schedule.

During helicopter operations, public access to defined areas will be restricted. Temporary road closures, traffic detours, and posted notices and signs will be used to restrict public access to construction areas. This will be in addition to general public access restrictions to protect public health and safety. When use of helicopters for construction would occur during big game hunting season (hunting seasons vary by year, but generally occur during October), the Proponent or Construction Contractor(s) will provide advance notification to the public and the UDWR Cedar City office. Notification to the public should include notice of heavy construction and helicopter use that may affect big game habitat use and sportsmen's hunting experiences. Notice should be provided to the public using newspaper, radio, flyers placed at local outfitters, etc.

A4.2.1 Typical Helicopter Construction Description

Construction workers and equipment will be dropped off at pulling and tensioning sites, tower locations, or other work areas previously described to receive temporary disturbance. Large heavy-lift helicopters will be used to transport a tower to a location where the ground crew is waiting to spot the structure into a preconstructed foundation. The helicopter will fly from pre-determined yards and transport the preassembled structure sections to each tower site. Depending on the size and weight of the load, several round trips may be required from the assembly yard to fully construct each structure. Each assembly yard can support several structure sites and must be located no farther away from the structure site locations than is within the safe round-trip flight distance limitation of the helicopter(s) being used. The typical safe round-trip flight distance for a heavy lift helicopter is a 3- to 5-mile radius, depending on altitude and lift weight.

Structure locations designated as helicopter sites also typically will require some type of ground access using temporary roads or utility trailer vehicle roads to the tower sites. Foundation and tower leg construction would be typically accomplished using low-impact construction equipment. Low-impact construction equipment is defined as tracked vehicles that use a street-type of track and walking-type,

rubber-tired, all-terrain backhoes. Street tracks have much less aggressive tread than tracks typically used for off-road travel. A walking-type backhoe uses outriggers to stabilize itself in locations too steep to provide a level surface from which to perform excavation tasks. An advantage of this type of equipment is that it is possible to traverse much steeper grades than conventional equipment. The backhoe will be used to create safe temporary access for street-tracked vehicles to follow. Therefore, the length of access, and by extension, the amount of disturbance may be expected to be much less.

All-terrain and utility trailer vehicles may be utilized to transport personnel and/or small materials to the tower site along the temporary access roads. Personnel may hike, horseback, or be transported by light-duty helicopters into the site when required. Existing fire breaks and ridge tops will be used for temporary access, wherever possible, and approved by the Bureau of Land Management/U.S. Forest Service to minimize tree removal. Some construction materials such as rebar, stub angles, and steel for tower legs may also be delivered on the ground by this equipment. However, the heaviest and most bulky materials will be delivered by helicopter for assembly at the site.

Helicopter assisted construction at a typical tower site will be sequenced as follows:

1. At the tower site, a walking-type backhoe will be used to create the working pads required for construction of the tower foundation and base.

2. A track-hoe equipped with low-impact street-type track and drilling auger will be mobilized to the site via the safe temporary access created by the walking backhoe. This equipment will be used to excavate the drilled shaft or alternate foundation construction.

3. A track-mounted crane equipped with a street track and sufficient boom to safely deliver materials to the top of the tower waist will be mobilized to the site. The crane will be setup on the tower working pad.

4. Reinforcement cages, tied at the site or delivered assembled by helicopter will be inserted into the excavation by the crane. The cage and leg stub angle will be supported by the foundation reveal forms. Foundation concrete will be delivered via heavy lift helicopter.

5. Steel for the towers will be delivered to the site. Lattice tower assembly will begin as the foundation is being constructed and cures. Assembly will be aided by the track-mounted crane and backhoe. Tower erection will begin once the foundation reaches 75 percent of the specified 28-day concrete compressive strength. Assemblies will be stacked on the foundation using the tracked crane up to the top of the tower waist.

6. Tower top sections will be pre-assembled at staging/assembly yards and flown complete with insulator assemblies and travelers and/or lifted into place using a heavy lift helicopter.

7. Sock lines will be installed using smaller helicopters. The sock line is used to facilitate the subsequent pulling and installing conductors.

8. On completion of the stringing operations, the temporary access will be reclaimed as described in the Plan of Development with the mitigations prescribed for the given access road type and condition.

A4.2.1.1 Procedures Considered for Minimizing Ground Disturbance within Inventoried Roadless Areas

There are six towers, labeled E_54 through E_59, planned within the Atchinson Inventoried Roadless Area (IRA) within the Dixie National Forest. Overland access, specifically Type 7 – New Temporary Overland Clear and Cut and Type 9 – New Temporary Overland Drive and Crush, is allowed from the existing roads to those transmission structures located within the IRA but only by using equipment that minimizes ground disturbance. The area where overland access is allowed is depicted using a hatch pattern from the existing road to the eastern Project right of way boundary (identified on Panels 181 and 182 of Volume II – POD Map Set 2). Equipment that minimizes ground disturbance must be used within the hatched pattern area of the Atchinson IRA.

Vegetation management to support overland access within the hatched pattern area of the Atchinson IRA must be minimized. Reclamation of all ground-disturbing activities must be completed to conform to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan and the Construction Contractor(s) developed Reclamation Plan and also in coordination with the Compliance Inspection Contractor (CIC).

It is important to note that overland access must be completed without road pioneering and/or construction to or within the boundaries of the Atchinson IRA.

The types of equipment that can be considered and the requirements for disturbance minimization are described below.

Right of Way Preparation/Vegetation Management

- Hand cutting of vegetation in compliance with the Proponent's Transmission and Distribution Vegetation Management Program. Mechanized land clearing equipment will not be permitted.
- The root-mat and low growing understory vegetation shall be left in place to minimize sediment erosion.
- Debris that is felled in streams shall be carefully removed to minimize stream bank damage.

Overland Access

- Choose routes from existing roads outside the Atchinson Inventoried Roadless Area that will result in the lowest amount of disturbance (i.e., soil displacement from the turning of track vehicles, side slope travel, rutting in wetter soils, displacement from climbing steep grades) These travel areas should be pre-approved by the CIC or USFS Authorized Officer or his/her designated representative.

- Choose routes from the existing roads to the structure work areas that minimize the need for vegetation management to support overland access.

- Use low-impact vehicles to support transmission line construction. Low-impact vehicles may include, but not be limited to, conventional track-mounted construction vehicles, such as drill rigs, trackhoes, rubber tiered backhoes and cranes. It is suggested these vehicles not be equipped with deep lugged, all-terrain tracks. Rather a street track, modified as needed to ensure the safety of the operator, should be used. Additionally, articulating (walking backhoes) may be used. These vehicles are capable of negotiating steep terrain with minimal ground disturbance. They do

require the use of their bucket as a fifth point of contact. The bucket will disturb the ground where it touches. Wheeled equipment using oversized, low-pressure tires may be used to minimize impact/rutting by spreading the vehicle weight over a large surface area.

- Plan for access to the sites for structure work to be limited to access for construction, walking the equipment back out for fueling and servicing instead of moving service vehicles to the site. Crews should plan to hike in and out each day. Alternatively, and as approved by the CIC, in areas where hiking is too difficult, all-terrain and/or utility-terrain vehicles may be used to transport crews, small equipment, and materials to the structure work area.

Transmission Line Construction

- Use previously described low-impact vehicles to create stable working areas within the specified structure work area. Foundation pads shall be planned for cross-slope to prevent the need for large flat areas to be graded for the entire structure.

- Excavations for drilled shaft concrete piers should be advanced using the lowest impact drill rig that has sufficient crowd and torque to complete the work. If the disturbance is deemed to be too great for the described drill rig, hand digging of the excavations should be considered.

- If it is determined drilled shaft concrete pier foundation construction will result in excessive disturbance, alternative foundation types such as micropiles or rock anchors should be considered.

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

- Anchor bolts for drilled shafts, stub angles for lattice towers, and flanged base plates for directly embedded H-frames should be considered for structure attachment to the foundations. It is expected these types of attachments will support delivery of structure materials by helicopter.

- Once the foundation attains sufficient structural capacity, structure erection will begin. Structure erection may use low-impact self-propelled cranes when it can be done with no additional disturbance from the foundation excavation. It is expected these low-impact vehicles will have height limitations on lifting tower components. Low impact vehicles may be used to erect lattice towers to the top of the structure waist. Heavy- or medium-lift helicopters would then lift the remaining assemblies to complete the structure.

- As an alternative to helicopter-assisted lattice tower erection, as described previously, the tower may be completely constructed on site using a gin-pole. Lattice steel may be delivered to the site in small packages by small/medium-lift helicopters or transported to the work site by packstock.

- Sock lines will be installed using a small helicopter. The sock line will facilitate pulling the heavier conductor from pulling and tensioning sites, located outside the inventoried roadless area, through the blocks. Crews that have hiked, been transported by all-terrain and/or utility-terrain vehicles or flown in by helicopter will be used to clip and dead-end the conductor pull.

- On completion of conductor stringing operations, the temporary access will be reclaimed as described in the approved environmental plan with the mitigations prescribed for the given access road type and condition.

It is not intended that the preceding list of construction methods restrict the Construction Contractor(s). If the Construction Contractor(s), in consultation with the CIC and the agencies, agree on a proposal for overland access using a construction method separate from the construction methods identified in the preceding list, but meets the Atchinson IRA objective by minimizing ground disturbance for overland access, it may be implemented with the submittal of a Level 2 variance request. The Level 2 variance request would serve the purpose of documenting the construction method variation and would not prohibit construction from progressing.

A4.3 Temporary Water Use During Construction

Construction of the transmission lines and substations will require water. Major water uses are for transmission line structure and substation foundations and dust control during right-of-way and substation grading and site work.

For transmission lines, water is used for two primary purposes: foundation construction and right-of-way dust control. The required water will be procured from municipal sources and/or from landowners. No new water rights will be required. In the construction of foundations, water is transported to the batch plant site, if needed, where it is used to mix wet concrete. From the batch plant, the wet concrete is transported to the structure site in concrete trucks for use in foundation installation (refer to Appendix A3 – Project Construction for more details on foundation installation).

Construction of the transmission lines and related facilities will generate a temporary increase in fugitive dust. The Construction Contractor(s) will employ approved dust suppression techniques, such as watering construction areas or removing dirt tracked onto a paved road as needed to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates. Water trucks will be the primary means of dust abatement during all phases of construction. The Construction Contractor(s) will obtain a dust permit from the Utah Department of Environmental Quality prior to construction and comply with all conditions in the permit. Water spray will be controlled so that pooling will be avoided to the extent possible. In construction zones near residential and commercial areas and along major highways and interstates, or where determined necessary by the CIC, speed limits of 15 miles per hour will be set and strictly enforced by the CIC or Construction Contractor(s).

Construction water and water used for dust control will come from municipal and/or landowner sources determined by the Construction Contractor(s). All procured water will require written landowner approval, which will include how much water will be used as well as a map and shapefile showing the location of the procurement site. This written approval must be provided to the CIC prior to procuring the water. The contractors working on the Project will truck water to the site. All Project personnel will be educated on the site dust mitigation plan.

Water usage for substation construction is primarily for dust control during site preparation work. During this period, construction equipment will be cutting, moving, and compacting the subgrade surface. As a result, water trucks may be used consistent with the dust permit obtained by the Construction Contractor(s) from the Utah Department of Environmental Quality prior to construction. Once site preparation work is complete, concrete for the placement of foundations becomes the largest user of water and dust control becomes minimal.

Once site grading is complete, the balance of the substation construction work will be performed on bare subgrade soil or subgrade with a thin layer of rock. Fire risk will be minimal, due to the bare ground or rock surface, and will be contained within the confines of the substation fenced area.

A4.4 Shipping and Handling Guidelines for Sulfur Hexafluoride

In accordance with PacifiCorp's commitment to reduce sulfur hexafluoride (SF_6) gas, a fluorinated compound with superior insulation properties and dialectric strength used as an electric insulator in high-voltage substation equipment, the Proponent is required to do the following (Rocky Mountain Power 2009-2010):

1. Report (quarterly and annually) to the Environmental Protection Agency and PacifiCorp management on the following items:

    a. Quantity of existing and newly installed SF_6
    b. List and locations of leaking equipment
    c. SF_6 gas usage (maintenance) due to leaking equipment

2. Properly ship, label, and track SF_6 gas, which includes:

    a. Proper shipping name (Hazardous Material name, hazard class, identification number)
    b. Proper labeling and marking (internal racking number, nonflammable label)
    c. Strict adherence to the proper shipping and labeling guidelines and Department of Transportation required elements

3. Notify authority if SF_6 gas is discovered in any other specification cylinder.

4. Properly transport SF_6 gas, which includes:

    a. Upright or horizontal position in boxes or crates
    b. Placards placed on four sides of transport vehicle if transporting greater than 1,000 pounds
    c. Hazmat endorsement

5. Remove SF_6 cylinders not currently in service and do not have an assigned identification number.

6. Account for all unused SF_6 gas by weighing all cylinders returned to Logistics for credit to facilities work orders.

7. Maintain minimal, but reasonable inventory levels, at each location to reduce unnecessary use or releases.

8. Include in the cab of the vehicle material safety data sheets for SF_6 gas consistent with the Construction Contractor's Site Environmental Health and Safety Plan within arm's reach of driver.

Currently, there are no viable alternatives to replace the use of SF_6 in high-voltage transmission systems. In the past, mineral oil and vacuum systems have been used as an insulating medium. However, these alternatives are only reliable in lower voltage systems (e.g., 12.5kV or 50kV) and are not viable

alternatives for this Project. In addition, oil-insulated systems are no longer available and are slowly being replaced due to their potential environmental consequences when spills or accidents occur.

A4.5 Literature Cited

ASTM D 2472−00, *Standard Specification for Sulfur Hexafluoride*

PacifiCorp Material Specification ZS 063, Insulating Fluid – Sulfur Hexafluoride, dated 29 May, 2009.

Rocky Mountain Power. 2009-2010. M. Doyle, EPG, personal communication with Transmission Development Department.

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A5 – CONSTRUCTION WORKFORCE

A5.1 Introduction

The proposed Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) will be constructed primarily by contract personnel with PacifiCorp, doing business as Rocky Mountain Power (Proponent). The Proponent will be responsible for Project administration. The Project will consist of several phases of construction at varying locations along the Project right-of-way.

The construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel who will perform the construction tasks. Construction activities will consist of surveyors, road construction, foundation installation, structure steel haul, structure assembly, structure erection, wire installation, cleanup, and road rehabilitation. It is anticipated multiple contractors will be working concurrently on the separate line segments and expansions Project substations of the Project to meet the planned in-service date estimated for June 2015.

The Construction Contractor(s) will hold daily field meetings with their environmental monitors and the Compliance Inspection Contractor (CIC) to review applicable environmental regulations and stipulations as well as potential environmental issues.

The estimated number of workers and types of equipment required to construct the proposed transmission line are shown in Table A5-1.

TABLE A5-1
ESTIMATED PERSONNEL AND EQUIPMENT FOR CONSTRUCTION

Activity	Equipment Type	Quantity of Equipment	No. of People
Survey	Pickup truck	3	6
Support equipment	4 x 4 pickup	3	8 to 16
	1-ton mechanic service truck	2	
	Equipment fuel truck	2	
	5-ton truck tractor	1	
	40-ton lowboy rig	2	
	45-ton cherry picker	2	
	10-ton forklift	2	
	4,000-gallon water truck	2	
Road maintenance, building, and restoration equipment	4 x 4 pickup	2	12 to 24
	D8 crawler tractor	1	
	4,000-gallon 6 x 6 water truck	2	
	Self-propelled water wagon	2	
	Road grader	2	
	Backhoe	2	
Guard pole equipment	4 x 4 pickup	2	5 to 10
	Flatbed boom truck	1	
	Auger truck	2	

TABLE A5-1 ESTIMATED PERSONNEL AND EQUIPMENT FOR CONSTRUCTION			
Activity	**Equipment Type**	**Quantity of Equipment**	**No. of People**
Foundation installation	4 x 4 pickup	4	30 to 48
	Crewcab pickup	2	
	Air compressor	4	
	25-ton flatbed boom truck	2	
	15-ton flatbed boom truck	4 to 8	
	Rock drill	2 to 4	
	Excavator	3	
	Auger truck	3	
	10-cubic-yard dump truck	2	
	1.5-cubic-yard front-end loader	2	
	Backhoe	2	
	Concrete mixing truck	2 to 8	
	18-ton crane	2	
	30-ton crane	2	
Yard and material hauling equipment	4 x 4 pickup	2	10
	10-ton forklift	3	
	8-ton forklift	2	
	4-ton forklift	2	
	22-ton crane	1	
	6 x 4 truck tractor	1	
	15-ton flatbed boom truck	2	
	4 x 4 flatbed truck	2	
	Heavy-lift helicopter	1	
Structure assembly and erection	4 x 4 pickup	2	40 to 60
	Crewcab pickup	2	
	100-ton hydraulic crane	2	
	70-ton hydraulic crane	1	
	D-8 crawler tractor	2	
	Air compressor	2	
	4 x 4 flatbed truck	2	
Wire stringing and ground cleanup equipment	120-ton crane	2	20 to 48
	30-ton crane	2	
	19-ton crane	2	
	6 x 6 truck tractor	2	
	2-ton truck	2	
	5-ton truck	2	
	Auger truck	1	
	Backhoe	2	
	High-reach boom truck	2	
	15-ton flatbed boom truck	1	
	Pickup truck	4	
	4 x 4 pickup	2	
	Crewcab pickup	2	
	Helicopter	1	

TABLE A5-1 ESTIMATED PERSONNEL AND EQUIPMENT FOR CONSTRUCTION			
Activity	**Equipment Type**	**Quantity of Equipment**	**No. of People**
Wire installation	Wire reel trailer	6	25
	Diesel tractor	2	
	3-drum pulling machine	3	
	Single-drum puller (large)	1	
	Double bull-wheel tension machine (heavy)	3	
	Sagging equipment (D-8 cat, tracked)	2	
	Helicopter and fly ropes	1	
	Carryall	4	
	Static wire reel trailer	2	
	Air compressor	1	
Optical ground wire (OPGW) installation	OPGW splicing trailer	2	6
	OPGW bucket truck	2	
SOURCE: Pike Engineering/Shaw Engineering 2010			

Construction of the transmission line and expansion of substations are expected to occur over 18 to 24 months.

Various phases of construction will occur at different locations throughout the construction process and in some cases at the same time at different locations. Regular field meetings will be held with the CIC to review the process and its implementation.

Construction will generally occur between 7 a.m. and 7 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

A5.2 Construction Equipment and Traffic

Construction access will occur at several locations along the transmission line route resulting in dispersed construction traffic. Truck deliveries will normally be on weekdays between 7 a.m. and 7 p.m. The following is a summary of anticipated equipment to be used for each construction activity.

Survey work only requires the use of pickup trucks or all-terrain vehicles. Road construction will utilize pickups, bulldozers, motor graders, and water trucks. For assembly and erection of structures, pickup trucks, 2-ton trucks, carryalls, and cranes will be required. Wire installation requires the most equipment, including pickups, wire reel trailers, diesel tractors, cranes, boom trucks, splicing trucks, three-drum pullers, single-drum pullers, tensioner, sagging dozers, carryalls, static wire reel trailers, and a light helicopter. Final cleanup and reclamation will use pickups, 2-ton trucks, bulldozers, motor graders, dump trucks, front-end loaders, and water trucks. The highest level of traffic will be when the wire stringing operations begin while several other operations are occurring at the same time, which will likely include excavating holes, installing foundations, hauling steel, assembling structures, and erecting structures.

For the substation work, the highest level of traffic will be during site grading and foundation installation. Dump trucks will be leaving and returning to the site on a constant basis each day for the duration of the site grading.

Once concrete placement is complete, traffic on the surrounding roads will subside. Workers will arrive in the morning and leave at the end of the day. The balance of daily traffic will be for material deliveries from storerooms, which will probably be one or two trips per day. Each substation will require the delivery of permitted loads such as transformers and/or reactors. Each reactor or transformer bank will require four large multiple-wheel lowboy trucks. Delivery will be scheduled to match the completion of their respective foundations.

A5.3 Environmental and Safety Training

Prior to gaining access to the right-of-way, all construction and maintenance workers will be required to participate in an environmental education program to be conducted by the Construction Contractor in coordination with the CIC (or approved specialist designee) and Proponent. This program will be developed by the Proponent prior to the start of construction. Signatories and tribes participating in the Programmatic Agreement will be invited to review and comment on the cultural resources protection aspects of this program. Environmental and safety training program materials will be submitted to the Bureau of Land Management and U.S. Forest Service Authorized Officer or his/her designated representative for review and approval prior to implementation. The environmental and safety training will be presented at the preconstruction meeting to ensure all appropriate parties are aware of the established protocol.

A two-tiered environmental training program will be implemented to educate managers and field crews on compliance with the Plan of Development and Project permits. The program will include the following topics: biological, cultural, paleontological, and other environmental requirements and protection measures. The first tier will be a Supervisory Environmental Training session, which will be a multi-hour training for supervisor and management personnel. This training will include, but not be limited to the following:

- Role of the environmental compliance team
- Individual responsibilities
- Compliance monitoring and reporting process
- Approval of Project changes
- Discussion of requirements stated in the Plan of Development, Bureau of Land Management right-of-way grant, U.S. Forest Service special-use authorization, and other agency permits. The discussion may be tailored to specific audiences to highlight the information they need to know.

The second tier of the program will be onsite environmental crew training. This training will generally be less than one hour and will be conducted before construction personnel are allowed to work on the Project. Due to the high turnover rate associated with construction crews, general foremen will be required to keep track of and require training of all construction personnel under their supervision. Additional training will be conducted throughout construction as needed to inform new personnel brought on the job of their environmental responsibilities.

After participating in the training program, each trained worker will receive a card and hardhat sticker indicating they are cleared for access to the right-of-way. The Construction Contractor(s) will provide the CIC with an updated list of those workers who have received the training. The Construction Contractor(s) will be responsible for ensuring all construction personnel have received the required training. A noncompliance violation will be issued if a worker is found working on the right-of-way without the required training.

In addition, the Construction Contractor(s) will be responsible for providing safety training, as required. All construction, operation, and maintenance activities will be required to comply with Occupational Safety and Health Administration regulations. The CIC will be notified by the Construction Contractor(s) of any accidents that occur on public land during construction of the Project. Notification procedures for emergencies are described in Appendix B9 – Emergency Preparedness and Response Plan Framework.

After construction is complete, the Proponent will provide environmental education to all maintenance and operation personnel who will be accessing the right-of-way.

A5.4 Literature Cited

Pike Engineering/Shaw Engineering. 2010. Personal communication between Amanda O'Connor, EPG, and Pike Engineering/Shaw Engineering concerning Project engineering costs. September 10, 2010.

Appendix A6 – Environmental Compliance Management Plan

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A6 – ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN

A6.1 Introduction

The Bureau of Land Management (BLM) and U.S. Forest Service (USFS) will be responsible for enforcement of the terms and conditions of the BLM's right-of-way grant and USFS's special-use authorization on federal lands during the term of the grant/special-use authorization, respectively. As the lead federal agency, the BLM will approve a third-party Compliance Inspection Contractor (CIC) to act on behalf of the BLM and USFS.

On federal lands, the CIC will inspect and monitor preconstruction and construction activities, as well as enforce the terms and conditions of the BLM's right-of-way grant and the USFS's special-use authorization. On non-federal lands, the CIC will inspect and monitor preconstruction and construction activities, document disturbance of the entire Sigurd to Red Butte No. 2 – 345-kilovolt (kv) Transmission Project (Project) on all lands analyzed in the Environmental Impact Statement (EIS) and enforce requirements related to BLM and USFS responsibilities under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA).

In addition, the Project will require adherence to any federal, state, and local permits, as well as private landowner agreements (if applicable), that include conditions to construct. The responsibility of compliance monitoring and enforcement of non-federal conditions will be determined between PacifiCorp, doing business as Rocky Mountain Power (Proponent) and the landowner on a case-by-case basis.

Mitigation plans have been developed to minimize potential impacts on sensitive environmental resources (refer to Section 5 – Environmental Mitigation Measures). The terms and requirements from the Project permitting and related documents described above are specified in Section 1 – Introduction and Appendix B – Environmental Protection Plans.

A6.2 Environmental Compliance Management Plan Elements and Authority

This Environmental Compliance Management Plan (ECMP) is the primary guidance document that states how the Project participants will uphold, document, and manage compliance with the right-of-way grant/special-use authorization; the Plan of Development (POD); landowner agreements, and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is thereby intended to facilitate environmental compliance across the entire Project for all parties and describes the following essential elements:

- Roles and responsibilities of the participants
- Comprehensive inspection and monitoring program
- Corrective procedures in the event of noncompliance
- Standard protocol for variance requests and other deviations
- Reporting process
- Comprehensive Project-specific environmental compliance training program

The Proponent's commitment to environmental compliance will be demonstrated by activities prior to, during, and following construction. The ECMP is intended to be a controlled document and may be revised as needed throughout the construction process. Because the Project will cross federal and state lands as well as lands owned privately and/or under the jurisdiction of multiple agencies, the ECMP will be applicable for multiple jurisdictional permitting entities and landowners.

Authority for implementation of this ECMP originates from the terms, conditions, and stipulations of the BLM's right-of-way grant and the USFS's special-use authorization, the POD, the Final EIS, the Record of Decision (ROD), BLM Notices to Proceed (NTP), and other conditions associated with non-federal agency permits. As part of the Proponent's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the POD (within the bounds of construction activities and associated disturbance analyzed in the Final EIS).

Project specific permitting documents, including but not limited to those identified above, must be reviewed prior to any construction activities to identify all Project-wide and site specific requirements. These documents will be distributed by the CIC to the appropriate parties for their review prior to the initial construction kickoff meeting. At that time, a document control system to manage distribution of all documents and revisions will be presented and demonstrated.

The Proponent and BLM/USFS have agreed to use a third-party CIC to act on the BLM's and USFS's behalf to ensure adequate oversight during construction. The CIC will be hired by the Proponent prior to the BLM and USFS offering the right-of-way grant and special-use authorization, respectively, to allow adequate time for the CIC to review documents and develop on-the-ground familiarity with the Project. The CIC will be authorized to enforce the POD on BLM- and USFS-administered lands. The CIC will also ensure BLM and USFS responsibilities under the NHPA and ESA are met on non-federal lands and disturbance on non-federal lands is consistent with the analysis in the EIS.

Environmental Inspectors will be retained by the Construction Contractor(s) but will report to the Proponent who will then report to the BLM (as shown in the organizational chart in Figure A6-1 in Section A6.3 – Roles and Responsibilities). The Environmental Inspectors primary focus will be to make certain all construction activities in all Project segments and phases are performed in accordance with the environmental commitments set forth in the POD, permits, and individual agreements. If the CIC is not present during construction on non-federal lands, the Environmental Inspectors must document all construction activities and Project disturbance that occurs at each work area, which will be included in the total Project disturbance tracking maintained by the CIC (Section A6.3.2.3 – Compliance Inspection Contractor Project Manager).

The BLM, through the CIC, and the Proponent will provide direct oversight of the Construction Contractor's environmental compliance performance, with any specific work direction to the Construction Contractor(s) only coming from the Proponent. Additional information about the Construction Contractor's role in this ECMP is explained in Section A6.3.3 – Construction Contractor(s).

A6.3 Roles and Responsibilities

The following section describes the responsibilities of each ECMP entity and describes their reporting relationships and roles in executing the ECMP (Figure A6-1). If other parties become engaged in this ECMP as additional participants, they would be responsible to function and abide by the protocols, terms, and conditions outlined in this ECMP and their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of their input.

This section of the POD briefly discusses the variance process. However, a more detailed variance discussion is located in Section A6.4.2 – Variance Procedures (Unforeseen Circumstances).

A6.3.1 Project Proponent

Rocky Mountain Power will act as holder of all rights-of-way easements, public and private, and will be the grant holder for the BLM right-of-way and USFS special-use authorization. As such, the Proponent is ultimately accountable for adherence to the environmental permit requirements specified in the terms of its agreements and is responsible for ensuring that environmental impacts do not exceed those analyzed in the Final EIS and approved in the POD. To facilitate this goal, the Proponent will maintain regular and consistent communication with the Construction Contractor(s) to track the success of mitigation and compliance efforts prior to, during, and following construction. As the permit holder, the Proponent is responsible for assuring all instances of noncompliance are corrected.

A6.3.1.1 Proponent's Project Sponsor

- Responsible for Project delivery. Ensures effective coordination occurs between the Proponent Project Manager and Environmental Compliance Manager with the BLM's or USFS's Authorized Officer or his/her designated representative and CIC and the Construction Contractor's Project Manager to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Informs the Construction Contractor(s) they are contractually bound to comply with all of the Project's environmental requirements including the implementation of the ECMP.

A6.3.1.2 Proponent's Project Manager

- Responsible for all aspects of Project execution and completion.
- Enforces Construction Contractor(s) compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Manages Proponent's Construction Inspector and Environmental Compliance Manager.

Reporting

- Reviews and evaluates weekly reports.
- Reports environmental compliance violations to Proponent's Project Sponsor as needed.

Variances

- Reviews and approves Construction Contractor's written variance requests for submittal to the CIC.
- Delegates authority to approve submittal of Construction Contractor's variance requests to the BLM as needed.

A6.3.1.3 Environmental Compliance Manager

- Facilitates oversight and coordination of Construction Contractor's compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Coordinates with Proponent's Project Manager and Construction Inspector (refer to Section A6.3.1.4 – Proponent's Construction Inspector), the Construction Contractor's environmental inspection/compliance personnel (refer to A6.3.3.7 – Construction Contractor's Environmental Reporting Coordinator), and the CIC (refer to Section A6.3.2.3 – Compliance Inspection Contractor Project Manager) on a regular basis to evaluate environmental compliance with the Project.
- Monitors completion of all preconstruction and post-construction commitments.
- Serves as the primary Proponent contact regarding environmental issues.
- Communicates environmental compliance issues to the CIC and tracks resolution of issues to completion.
- Coordinates field inspection visits with Construction Contractor(s).
- Maintains coordination with the Proponent's environmental department throughout the life of the Project.
- Coordinates submittal of all Work Authorizations associated with the BLM NTP and USFS special-use authorization.

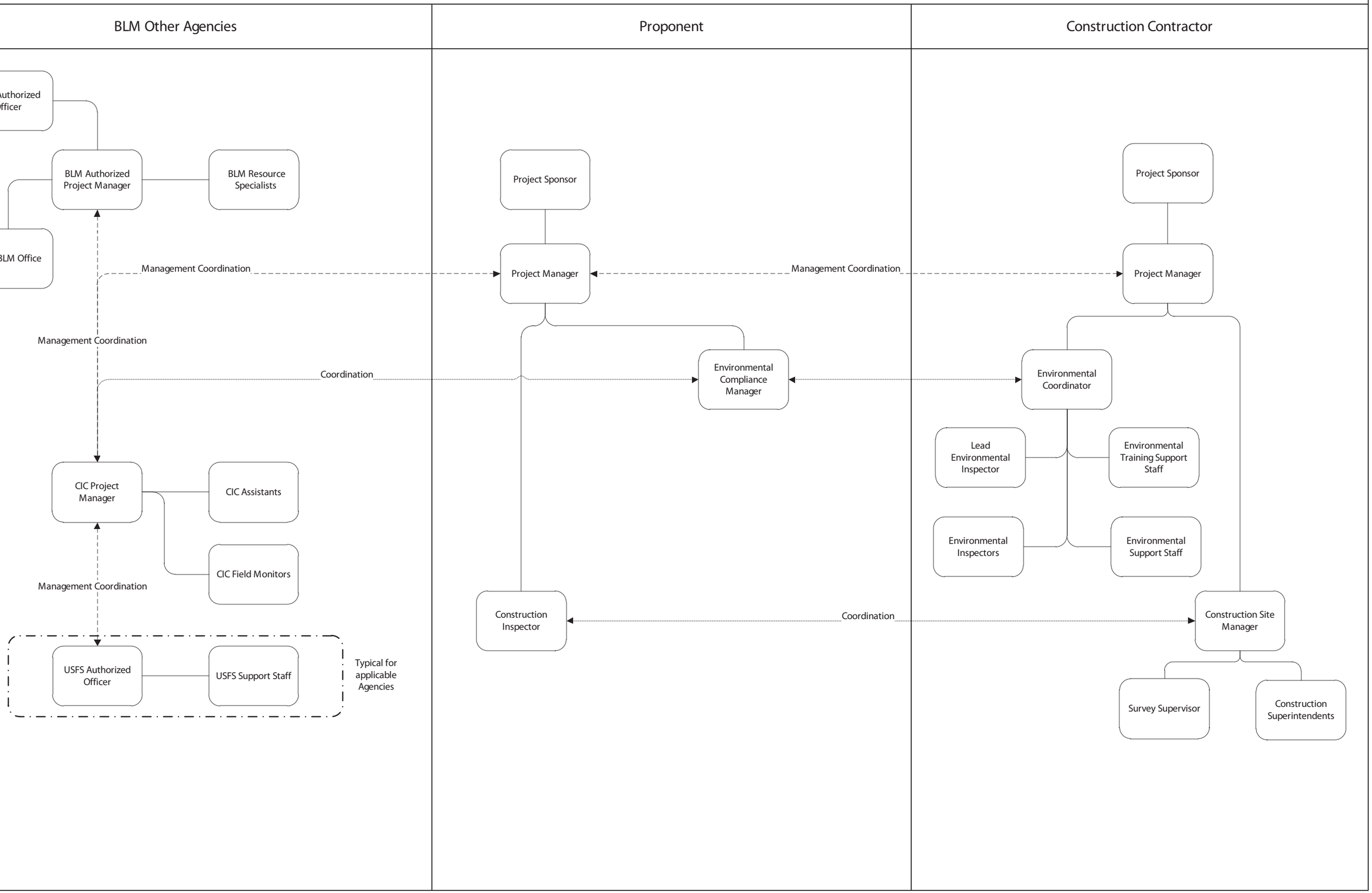
Reporting

- Provides updates of environmental compliance, including corrective actions, to the Project Manager.
- Compiles and distributes environmental permit and plan updates to Proponent's staff and the Construction Contractor's Environmental Coordinator.
- Reviews all Construction Contractor's derived environmental documentation including, but not limited to, site specific environmental plans, environmental plans, variance requests, daily reports, and weekly reports.

Variances

- Provides review and comments of written variance requests from the Construction Contractor(s).
- Submits completed variances to the Proponent's Project Manager for review, approval, and submission to the CIC.

Environmental Compliance Organization Chart Sigurd to Red Butte 345kV Transmission Line # 2 Variance Process



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A6.3.1.4 Proponent's Construction Inspector

- Observes, witnesses, and monitors the construction activities of the Construction Contractor(s) for compliance to the engineering contract documents, plans, standards, and specifications, to ensure construction quality.
- Understands the Project's environmental requirements, especially as they relate to specific construction activities.
- Coordinates with Proponent's Environmental Compliance Manager regarding specific work activities scheduled to occur in sensitive resource areas that may require additional environmental oversight.
- Provides technical explanations of construction processes to Proponent's Environmental Compliance Manager as needed.
- Attends environmental training class.

Reporting

- Reviews for accuracy and adequacy certain environmental compliance documents prepared by the Construction Contractor(s) that could include, but are not limited to, Spill Prevention, Control, and Countermeasures Plan; Stormwater Pollution Prevention Plan(s); and emergency communications contact list.
- Provides any observations regarding environmental compliance to Construction Contractor's Environmental Reporting Coordinator.

A6.3.2 BLM and USFS

The objective of the BLM and USFS is to ensure right-of-way grant and special-use authorization compliance, respectively, during construction, operation, and maintenance phases. The CIC shall represent the BLM and USFS during the construction and reclamation phases to help ensure right-of-way grant and special-use authorization compliance and ensure environmental impacts do not exceed those analyzed in the Final EIS, and approved in the POD. The CIC assists the BLM and USFS by providing regular and consistent field observations, documenting his/her findings, processing and approving Level 1 Variance requests and/or other deviations for which authority has been delegated to the CIC, and working with the Proponent and Construction Contractor(s) to identify compliance issues and maintain compliance during construction of the Project.

The CIC shall work under the direct supervision and control of the BLM. No direction with respect to times, places, or manner of conducting monitoring shall be taken from the Proponent or Construction Contractor(s); provided, however, that the CIC and the Proponent work together to support the Project's timely and effective construction. If the CIC determines an action is in noncompliance, the CIC has the authority to issue an immediate temporary suspension or work stoppage order (WSO) for that specific work activity. However, all efforts shall be made to coordinate closely with the Proponent and Construction Contractor(s) to report and document compliance concerns not otherwise identified by these parties, giving them the opportunity to resolve the concerns. Every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not, at any time or way, otherwise authorized to direct work undertaken by the Construction Contractor(s) with the exception of a WSO. If any additional environmental compliance oversight representative is required by agencies other than the BLM and USFS, their responsibilities would be

consistent with those outlined for the BLM and USFS and the CIC as described in this ECMP, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction.

It is not the role of the CIC to direct the work of either the Proponent or the Construction Contractor(s). Rather, the CIC's primary role is to observe work activities, bring noncompliant situations to the attention of the appropriate party, and offer recommendations on how to prevent noncompliance. Refer to Section A6.1 – Introduction for a discussion on the authority and jurisdiction of the CIC for the Project.

A6.3.2.1 BLM and USFS Authorized Officers

- Ultimate authority and decision maker for issues pertaining to BLM's right-of-way grant or USFS' special-use authorization.
- Supervises BLM Project Manager to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Determines, in coordination with others, if any environmental noncompliance events, for which the Proponent is accountable, qualify as violations to the terms and conditions of the right-of-way grant/special-use authorization.
- In accordance with 43 Code of Federal Regulations (CFR) 2807.17(a), suspends or terminates the right-of-way grant or special-use authorization if the Proponent and/or its Construction Contractor(s) do not comply with applicable laws and regulations or any terms, conditions, or stipulations (e.g., excessive or continuous noncompliance activities that demonstrate a willful disregard for right-of-way grant or special-use authorization terms and conditions).
- Issues BLM/USFS decisions unless otherwise delegated to the BLM Project Manager.

A6.3.2.2 BLM and USFS Project Managers

- Enforces Proponent's compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, and federal permits during construction of the Project.
- Responsible for ensuring that right-of-way grant/special-use authorization compliance during construction is done in a manner which facilitates timely and efficient construction while protecting the public interests and the environment.
- Responsible for ensuring that environmental impacts do not exceed those analyzed in the Final EIS and ROD.
- Manages third-party CIC
- Coordinates with BLM or USFS resource specialists for their technical expertise and input.
- Informs the Proponent of any right-of-way or special-use authorization violations due to environmental noncompliance and enforces their remedy.
- Reports major environmental compliance violations to the BLM or USFS Authorized Officer or his/her designated representative.

Reporting

- Responsible to ensure the Project Administrative Record is maintained accurately.

Variances

- If delegated by the BLM or USFS Authorized Officer, authorizes approval of Level 2 Variances or designates authority to others.

A6.3.2.3 Compliance Inspection Contractor Project Manager

- Represents the BLM/USFS in the field for compliance activities.
- Verifies and reports Construction Contractor's compliance with all environmental requirements and tracks all reported noncompliance events and their resolution.
- Tracks all Project construction disturbance for inclusion in an End of Construction Project Report (Section A6.8.2 – End of Construction Project Report)
- Reports directly to the BLM Project Manager (or designated representative).
- Remains assigned to the Project through completion of reclamation and initial revegetation or termination of the Project unless otherwise directed by BLM.
- Reviews and understands the right-of-way grant/special-use authorization, Final EIS, ROD, POD, and all other Project-specific environmental documents.
- Maintains copies of the right-of-way grant/special-use authorization and POD and possesses a copy while on the right-of-way.
- Develops post-construction reclamation monitoring protocols, to be approved by the BLM or USFS Authorized Officer or his/her designated representative, per the procedures and requirements identified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.
- Verifies construction occurs as outlined in the POD, Final EIS, ROD, and right-of-way grant/special-use authorization and within the limits of disturbances analyzed in the EIS.
- Performs compliance monitoring work in the field and from the CIC's office. At a minimum, CIC or designated monitors are required to be on the right-of-way when activities involving the use of construction equipment have the potential for significant surface disturbance or harm to sensitive resources. Exceptions can be made should the CIC, using professional judgment, determine that reductions in presence would not adversely impact compliance oversight (e.g., when Project phases have approached conclusion; when on-site activities are minimal).
- Responsible to gather the collective understanding of the intent and desired results of application of site specific mitigation measures and convey findings to all parties, if needed. If discrepancies are found between parties, CIC is responsible to collaborate with the Proponent and Construction Contractor(s) to work towards a resolution. In some cases, approval from the BLM Project Manager may also be required.
- Coordinates regular compliance monitoring during construction.
- Discusses any potential compliance issues with the Construction Contractor's environmental inspection staff as soon as possible.
- Provides recommendations to the BLM/USFS Project Managers on ways to resolve or prevent noncompliance issues.
- Manages and supports CIC Field Monitors and coordinates their daily activities.
- At a minimum, meets weekly with the BLM/USFS Project Managers (or designees), in person or by telephone, to review construction activities and the status of compliance.
- Communicates and coordinates regularly with Proponent's Project Manager and Environmental Compliance Manager.
- Coordinates variance requests with the BLM/USFS Project Managers and Proponent's Project Manager and Environmental Compliance Manager.
- Participates in meetings with the BLM/USFS Project Managers and Proponent's Project Manager.

- Conducts the final route review and develops final report documenting the status of the right-of-way and the final amount of construction disturbance.
- Performs activities as instructed by BLM/USFS Project Managers.
- Responsible for tracking actual acres of disturbance through completion of construction and final reclamation.
- Performs post-construction reclamation monitoring as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD, and as directed by the BLM/USFS and/or Proponent.

Reporting

- Documents all instances of noncompliance, or other problems that would reasonably be expected to result in environmental impacts. This may include, staking, flagging, or photographing problem areas, verifying locations with a global positioning system, and comparing them to the right-of-way grant/special-use authorization and POD maps as specified in the Compliance Plan.
- Provides weekly summary reports of compliance inspection to the BLM/USFS and the Proponent via a secure, but mutually exclusive, website with reporting due by Tuesday of the following week. In the event the CIC, BLM, or USFS temporarily cannot obtain reports through the secure website, reports will be transmitted by mail, e-mail, fax, or compact disk. Weekly reports shall summarize the prior week's activities and include a brief description of construction activities, compliance issues, any additional acreage disturbed resulting from variances and corrective actions taken, and any foreseeable issues.
- Reviews CIC Field Monitor's daily reports for completeness and accuracy.
- Participates in all preconstruction meetings, safety meetings, safety training, environmental training, and other meetings called by the BLM or USFS, Proponent, or Construction Contractor(s) which involve environmental compliance aspects of the Project. The CIC is responsible for preparing meeting notes that highlight all decisions made during these meetings.
- Provides post-construction reclamation monitoring reports to the BLM/USFS and Proponent throughout the post-construction reclamation monitoring period.

Variances

- Coordinates with BLM and USFS Project Managers to review and approve variance requests.
- Authorizes approval or denial of Level 1 variances involving minor field adjustments within approved right-of-way that conforms to the POD, or designates authority to others, as delegated and approved by BLM and USFS Project Managers.

A6.3.2.4 Assistant Compliance Inspection Contractor

- Performs the same duties as the CIC if the CIC is not available.
- Remains assigned to the Project through completion of construction or termination of the Project unless redirected by BLM or USFS.

A6.3.2.5 Compliance Inspection Contractor Field Monitors

- Assists CIC in conducting monitoring of construction activities as needed for biological, cultural, paleontological, or other resources and according to scheduled construction activities within environmentally sensitive areas.
- Represents the BLM/USFS in the field for compliance activities.
- Verifies construction occurs as outlined in the POD, Final EIS, ROD, and/or right-of-way grant/special-use authorization.
- Verifies construction crews are provided with proper environmental and compliance training.
- Discusses any potential compliance issues with the Construction Contractor's environmental inspection staff (refer to Sections A6.3.3.5 – Construction Contractor's Lead Environmental Inspector and A6.3.3.6 – Construction Contractor's Environmental Inspector) as soon as possible.
- Coordinates with the Construction Contractor's Lead Environmental Inspector (LEI) and the Proponent's Environmental Compliance Manager as their primary points of contact.
- Coordinates solutions for corrective action on noncompliance activities.
- Verifies corrective action is performed for noncompliance activities.
- May temporarily stop activities likely to damage protected or sensitive resources and/or where those resources were intended to be avoided or protected.
- May temporarily stop activities for noncompliance.
- Conducts daily compliance inspection activities and develops daily reports.
- Attends safety and environmental coordination meetings to understand planned construction activities and any safety or environmental concerns.
- Does not direct construction activities in any way.

Reporting

- Submits daily reports to the CIC to document compliance or noncompliance with the Project's environmental requirements.

A6.3.3 Construction Contractor(s)

The Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the right-of-way grant/special-use authorization, POD, Final EIS, and ROD throughout all phases of the Project. All construction personnel will participate in environmental trainings and work with the Construction Contractor's Environmental Inspectors and staff to build the Project safely and in compliance with all Project terms and conditions; federal, state, and local laws and regulations; and all landowner agreements. If a noncompliance occurs, the Construction Contractor(s) will cooperate and implement a solution as soon as possible to resolve the situation.

A6.3.3.1 Construction Contractor's Project Sponsor

- Responsible for Project completion in accordance with all environmental laws and regulations, including the terms, conditions, stipulations, and/or work authorizations related to the right-of-way grant/special-use authorization, POD, permits (federal, state, and local), and landowner agreements.
- Ensures its Project Manager promptly addresses any environmental compliance issues.

- Ensures effective coordination between his/her Project Manager and/or Environmental Coordinator with the Proponent's Project Manager , Environmental Compliance Manager, and/or LEI , and the BLM and USFS Project Manager and/or CIC to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Ensures the immediate and timely remedy to any environmental noncompliance events to the satisfaction of the Proponent's Environmental Compliance Manager and the CIC.

A6.3.3.2 Construction Contractor's Project Manager

- Responsible for all aspects of Project execution and completion.
- Requires all Construction Contractor's and subcontractor(s) staff adhere to compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local), and landowner agreements during the construction of the Project.
- Coordinates with his/her Superintendent(s), and Environmental Coordinator, as well as Proponent's Project Manager and Environmental Compliance Manager on a regular basis to stay updated regarding the Project's compliance with environmental laws and regulations.
- Requires all Superintendents and Foremen follow directions of the Construction Contractor's environmental compliance staff regarding maintaining compliance with all environmental laws and regulations.
- Ensures Superintendents and Foremen implement measures identified to resolve noncompliance issues in a timely manner.
- Designates the Construction Contractor's Environmental Coordinator.
- Verifies construction personnel participate in the environmental training program.
- Responsible for removal of noncompliant personnel, as necessary.
- Manages Construction Contractor's Superintendent(s), Foremen, Environmental Crew Foreman, and optional Environmental Coordinator.
- Develops and distributes weekly schedules of construction activities.
- Immediately informs Proponent's Environmental Compliance Manager and CIC of any noncompliance.
- Responsible for resolving noncompliance situations.
- Responsible for environmental compliance of all subcontractors.
- Determines the need for scope variances and works with staff and Construction Contractor's Environmental Inspectors to develop a formal request.
- Receives and reviews daily environmental compliance inspection reports from Construction Contractor's environmental staff.

Reporting

- Responsible for making sure Proponent is provided with reports in a timely fashion.
- Reviews and approves compliance reports for submittal to Proponent.

Variances

- Reviews and approves written variance requests for submittal to Proponent, CIC, and BLM or USFS.
- Can delegate authority to submit written variance request to others.

A6.3.3.3 Construction Contractor's Superintendent(s)

- Primarily situated in the field to manage construction activities.
- Responsible for a segment or portion of the overall Project.
- Requires all contractor personnel follow directions of the Construction Contractor's environmental compliance staff regarding maintaining compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local), and landowner agreements during the construction of the Project.
- Coordinates with the LEI, and the Construction Contractor's Environmental Training Coordinator and Environmental Inspectors to ensure all construction personnel for which they are responsible abide by all applicable laws, permits, and agreements.
- Attends environmental training programs produced by the Construction Contractor(s).
- Conducts regular meetings and training with construction personnel to review safety and environmental compliance practices.
- Ensures measures identified to resolve noncompliance issues are communicated to construction personnel and implemented in a timely manner.
- Immediately informs Construction Contractor's Project Manager of any noncompliance.
- Evaluates all compliance issues and ensures all supervisee's involved with any construction activities complete the environmental training program.

Reporting

- Prepares report regarding measures taken to resolve any noncompliance events and submits them to the Construction Contractor's Environmental Reporting Coordinator.

Variances

- Prepares written variance requests for submittal to Proponent, CIC, and BLM or USFS.
- Can delegate authority to prepare written variance request to others.

A6.3.3.4 Contractor's Civil Survey Supervisor

- Sets initial and maintains right-of-way and easement boundary stakes and flagging with agreed on Project flagging scheme.
- Delegates survey crews when necessary to work with environmental inspectors to adjust work areas to comply with environmental constraints.
- Communicates with Proponent's Construction Inspector and Environmental Compliance Manager regarding changes to right-of-way boundaries.
- Maintains a master set of alignment sheets for each spread in the appropriate spread office. The alignment sheets should reflect all restricted areas due to easement status, environmental restrictions, etc.
- Places signs for roads approved for use on the Project and those not approved for use on the Project.

Reports and Variances

- Provides data and/or supports development of maps and legal descriptions for Project reports, variance requests, and documentation in the Project Record.

A6.3.3.5 Construction Contractor's Lead Environmental Inspector

- Regularly inspects or coordinates the inspection of all construction activities for compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction life of the Project.
- Has the authority to stop work when construction activities violate environmental conditions of right-of-way grants/special-use authorizations, permits or landowner conditions.
- Identifies sensitive resources and areas of concern prior to upcoming construction activities and coordinates appropriate measures with construction personnel accordingly.
- Acts as a resource and technical lead to Environmental Inspectors.
- Acts as a resource to construction personnel and explains environmental laws and regulations and how they are applied in the field.
- Serves as the primary point of contact for the third-party CIC Field Monitors.
- Coordinates appropriate corrective actions to resolve noncompliance issues.
- Coordinates daily with Environmental Inspectors to discuss upcoming construction activities, potential problem areas, and areas of concern.
- Assigns field inspection responsibilities to Environmental Inspectors.
- Coordinates with Environmental Inspectors and construction personnel to provide information and facilitates regular communication among all parties.
- Inspects areas of concern identified by Environmental Inspectors and makes appropriate recommendations to construction personnel.
- Inspects erosion control devices/measures to ensure functionality and communicates erosion control devices/measures maintenance needs to the Construction Contractor's Environmental Crew Foreman.
- Communicates with and Environmental Crew Foreman on issues needing resolution in the field.

Reporting

- Reviews daily reports from field inspectors for completeness and accuracy and communicates action items or follow-up items to appropriate parties
- Forwards all daily and weekly reports to Construction Contractor's Environmental Reporting Coordinator for storage and potential agency distribution.
- Compiles daily reports into weekly summary report.
- Submits weekly summary documenting construction activities and compliance issues to the Construction Contractor's Environmental Reporting Coordinator.

Variances

- Conducts primary reviews of written variance requests from the Construction Contractor(s).
- Communicates variance status to Environmental Inspectors and construction personnel.

A6.3.3.6 Construction Contractor's Environmental Inspector

- Assists in inspection of construction activities for compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Conducts daily inspections of construction activities.
- Identifies sensitive resources and areas of concern prior to upcoming construction activities and coordinates with construction personnel to discuss.
- Acts as a resource to construction personnel to explain environmental regulations and how they are applied in the field.
- Verifies construction work areas, access roads, and features such as wetlands or sensitive habitat are properly marked and flagged before work is done in the area.
- Identifies erosion, sediment control, and soil stabilization needs to protect sensitive resources and communicates them to construction personnel.
- Ensures erosion control or other measures do not inadvertently cause impact to other sensitive resources.
- Acts as a point of contact for the third-party CIC Field Monitors.
- Informs Construction Contractor(s) of all potential and existing compliance issues and coordinates with LEI to determine appropriate corrective actions.
- Has stop-work authority when construction activities violate the environmental conditions of the right-of-way grant/special-use authorization, permits, or landowner conditions.
- Identifies, documents, and oversees corrective actions to resolve noncompliance issues.
- Inspects erosion control devices/measures to ensure functionality and communicates erosion control devices/measures maintenance needs to the Environmental Crew Foreman.
- Follows up on the repair and maintenance of erosion control devices/measures.
- Inspects and documents reclamation and revegetation activities.

Reporting

- Maintain and submit daily reports to the LEI that document construction activities and associated compliance status for that day.
- Document the resolution of any compliance issues in daily reports.

A6.3.3.7 Construction Contractor's Environmental Reporting Coordinator

- Assists in tracking Project compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements during the construction of the Project.
- Coordinates with Proponent's staff, the Construction Contractor(s), BLM, and other relevant agency contacts and field inspection personnel on a regular basis to manage and track Project activities and ensure consistent communications Project wide.
- Maintains consistent communication between the Proponent and all federal, state, and local agencies.

Reporting

- Receives daily/weekly reports from Construction Contractor's environmental inspectors and documents them accordingly.

- Maintains centralized storage of daily/weekly Environmental Inspection reports and makes reports available at the request of the BLM Project Manager.
- Reviews field reports for consistency and accuracy.
- Responsible for tracking problem areas and noncompliance reports (including hazardous materials spill reports) and ensuring follow up and resolution reports are filed.

Variances

- Tracks variances and communicates variance status with Construction Contractor's Project Manager, Superintendent(s), and LEI.
- Coordinates processing and archiving of variances.
- Tracks progress and completion of any required field surveys (biology, archaeology, etc.) and technical reports to support variances.
- Ensures variance requests are complete and accurate prior to submitting to the BLM.

A6.3.3.8 Construction Contractor's Environmental Training Coordinator

- Develops training program to facilitate compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Provides CIC and Proponent's Environmental Compliance Manager with a course outline and all training material at least 30 days prior to any training for approval.
- Provides consistent roll-out of all training to all required personnel.
- Supports Environmental Inspectors and other environmental staff in providing routine trainings in the field.
- Maintains records of training for all construction personnel and submits to Proponent on a weekly basis.
- Updates training curriculum as needed.
- Facilitates compliance with all environmental laws and regulations, including the right-of-way grant/special-use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Conducts training session for Proponent construction and contractor staff at least 30 days prior to construction.
- Conducts preconstruction, refresher, and remedial training for Project personnel.
- Provides environmental compliance training to new personnel as they join the Project.
- Provides field reference guides to Project personnel with photos and details of sensitive resources and methods for impact avoidance.
- Updates Project training modules using feedback from environmental inspection team, construction personnel, and Environmental Compliance Manager.
- Maintains records of training for all personnel.

A6.3.3.9 Construction Contractor's Environmental Coordinator

- Ensures all construction personnel perform all work in compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Reviews environmental documents to identify and prepare a catalog of all construction limits and restricted areas where sensitive features may occur (biological, archaeological, permit

requirements, etc.) and coordinates implementation of avoidance with the Superintendent(s), and the Proponent's LEI and Environmental Compliance Manager.

- Ensures all areas of the Project are in environmental compliance by coordinating with the Proponent's environmental inspection staff.
- Identifies topics or specific crews that require additional, specialized, or site-specific environmental training, or re-training.
- Works closely with and supports the Proponent's environmental inspection staff regarding daily construction activities and locations.
- Communicates daily with the LEI and environmental staff on any potential or existing environmental concerns, compliance issues, or staffing needs and training.
- Communicates environmental issues to construction Project management and other construction staff.
- Coordinates with Environmental Crew Foreman and the environmental inspection staff to be sure all erosion control measures and all standard mitigation measures are installed properly and maintained.

Reporting

- Coordinates with the LEI to prepare, review, and submit regular reports to Proponent.

Variances

- Prepares and submits written variance requests to the Project Manager and Environmental Compliance Manager for approval.

A6.3.3.10 Construction Contractor's Environmental Crew Foreman

- Supervise environmental crew in daily installation and maintenance of erosion control devices/measures and all other design features of the Proposed Action for environmental protection.
- Follows up on the repair and maintenance of erosion control devices/measures.
- Ensure all areas of the right-of-way are in compliance with all environmental requirements/ permits held by the Construction Contractor(s).
- Works with the Construction Contractor's environmental inspection staff to remedy any problem areas and assure all areas are in compliance.

A6.4 Procedures

A6.4.1 Compliance Levels

Each separate activity that is inspected and documented in a daily report will be assigned a compliance level as defined below. Environmental Inspectors will assess potential noncompliant activities based on the extent and nature of actual impacts on a resource, the potential for additional impacts on a resource, the intent behind the action, and the history of the occurrence.

A6.4.1.1 Acceptable

All activities that are in compliance with the Project's environmental requirements will be documented as acceptable.

A6.4.1.2 Problem Area

A problem area is a location or activity that does not meet the definition of acceptable but is not noncompliant (refer to Section A6.4.1.3 – Noncompliance). The problem area category can be used in a variety of situations, including the following:

- A minor incident that is accidental or unforeseeable and is repaired in a timely manner.
- A location where the Project is not in direct noncompliance but is one where the inspector or monitor determines damage to a resource could occur if corrective actions are not taken.
- An activity that is isolated and determined unintentional that causes no direct damage to a resource.

If a problem area is corrected in a timely manner it will not be considered a noncompliance. If a problem area is found to be a repeat situation or has happened in multiple locations or is not corrected within an agreed timeframe, the Construction Contractor's Environmental Inspector or the CIC Field Monitor may document the situation as a noncompliance. The Construction Contractor's Environmental Inspector will inform the Construction Contractor's Foreman onsite of the problem area before issuing a problem area report and discuss and agree on an acceptable timeframe for its resolution. The Construction Contractor's Environmental Inspectors will document problem areas and their resolutions in daily reports. Problem areas documented by the CIC Field Monitors will be reported and discussed with the Construction Contractor's Environmental Inspectors. If the problem area is not corrected in the agreed timeframe, resource damage occurs or similar activities occur repeatedly, a noncompliance report may be issued.

A6.4.1.3 Noncompliance

A noncompliance report will be prepared and issued by the CIC when construction activities violate the Project's environmental requirements, result in damage to a resource, or place sensitive resources at unnecessary risk. Factors that will contribute to a noncompliance will be the extent of damage to the resource, the intent of the action, and the determination of the action being a repeat occurrence. A noncompliance report may also be issued for direct disregard for Project requirements that do not directly cause harm to sensitive resources. Examples include using an unapproved access road or construction activities that cause ground disturbance outside of established Project boundaries.

If the CIC or CIC Field Monitor observes a noncompliant activity, they will notify the Proponent's Environmental Compliance Manager and the Construction Contractor's LEI and Superintendent immediately to discuss the situation prior to issuing a noncompliance report. If a noncompliance report is issued, it will include the name of the Construction Contractor's Superintendent contacted and the time of the notification. In addition, a follow-up report will be filed documenting the resolution of the noncompliance. If the Construction Contractor's Superintendent is not immediately available or the severity of the situation requires immediate action, the monitor will inform the Construction Contractor's Project Manager and the Proponent of the noncompliance.

If the Construction Contractor's Environmental Inspection staff observes a noncompliance, they will notify the superintendent or Foreman onsite immediately. The noncompliance will be resolved

immediately or within an agreed timeframe that has been established by the Environmental Inspector and the Superintendent or Foreman. The Construction Contractor's Environmental Inspector will also notify the CIC Field Monitor and document the noncompliance in a daily report that will be filed with the Construction Contractor's Environmental Reporting Coordinator and the Proponent's Environmental Compliance Manager. The CIC will submit all noncompliance reports and reports documenting their resolution to the BLM or USFS Project Managers, Proponent, and Construction Contractor(s).

The Construction Contractor's Environmental Inspectors and the Proponent's Environmental Compliance Manager and the CIC will work together to establish the appropriate corrective actions and timeframes for the resolution of a noncompliance. The Construction Contractor's Environmental Inspector will be responsible for communicating the corrective actions to the Foreman onsite. If necessary, the Proponent's Environmental Compliance Manager and the Construction Contractor's LEI and Superintendent will determine the level of retraining for the crew involved. Following a serious or repeat noncompliance, the CIC, the Construction Contractor's Project Manager, LEI, Environmental Inspector, and Superintendent(s), and the Proponent's Project Manager and Environmental Compliance Manager will discuss the situation and how best to implement measures to prevent it from reoccurring.

A6.4.1.4 Response to Noncompliant Activities

If the resolution of a noncompliance is not achieved through the process described above the following may occur:

Temporary Suspension

For incidents of noncompliance by the Proponent or the Construction Contractor(s), that remain unresolved after the notifications described under Section A6.4.1.3 – Noncompliance, the CIC or Project Manager may issue a temporary suspension to halt specific activities or all activities in a localized work area. The temporary suspension shall be issued orally and in writing to the Proponent's Project Manager or designee, and the Proponent shall immediately provide notice of the temporary suspension to the Construction Contractor's Project Manager or designee.

Work Stoppage Order

If necessary, a WSO to temporarily suspend all construction activities may be issued orally or in writing by the CIC or Project Manager to the Proponent's Project Manager. A WSO would be appropriate in the event of serious noncompliance that could reasonably be expected to result in a risk of death or harm to persons or repeated violations of environmental requirements that have a detrimental effect to sensitive resources.

A conference call will be held with the CIC and BLM or USFS Project Manager, the Proponent's Project Manager and Environmental Compliance Manager, and the Construction Contractor's Project Manager and LEI within 24 hours to discuss the noncompliance incident and to schedule a face-to-face meeting, if necessary. The face-to-face meeting will be held with all parties to discuss the noncompliance resolution within 24 hours of the initial conference call (excluding weekends and federal holidays). After conclusion of the conference call or meeting, the Proponent and Construction Contractor(s) will need to resolve the issue(s) identified by the BLM. Once they have resolved the issue and documented the resolution method, the Proponent may file a written request with the BLM to resume activities. No construction activities shall be undertaken (except emergency or safety-related) until formal approval is provided by the BLM's

CIC or Project Manager. The BLM shall review and respond to the Proponent's written request to resume activities within 24 hours after receipt. The BLM's response shall either approve the request or provide additional criteria that must be met prior to resumption of activities. Any additional criteria must cite the applicable law(s), agreement (s), and/or permit requirements.

Grant Suspension or Termination

In accordance with 43 CFR 2807.17(a), BLM or USFS may suspend or terminate the right-of-way grant/special-use authorization if the Proponent and/or its Construction Contractor(s) does not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant/special-use authorization (e.g., excessive or continuous noncompliance activities that demonstrate a willful disregard for the terms and conditions of right-of-way grant(s)/special-use authorization(s)). Prior to suspension or termination, the Proponent will be notified in writing and allowed a reasonable opportunity to correct any noncompliance pursuant to 43 CFR 2807.18(a), and, if applicable, provided a hearing pursuant to 43 CFR 2807.18(b).

A6.4.2 Variance Procedures (Unforeseen Circumstances)

The intent of this section is to inform the Proponent, BLM, USFS, Construction Contractor(s), and other Project personnel of the variance request process to minimize potential costly construction delays. It is understood by the BLM, USFS, and the Proponent that unforeseen circumstances will occur during construction. The need for realignments to the proposed route, access roads, and/or work areas not within the permitted Project right-of-way grant/special-use authorization and not analyzed in the EIS analysis may arise. In addition, the need to make changes to construction procedures, schedule, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances, a variance will need to be filed and approved by the BLM and/or USFS to stay in compliance.

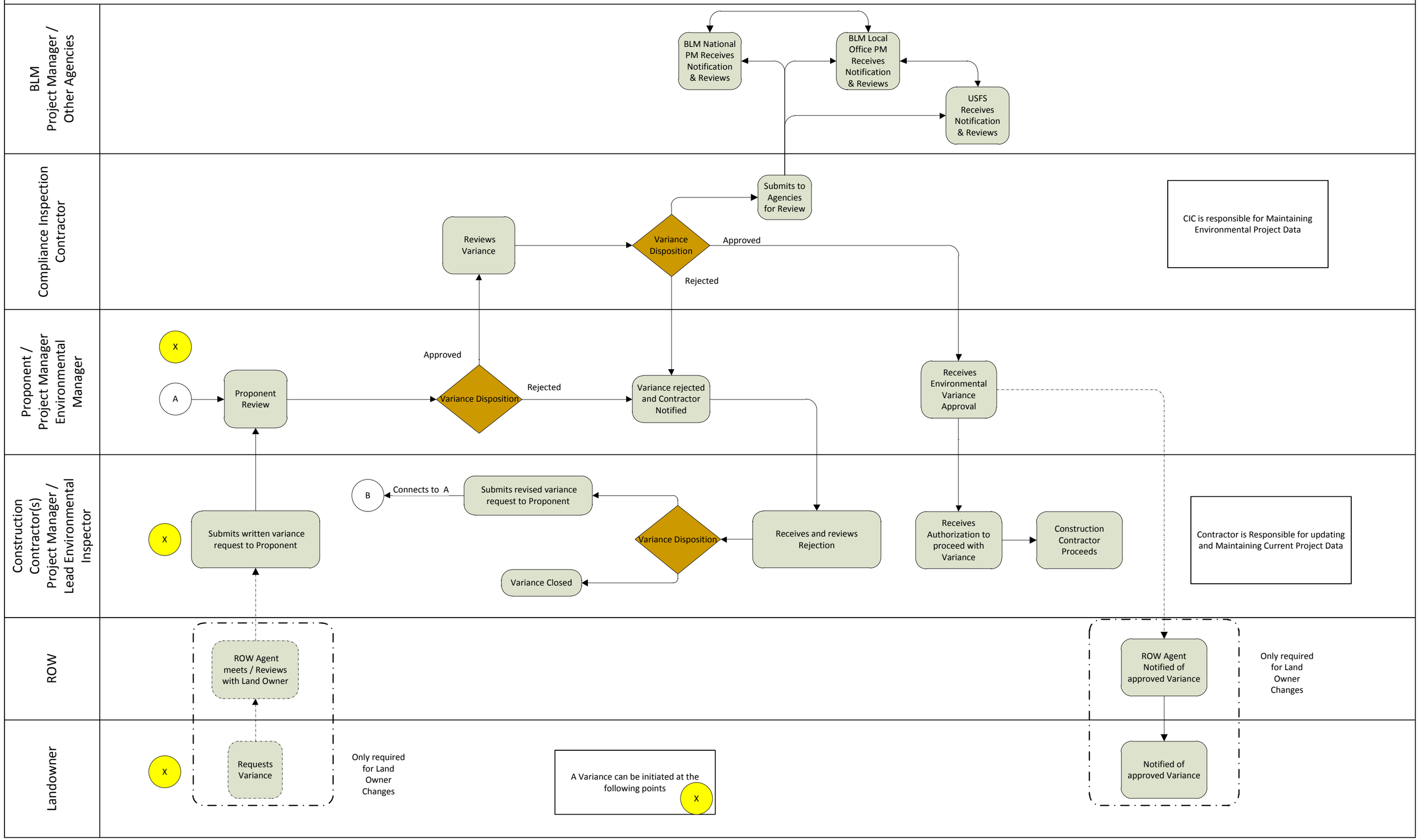
Where Project changes occur on private lands, the BLM and/or USFS will review all variance requests to ensure compliance with the EIS analysis, NHPA, and ESA (refer to Table A6-1a). In addition, written approval of the Project change must be obtained from the affected landowner and provided to the Proponent who will provide it to the CIC for inclusion in the Project record and End of Construction Project Report (Section A6.8.2 – End of Construction Project Report).

Variance requests will be generated by the Construction Contractor(s) and provided in writing to the Proponent who will then review the request. The Proponent will evaluate the variance request and submit it to the CIC to be processed according to the process outlined herein.

The Proponent will be required to submit the variance and supporting documentation to the CIC. The CIC is responsible for providing supporting documentation and an on-the-ground perspective of the requested variance to the BLM or USFS Project Manager or designee. The CIC is given authority by the BLM to approve a Level 1 variance (refer to Section A6.4.2.1 – Level 1 Variance – Variances Accomplished through Field Resolution) in the field. In addition, on consulting with the BLM or USFS Project Manager, the CIC also is given the authority to approve a Level 2 variance (refer to Section A6.4.2.2 – Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-way Grant or Special-use Authorization). Authority to approve or deny Level 3 variances requests (refer to section A6.4.2.3 – Level 3 Variance – Variances Requiring an Amendment to the Right-of-way Grant or Special-use Authorization) is provided to the appropriate agencies and/or BLM or USFS Project Manager or designee. The Variance Request Process is shown in Figure A6-2.

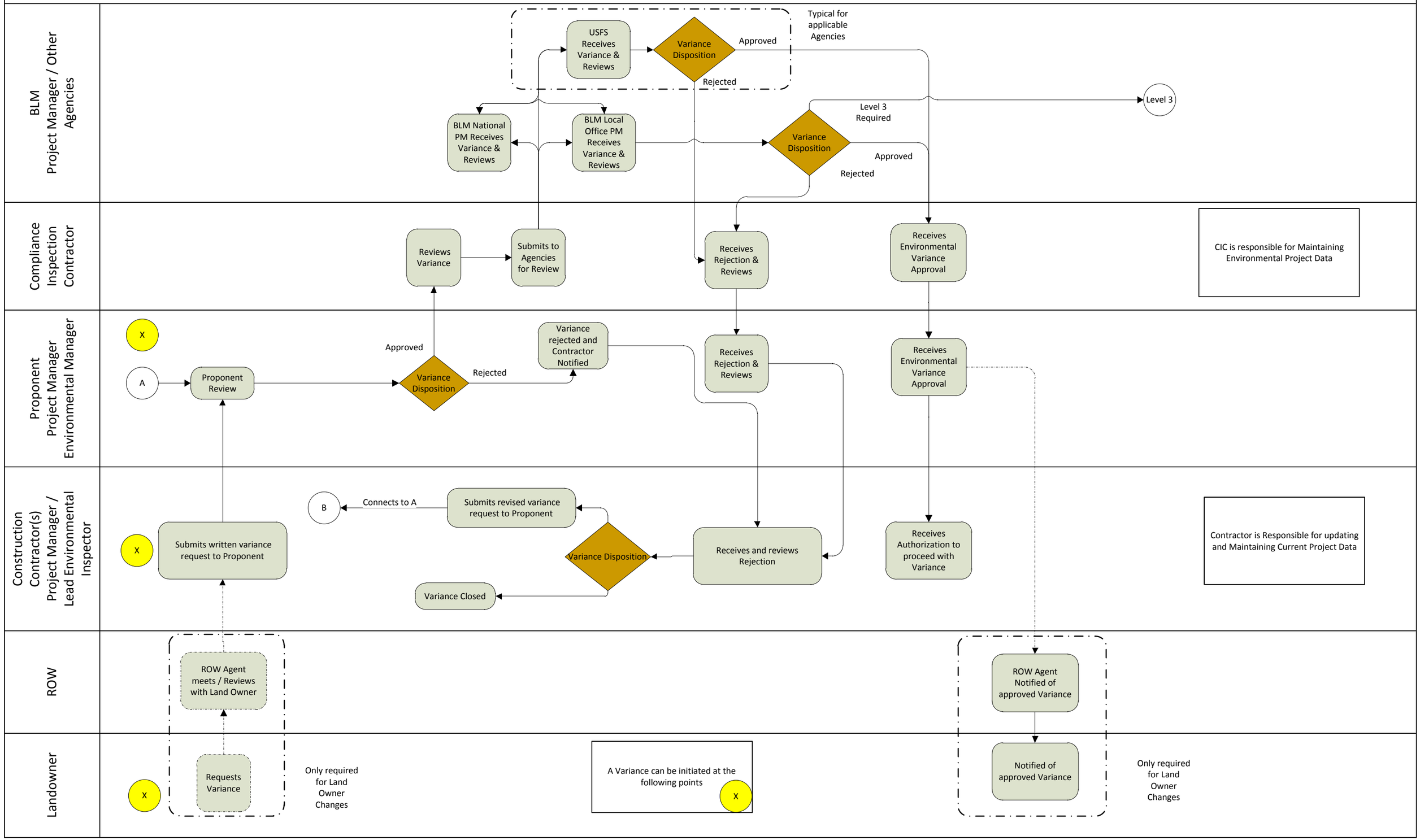
Level 1 Variance Process

This Process is for All Lands, Formal Agency approval occurs on Agency administered Lands



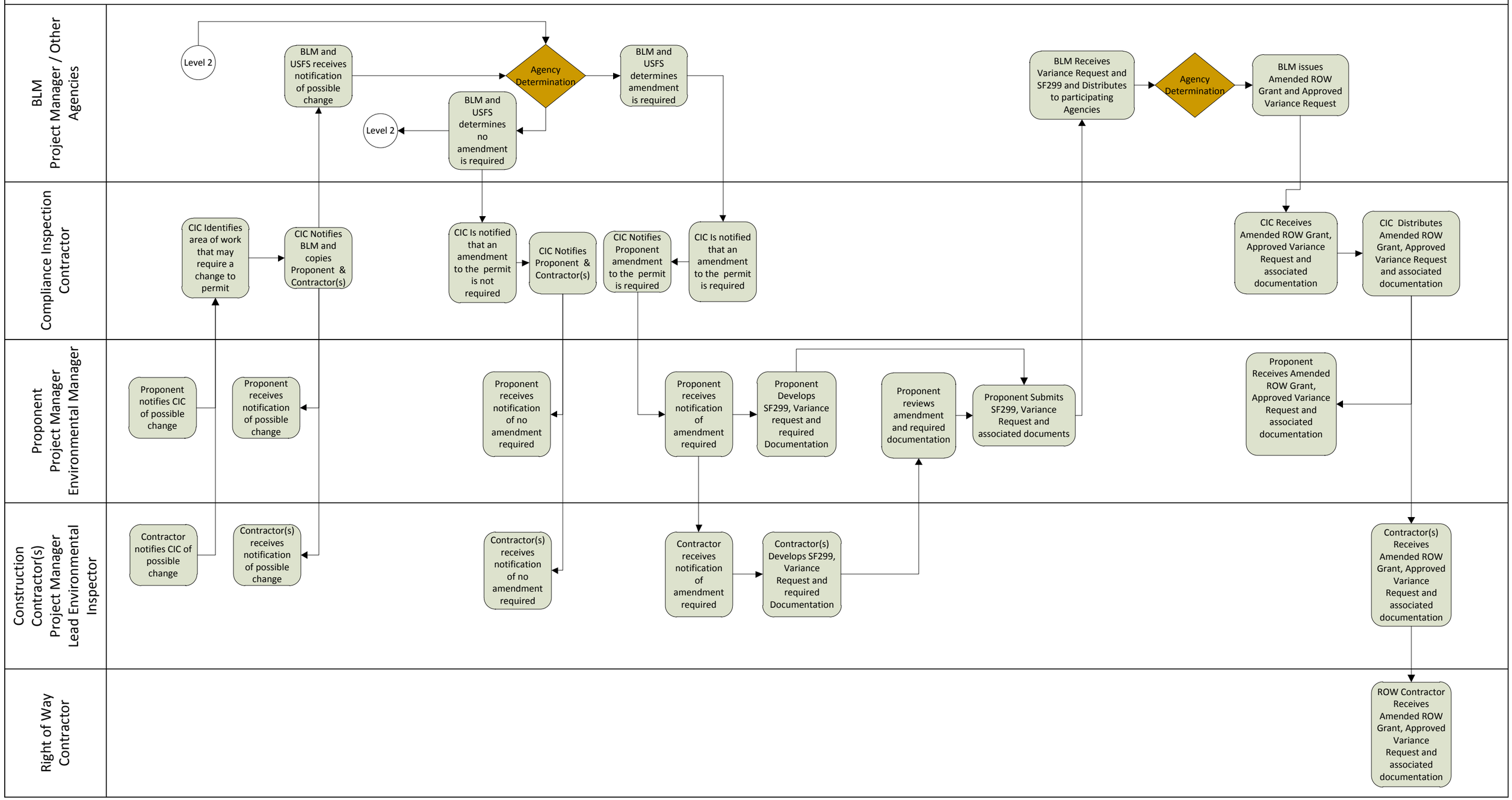
Level 2 Variance Process

This Process is for All Lands, Formal Agency approval occurs on Agency administered Lands



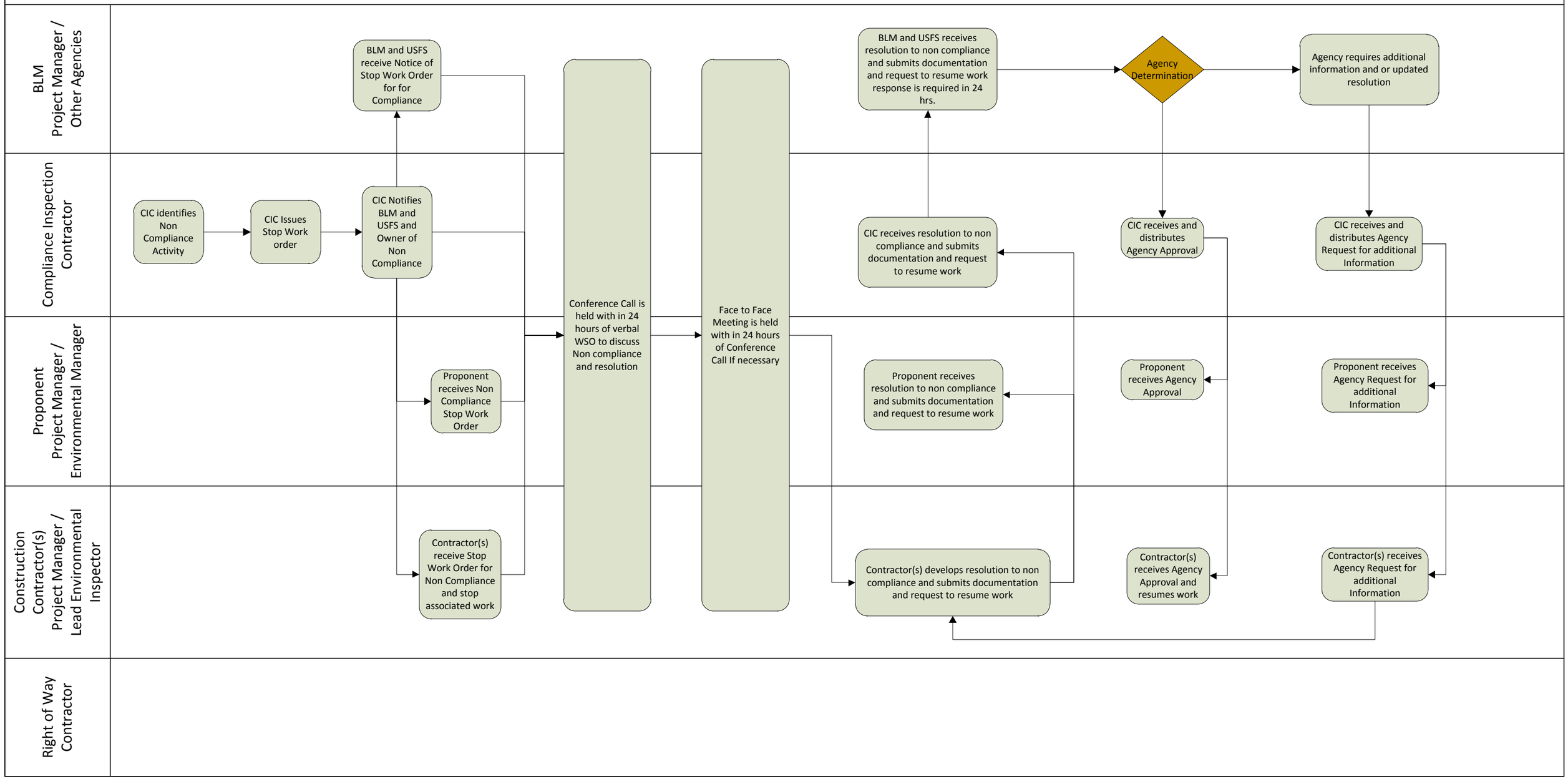
Level 3 Variance Process

This Process is for Public Lands Only



Stop Work Process

This Process is for Public Lands Only



A variance request form will be developed by the Construction Contractor(s), reviewed and approved by the Proponent and the CIC, and then reviewed and approved by the BLM or USFS prior to the start of construction. The variance request form will be incorporated into the preconstruction environmental training program. The variance request form will describe the variance request in detail, provide justification and documentation for the variance (including maps and photos), calculate the proposed permanent or temporary acreage affected, describe the original disturbance acreage analyzed in the EIS, and show the difference in acreage between the proposed variance and the original disturbance. It will also describe any potentially impacted resources and identify if additional resource surveys will be required. An example variance request form is included as Attachment B of this appendix.

The variance request may be implemented in the field as soon as the approved variance is received by the Construction Contractor(s). The CIC is responsible for communicating with the Proponent regarding variance status and the Proponent is responsible for communicating with the Construction Contractor(s) prior to modifications being made on the ground.

Tables A6-1 and A6-2 summarizes the different variance levels, potential uses, and approvals required in order to obtain the Project variance.

TABLE A6-1
SUMMARY OF VARIANCE PROCEDURES ON PRIVATE LANDS

Variance Level	Potential Use	Approval
Level 1	Minor field adjustments	CIC
Level 2	Modify POD	CIC w/concurrence of BLM Project Manager (delegated authority by BLM or USFS Authorized Officer or his/her designated representative)[1]
NOTE:[1]Related to compliance with NHPA and ESA and consistent with analysis in the EIS		

TABLE A6-2
SUMMARY OF VARIANCE PROCEDURES ON NON-PRIVATE LANDS

Variance Level	Potential Use	Approval
Level 1	Minor field adjustments	CIC
Level 2	Modify POD	CIC w/concurrence of BLM Project Manager (delegated authority by BLM or USFS Authorized Officer or his/her designated representative)
Level 3	Amend right-of-way grant/special-use authorization	BLM or USFS Authorized Officer or his/her designated representative

A6.4.2.1 Level 1 Variance – Variances Accomplished through Field Resolution

A Level 1 variance is a minor field adjustment within the approved BLM right-of-way grant or USFS special-use authorization that conforms to the POD. A Level 1 variance must meet the following criteria:

- The area of activity or change lies within the approved right-of-way area, including temporary use areas.
- The area of activity or change was previously identified and analyzed in the EIS.
- The area of activity or change does not result in an increase in disturbed acres than was estimated in the EIS.

- The variance creates equal to or less impact on resource values than the original location and activity (e.g., does not involve higher density wildlife habitat than the planned site or impacts on populations of sensitive plants or impacts on cultural sites, etc.)

A Level 1 variance request will be initiated by the Construction Contractor(s) and submitted to the Proponent for review. The variance request form will include all attached supporting documentation. On the Proponent's review and approval, the Proponent's Environmental Compliance Manager will submit the variance request package to the CIC for their review. The CIC has been given authority by the BLM to approve these variances in the field in consultation with the Proponent's Environmental Compliance Manager. However, the desired adjustments or deviations would be documented in a variance request form for inclusion in the Project record. The CIC would inform the Proponent's Environmental Compliance Manager and the BLM Project Manager of these minor changes by including them in that week's progress report.

Examples of minor field adjustments include, but are not limited, to the following:

- Relocation of erosion control devices (note this could also require a modification to the Stormwater Pollution Prevention Plan
- Locating temporary fences inside authorized work areas
- Permitting water bars to be extended, if applicable, off the area designated for the transmission line, and into native vegetation "one dozer length" (this includes providing permission for construction equipment to work outside designated work areas)
- Allowing rubber-tired vehicles to use additional designated access roads (in addition to those approved in BLM/USFS approval documents) where improvements to the road would not be necessary (Note: not intended for authorizing additional haul roads for equipment and materials)
- Temporarily (for not more than seven days) placing parts or other assemblies outside areas designated in the POD but within the authorized Project area. This does not include any surface disturbance associated with temporary storage

Level 1 Variance Approval or Denial

A CIC can approve or deny Level 1 variance requests in the field. In some cases the CIC may consult with the BLM Project Manager. Level 1 variance requests may be approved if the results of implementing the changes are not significant and will occur within the granted right-of-way. A Level 1 variance request can be implemented in the field as soon as it is approved and signed by the CIC. . In some cases a verbal approval can be given, and followed up with a written, signed variance document. The CIC will document the approved variance in the daily reports.

If a Level 1 variance is denied, the CIC will inform the Proponent's Project Manager within 24 hours. The Proponent's Project Manager may choose to resubmit the request as a Level 2 variance or discontinue pursuit of the request.

Level 1 Variance Distribution

The CIC will give/send the approved Level 1 variance request to the Proponent's Project Manager, who will then distribute the approved variance on the construction side of the Project. The CIC will provide the BLM and/or USFS Project Manager and the Proponent with copies of approved Level 1 variances on a daily basis. The CIC will generate a report at the end of each week identifying all Level 1 variances approved during the previous week.

A6.4.2.2 Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-way Grant or Special-use Authorization

Level 2 variances pertain to requests that exceed the field decision authority of the CIC. Level 2 variances require approval by the BLM or USFS Project Manager (delegated authority from the Authorized Officers) and may require agency resource staff review or field examinations. These alterations generally involve Project changes that would affect an area outside of the granted work area, but within the area previously surveyed and/or analyzed for cultural resources, Section 404 of the Clean Water Act, paleontological resources, and biological resources. Such variance requests typically require review of supplemental documents, correspondence, and records to be provided with the request. Examples include, but are not limited to, the following:

- Shifting extra workspace outside the approved construction corridor a short distance but within the area previously surveyed where overall disturbance type and acreage remains approximately the same and no additional cultural, paleontological, biological resources, or invasive weed populations could be affected;
- Using additional extra workspace outside of the previously approved work areas (within or outside the Project or off-Project right-of-way);
- Shifting temporary workspace to previously disturbed areas;
- Allowing construction or maintenance activities to be conducted in Project areas when seasonal restrictions are in place (refer to Adaptive Wildlife Management Plan in Attachment C of Appendix B6 – Plant and Wildlife Species Conservation Measures Plan of this POD);
- Moving proposed culvert location(s) to better accommodate natural drainages (Note: may also require a modification to the Stormwater Pollution Prevention Plan);
- Providing extra work space for topsoil and spoil material storage to prevent mixing of soils;
- Moving a range fence a specified distance laterally and permanently installing it to avoid proposed construction (Note: may also require an amendment to the Allotment Management Plan, if applicable);
- Modifying seed mixes specified in the POD, typically due to unavailability (this may also require a modification to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan); and
- Modifying an access road due to safety hazards.

Variance requests may also be submitted for minor changes that would extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional cultural, biological, and invasive weed surveys would be required. Documentation of the surveys and other applicable correspondence would need to be submitted with the variance request. If sensitive biological resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. All BLM- and USFS-approved stipulations, and if applicable, the Terms and Conditions of the U.S. Fish and Wildlife Service's Biological Assessment/Opinion must be adhered to, for the variance to be approved.

A Level 2 variance request will be initiated by the Construction Contractor(s) and submitted to the Proponent for review. The variance request form will include all attached supporting documentation. On the Proponent's review and approval, the Proponent's Environmental Compliance Manager will submit the variance request package to the CIC for review. Following this review, the CIC will submit the request form and attachments to the BLM and USFS Project Managers. The BLM or USFS Project Manager, after consulting with the BLM and USFS resource specialists, if necessary, will provide the Proponent's Project Manager through the CIC written approval or denial (including an explanation) of the request by using the spaces provide on the form. The BLM and USFS Project Manager or BLM/USFS representative may request additional information, or a modification of the request, before the variance

can be approved. In addition, the Proponent's Project Manager will be informed if an amendment to the BLM right-of-way grant or USFS special-use authorization will be required.

Level 2 Variance Approval or Denial

The BLM/or USFS Project Manager(s) will review the variance request form and any attachments in consultation with the appropriate BLM and USFS resource specialists. If additional information or a modification to the request is required, the Proponent's Project Manager will submit the requested information within five business days. The BLM and USFS Project Managers will provide the Proponent's Project Manager written approval of the request by using the space provided on the form within five business days from receipt of a complete request.

If a Level 2 variance is denied, the BLM/USFS Project Manager will provide the Proponent's Project Manager a written denial (including an explanation) of the request by using the spaces provided on the form within five business days from receipt of a complete request. The Proponent's Project Manager may choose to resubmit the request as a Level 3 variance request, or to discontinue pursuit of the request.

Level 2 Variance Distribution

The CIC will provide the approved Level 2 variance request to the Proponent's Project Manager, who will then distribute the variance on the construction side of the Project. The CIC will provide the BLM/USFS Project Manager copies of approved Level 2 variances daily. The CIC will generate a report at the end of each week identifying all Level 2 variances approved during the previous week.

A6.4.2.3 Level 3 Variance – Variances Requiring an Amendment to the Right-of-way Grant or Special-use Authorization

The BLM Project Manager will assist the CIC and Proponent's Environmental Compliance Manager in determining whether a significant proposed change, outside the approved BLM/USFS right-of-way grant/special-use authorization, will necessitate submittal of an amendment, or whether the change can be handled with a variance request.

Any proposed construction modification the BLM/USFS Project Manager and CIC have determined to involve substantial deviations from the right-of-way grant/special-use authorization will require a grant/special-use authorization amendment in accordance with 43 CFR 2807.20. A variance requiring an amendment to the right-of-way grant or special-use authorization requires completion of an application on a Standard Form 299 and a decision by the BLM or USFS Authorized Officer or his/her designated representative. Whomever (Proponent or Construction Contractor[s]) is initiating the change will prepare the Standard Form 299 with applicable supporting documentation. On approval, the package will be submitted to the CIC, who will forward it to the appropriate BLM/USFS office. The BLM/USFS will process the amendment application pursuant to 43 CFR 2800 and 36 CFR 251, respectively. The BLM/USFS may request additional information, or a modification of the request, before the amendment can be approved.

Grant/special-use authorization amendments will be reviewed by BLM/USFS staff who will consult with other federal, state, and local agencies as needed. Grant/special-use authorization amendment approvals or denials will come directly from the BLM or USFS. Approval of the grant/special-use authorization amendment also requires issuance of a NTP addressing the amendment, if a NTP is a requirement of the

original right-of-way grant or special-use authorization. Examples of grant/special-use authorization amendment requests include:

- Route realignments or facility relocations onto BLM/USFS land not analyzed in the EIS and included in the right-of-way grant/special-use authorization.
- Certain Project-wide changes to mitigation measures or reclamation procedures.
- Expansion of the Project area defined in the right-of-way grant/special-use authorization and POD.
- Requests affecting sites potentially eligible for the National Register of Historic Places or involving state or federally protected species or their habitat.
- Use of an existing access road that will need modification in order to be suitable for Project construction activities.

A6.5 Communications

Communication between all parties will be critical to maintain environmental compliance throughout the Project. Communication at the individual segment (spread) level and Project-wide will help maintain a consistent understanding of the Project's environmental requirements throughout construction. As specified in Appendix B1 – Traffic and Transportation Management Plan of the POD, the Construction Contractor(s), the CIC, and all Environmental Monitors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will allow for immediate coordination between all parties, which will facilitate resolution of any questions and/or monitoring requirements prior to construction activities. Oral communication will not substitute for written approvals.

A6.5.1 Primary Inter-Party Communication Channels

The following relationships are not intended to limit communication on the Project, but demonstrate the primary channels of routine communication between parties for compliance related issues.

- **BLM/USFS Project Manager** – Proponent's Project Manager and Environmental Compliance Manager
- **CIC** – CIC Field Monitors, Proponent's Project Manager, Environmental Compliance Manager and Construction Contractor's LEI
- **Proponent's Project Manager** – Construction Contractor's Project Manager, CIC, and Proponent's Environmental Compliance Manager
- **Proponent's Environmental Compliance Manager** – Construction Contractor's LEI, Construction Contractor's Environmental Coordinator, and the CIC
- **Construction Contractor's Environmental Reporting Coordinator** – CIC or designee and Construction Contractor's LEI
- **Construction Contractor's LEI** – CIC, Proponent's Environmental Compliance Manager, Construction Contractor's Environmental Reporting Coordinator, and Construction Contractor's Environmental Inspectors
- **Construction Contractor's Project Manager** – Proponent's Project Manager and Construction Contractor's Superintendents

A6.5.2 Daily Communications

The Construction Contractor(s) will schedule and host daily morning meetings to review the location and extent of each day's construction activities. Discussion should highlight safety and environmental issues, including a summary of activities that require monitoring by Environmental Inspectors and coordination with the CIC. Evidence of proper approvals must be furnished for any activities scheduled to occur outside designated areas. Attendees should include the CIC (or designee); the Construction Contractor's LEI, Construction Inspector, and Environmental Compliance Manager (or designee); and the Construction Contractor's Superintendent(s) and Foreman(s). Meeting topics should include:

- Safety review
- Planned work activities and locations for the day
- Right-of-way and landowner restrictions
- Available access roads
- Reminders of environmental requirements specific to the day's construction activities
- A discussion of procedures required for work in proximity to sensitive resources
- Upcoming, potential environmental issues

In addition to the morning meeting, Superintendents, Foremen and Environmental Inspector's should evaluate the need for and conduct tailgate meetings in the field to address issues that come up during the day.

A6.6 Training

A6.6.1 Preconstruction

All contractor construction personnel will receive environmental training prior to commencing work on the Project (refer to Appendix A5.3 – Construction Workforce). Training will emphasize compliance with all environmental laws including the stipulations in the right-of-way grant/special-use authorization and POD. Project-specific requirements and local issues pertaining to variations on different spreads will be addressed as necessary. Roles of Environmental Inspectors and third-party CIC Field Monitors, civil survey flagging methodology, specific landowner issues, biological and cultural mitigation plans, and approved areas of disturbance will be some of the major topics covered in the training. The Construction Contractor's Environmental Training Coordinator will maintain a master list of all Project personnel that have completed the training and provide it immediately to the Proponent or CIC on request. Hard hat stickers demonstrating attendance of the training will be issued to attendees.

A6.6.2 During Construction

All contractor personnel that arrive after construction has begun will attend new hire environmental awareness and compliance training. The Construction Contractor's Environmental Training Coordinator will be responsible for documenting all employees that have attended the training by maintaining a master list and provide it immediately to the Proponent or CIC on request.

Trainings will be held in the field as needed to address specific and immediate issues that come up during the work day. These meetings will include Superintendents, Foremen, operators and laborers, Construction Inspectors, and Environmental Inspectors.

Remedial training will be given to individuals and crews who are involved in noncompliant activities. These trainings will focus on the requirements pertaining to the noncompliance, as well as measures to follow to prevent further noncompliance situations. These may be performed in the field or in a more formal setting to be determined by the Construction Contractor's Environmental Training Coordinator and the Construction Contractor's personnel.

Training for visitors will be held as the need arises and as appropriate for the type of visit scheduled.

A6.7 Reporting and Documentation

There will be multiple forms and reports completed on a regular basis during the course of construction. The reports and forms will include:

- **Daily Inspection Reports.** Environmental Inspectors and CIC Monitors will fill out daily reports to record site visits. The reports will document construction activities observed with respect to environmental compliance. Environmental Inspector reports will be submitted to the Proponent and the CIC and will be available to the BLM or USFS on request. CIC Monitor reports will be submitted to the CIC's Project Manager. Refer to Attachment A: Daily Inspection Report Form for an example form.

- **Weekly Biological Monitoring Summary.** Environmental Inspectors and CIC monitors (where appropriate) will compile a weekly summary of biological events and issues identified for areas where biological monitoring is conducted (e.g., sensitive plant location, raptor nests, etc.). The weekly biological monitoring summary will be submitted to the Proponent, the BLM, or USFS.

- **Weekly Compliance Reports.** The Construction Contractor's LEI will produce a weekly report documenting the week's activities and compliance issues to be submitted to the Proponent and the CIC and will be available to the BLM or USFS on request. The CIC will submit a weekly compliance report to the BLM/USFS and the Proponent to be delivered to a secure, but mutually exclusive websites.

- **Variance Request Forms.** Variance requests will be produced by the Construction Contractor(s), reviewed by the Proponent, and submitted to the CIC for review before submittal to BLM and USFS for approval. It is critical that these forms include the proper accompanying documentation (photos, maps, alignment sheet exerts, drawings, etc.). The Construction Contractor's Environmental Reporting Coordinator will track, distribute and archive all approved and denied variances. Refer to Attachment B: Variance Request Form for an example form.

- **Problem Area Report Forms.** This section of the daily report will capture all information pertaining to a problem area that was documented that day. Photo documentation is required. A separate resolved problem area report may be required if the problem area is not resolved on the same day.

- **Noncompliance Report Form.** This section of the daily report will capture all information pertaining to a noncompliance that was documented that day. Photo documentation is required. A separate resolved noncompliance report may be required if the noncompliance is not resolved on the same day. Refer to Attachment C: Noncompliance Report Form.

- **Weekly Training Log.** The Environmental Trainer will submit a weekly training log to the Construction Contractor's Environmental Training Coordinator and Environmental Reporting

Coordinator with the names and signatures of all employees that went through environmental training that week.

Forms and reports should be submitted with digital photographs and additional supporting documentation as necessary.

A6.8 Project Closeout

A6.8.1 Reclamation and Post Construction

On notification of completion of work by the Proponent and the Construction Contractor(s), the CIC will coordinate with the BLM and USFS Project Managers and resource staff to conduct final on-the-ground inspections. Inspections will take place within 30 days to assure work was completed in accordance with the right-of-way grant/special-use authorization and the right-of-way reclamation activities as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

After construction reclamation activities are complete, the BLM and USFS will meet with the CIC to determine if there is any further work required. If no further work is required, the post-construction reclamation monitoring period will begin, as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD. Reclamation and post-construction monitoring activities will be performed in accordance with the Reclamation, Revegetation, and Monitoring Framework Plan included as Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD. The Proponent will retain the third-party CIC for post-construction reclamation monitoring activities described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.

A6.8.2 End of Construction Project Report

Within 60 days of construction completion, the CIC will submit a final summary report (electronically in pdf format on two CDs, as well as two hardcopies for each BLM Field Office and USFS Office) to document the number of special status animals or plants taken, including the capture, displacement, mortality, injury and/or harassment by other means, during Project activities. This report will include the amount of actual temporary and permanent acreage disturbed compared with the original temporary and permanent disturbance acreage (Final EIS/POD), an electronic and hard copy compilation of all daily compliance reports (including digital pictures), variance requests (including approval/denial), temporary suspensions, and WSOs (including documentation of resolution). The Construction Contractor(s) will coordinate with the CIC to provide all applicable documentation for inclusion in the End of Construction Project Report. Completeness of the End of Construction Project Report will be verified by the CIC.

A6.8.3 Construction Closeout Meeting

As required by the BLM and USFS, the CIC will coordinate a construction closeout meeting with the BLM, USFS, Proponent, Construction Contractor(s), other field monitors and affected agencies to document all agency requirements have been met, determine areas of improvement, and ensure all issues have been satisfactorily resolved. This may include any noncompliance items that are in process.

Attachment A
Daily Inspection Report Form

DRAFT Daily Inspection Form

(Note: All fields shaded in yellow are to be completed as applicable.)

Employee No.:		**Daily Report Sequence Number:**		**Daily Inspection Report Number:**	
Name:		**Station Begin:**		**Crew:**	
Date:		**Station End:**		**Foreman:**	
Spread:	**Time:**	**Milepost Begin:**		**Photo Documentation**	
Tract:		**Milepost End:**		**Date:**	
Activity Observed:		Use only stationing.		**Time Stamp:**	

Site Conditions		
Weather Conditions (Clear, Cloudy, Partly Cloudy):		
Precipitation (None, Light Rain, Rain, Heavy Rain, Snow):		
Wind (None, Light Breeze, Windy, Heavy Wind):		
Temperature:		**°F**
ROW Conditions (Frozen, Dry, Wet, Saturated):		

Specification Source							
FEIS	☐	ROD	☐	SPCC	☐	Noxious Weed Plan	☐
POD	☐	ROW Grant	☐	Seeding	☐	Land Owner Agreement	☐
SWPPP	☐	Unexpected Discoveries Plan	☐			Other	
Drawing	☐	Drawing Number (s)					

Inspection Due Diligence Checklist	**Check Box**
Stormwater Plan Followed	☐
Measurable Rainfall in Area	☐
Weed Management Plan Followed	☐
ROW Boundaries Clearly Marked	☐
Restricted Areas Being Properly Handled	☐
Refueling/Storage Done Properly	☐
Signage Properly Placed	☐
Erosion/Sediment controls	☐
Installed/Mainttained	☐
Land Owenr Conditions Implemented	☐
Workspace Clean and Debris Picked Up	☐

Compliance Level	
Acceptable	☐
Problem Area	☐
Non-Compliance	☐
Serious Violation	☐

Major Topic:	
Sub-Topic:	
Requirement:	

Comments

Corrective Problem Area/Noncompliance/Serious Violation

Follow-up NC/PA Information

Time/Date Contractor Environmental Inspector Contacted		**Timeline**	☐ 24 hours	☐ 48 hours	☐ 72 hours
				Yes	**No**
Due Date for Acceptable Resolution:		**Follow Up Required:**		☐	☐
Inspector Affirmation:	☐	By checking this box, I affirm that the above observations are correct to the best of my knowledge.			

Attachment B
Variance Request Form

DRAFT Variance Request Form

(Note: All fields shaded in yellow are to be completed as applicable.)

Variance Request No.:

		Date Submitted to RMP:	
		Date RMP Submitted to BLM:	
		Date BLM Approves or Denies:	
Requested by:		BLM Approval Reference No.	
Request prepared by:		**Variance Type:**	
Spread:		**Variance Sequence Number:**	

Location (Use either Station or Milepost)

Station:		**To:**		**Milepost:**		**To:**	
Alignment Sheet Number:				**Tract No.:**			
Landowner:				**Other Agency Jurisdiction:**			
Current Land Use/Vegetative Cover:							

Nearby Features (Waerbody, T&E Habitat, Wetland, Noxious Weed Area, Residence [distance], Cultural Resource Site [distance], etc.):

☐ Noxious Weed Area	☐ Residence (distance)		**In or within 100 feet of a wetland:**	☐ Yes ☐ No
☐ T/E Species Habitat	☐ Cultural Resource Site (distance)		**In or within 100 feet of a waterbody:**	☐ Yes ☐ No
☐ Raptor Nest	☐ Water Well		**Wetland or Waterbody ID:**	
☐ Other (Specify):				

Net acreage affected:		

To be Completed by the LEI or CIC

Variance Level: ☐ Level 1 ☐ Level 2 ☐ Level 3

Variance From: ☐ Permit ☐ POD ☐ ROW Grant ☐ FEIS ☐ Specification ☐ Drawing ☐ Mitigation Measure ☐ Landowner ☐ Other Describe:

Detailed Description of Variance: Attachments? ☐ Yes ☐ No Photographs? ☐ Yes ☐ No

List Attachments:

Variance Justification:

For RMP Variance Management Use Only

Additional Surveys Required			Surveyed Corridor Description	Additional Surveys Completed	
Cultural Survey	☐ Yes	☐ No		☐ Yes	☐ No
T&E Survey	☐ Yes	☐ No		☐ Yes	☐ No

Proof of Previous Biological and Cultural Survey Clearance

Sign-off (as appropriate)	Name (Print)	Approval Signature	Conditions (See Attached)
RMP Environmental Compliance Manager			☐ Yes ☐ No
Lead Environmental Inspector			☐ Yes ☐ No
Land Agent			☐ Yes ☐ No
Contractor Environmental Coordinator			☐ Yes ☐ No

For BLM Compliance Monitor and compliance manager Use Only					☐ Yes ☐ No
Variance Approved:		Variance Denied:		Beyond Authority:	
Signature::					
Date:					
Stipulations:					

Variance Conditions					
Name:		Title:		Organization:	
Conditions:					
Name:		Title:		Organization:	
Conditions:					
Name:		Title:		Organization:	
Conditions:					

VARIANCE REPORT FORM DEFINITIONS

CODE	TYPE
AR	Request new access road
CM	Request new or different construction
MM	Request new or different mitigation method
PM	Request permit modification
RA	Request new realignment of centerine
RR	Request re-route (outside cleared footprint)
WS	Request additional temporary workspace
CY	Request additional contractor yard
BLM	BLM EIS requirement
AG	Agency request

Attachment C
Noncompliance Form

DRAFT Noncompliance Report

Inspector:		**Date:**	

Description of Location:						
Legal Description:	**Township**		**Range**		**Section**	
Map Sheet Number:			**Nearest Tower Number:**			

Description of Noncompliance:	
Person and Company	
Responsible for the noncompliance:	
Resolution: (Continue on reverse if necessary)	

Photographs: ☐ No ☐ Yes

Did the noncompliance result in surface disturbance? (if yes, map location and extent of disturbance and photograph)	☐ Yes	☐ No
Description of Disturbance and Assessment of Impact:		

Was a protected plant taken or affected?	☐ Yes	☐ No
Was a cultural or paleontological resource affected? (if yes, contact BLM and Rocky Mountain Power immediately)	☐ Yes	☐ No

Sketch surface disturbance and measurements:

CIC Signature:	

Appendix B – Environmental Protection Plans

TABLE OF CONTENTS

B1 Traffic and Transportation Management Plan

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B1 – TRAFFIC AND TRANSPORTATION MANAGEMENT PLAN

B1.1 Introduction

This Traffic and Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of right-of-way access, and mitigation measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project).

B1.2 Purpose

The purpose of this plan is to provide the Bureau of Land Management (BLM), U.S. Forest Service (USFS) and other public agencies; the Compliance Inspection Contractor (CIC); and the Construction Contractor(s) with a description of the type of access associated with the construction, operation, and maintenance of this Project and make evident the potential impacts that could be created by construction and operation of the Project. The goal of this plan is to ensure impacts from construction of the transmission line and any associated access are kept to a minimum through the use of management practices and mitigation measures described throughout this appendix. These practices and measures are intended to mitigate the effects of transportation on environmental resources, roads, traffic, travel, and road safety.

B1.3 Regulatory

A number of agencies have jurisdiction over the transportation-related components of the Project. These include the BLM; USFS; Utah Department of Transportation; Federal Highway Administration; local law enforcement and road departments in the cities of Beaver, Elsinore, Enterprise, Joseph, Milford, Minersville, and Richfield and the counties of Beaver, Iron, Millard, Sevier, and Washington; and the Utah Highway Patrol. Encroachment permit applications will need to be filed with appropriate road agencies for those areas where the transmission line crosses public roads (e.g., I-70 and I-15) prior to construction.

Other permits and approvals not directly related to transportation could affect the construction, use, and/or maintenance of roads in certain areas. Persons responsible for Project transportation activities must be familiar with all relevant sections of Project's Plan of Development (POD).

B1.4 Traffic Management Practices

Ground travel will be the primary means of transporting construction and maintenance crews and equipment during Project construction. Helicopters will be used as deemed necessary and approved by the BLM or USFS Authorized Officer or his/her designated representative. All vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. On roads where speed limits are not posted, the speed limit is assumed to be 15 miles per hour, unless otherwise directed by the CIC. Speeds along access roads and spur roads within the right-of-way may be limited to 15 miles per hour in some

areas to prevent excessive amounts of construction-related dust or disruption (e.g., in construction zones near residential and commercial areas and/or along major highways and interstates, sensitive wildlife areas, etc.), as needed (refer to Appendix B7 – Erosion, Dust Control, and Air Quality Plan).

Before construction, authorized access routes will be clearly marked in the field with signs or flagging (refer to Appendix A1 – Flagging, Fencing, and Signage Plan). The Construction Contractor(s) will review the location of proposed access and will be responsible for ensuring construction travel is limited to designated areas that clearly identify the limits of disturbance.

All field personnel will attend an environmental training program (refer to Appendix A5.3 – Environmental and Safety Training). Through this program, field personnel will be instructed to use only approved access roads, drive within the delineated road limits, and obey jurisdictional and posted speed limits to minimize potential impacts on biological, paleontological, and cultural resources.

Every effort will be made to minimize the effects of the Project construction activities on public transportation and to provide for public safety. The Construction Contractor(s), the CIC, and all environmental monitors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will allow for coordination of equipment traffic along existing access roads so public safety, traffic impacts, and resource impacts are minimized. In addition, any necessary permits for the movement of equipment will be obtained and complied with.

In general, the number of construction vehicles needed for the Project is not expected to substantially increase traffic volumes. Similarly, road and land closures are anticipated to be minimal and most likely will occur during conductor stringing activities or during blasting. If road and lane closures are needed, the appropriate regulatory agencies, affected parties, and emergency service providers will be notified in advance.

Although construction traffic is not expected to disrupt access to residences along the right-of-way, adjacent landowners will be notified of the construction schedule (where appropriate). Signs will be posted in the Project area to notify landowners and others of the construction activity. Flagging will be maintained until final cleanup and/or reclamation is completed, after which they will be removed.

TABLE B1-1
FLAGGING SCHEME

Feature	Flagging or Sign Colors	Sign Text	What to do
Project access road	To be decided by Construction Contractor(s)	Project Access Road – Road # (e.g., Road 1/3) – Sigurd to Red Butte No. 2 – 345kV Transmission Project	To be located at points of intersection, additional intermittent flagging may be required. Construction Contractor(s) to verify that right of entry has been obtained before marking these areas.
Temporary work areas (pulling sites, material yards, etc.)	To be decided by Construction Contractor(s)	Not applicable	Construction Contractor(s) to verify that right of entry has been obtained before marking these areas.
Protected animals/plants or sensitive environmental areas	Yellow	Sensitive Resource Area Keep Out	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.
Reclamation project areas	Brown	Restoration in Progress – No Vehicle Traffic Allowed	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.

TABLE B1-1 FLAGGING SCHEME			
Feature	**Flagging or Sign Colors**	**Sign Text**	**What to do**
Invasive weed cleaning stations	Blue	Weed Cleaning Station	Signs will be posted at entry points into weed cleaning stations.
Proposed structure locations	To be decided by Construction Contractor(s)	Not applicable	Do not disturb survey stakes.
Structure offsets	To be decided by Construction Contractor(s)s	Not applicable	Do not disturb survey stakes.
Outside edge of permitted right-of-way or centerline	To be decided by Construction Contractor(s)	Not applicable	Do not drive vehicles or equipment outside of designated corridor.
Cadastral survey monument	To be decided by Construction Contractor(s)	Not applicable	Protect in place.
Non-authorized access road	To be decided by Construction Contractor(s)	Do Not Enter Not an-Authorized Access Road	Do not drive vehicles or equipment on unauthorized roads.

Notes:

- Staking and flagging will be done by Construction Contractor(s) and verified by CIC, including sensitive resource areas and exclusion zones.
- Construction Contractor(s) shall stake all proposed tower center hub and footer locations, structure locations, and associated reference points and mark the centerline with intervisible stakes not to exceed 500 feet and at all road crossings.
- Construction Contractor(s) shall use staking intervals appropriate to the conditions observed in the field. For example, areas of rough terrain or dense vegetation may require staking intervals less than 500 feet. In all cases, field staking intervals shall be done at a frequency such that each adjacent stake can be easily discernible.
- Maintain (refurbish as necessary) staking over time as conditions require.

Construction crews will park only in designated areas (e.g., multi-use construction yards) and will be shuttled to the appropriate work sites if necessary.

In addition to minimizing the impacts associated with ground travel, the Construction Contractor(s) will coordinate construction activities with jurisdictional utilities and the Federal Aviation Administration (to avoid any air navigation obstructions), as needed.

B1.5 Types of Right-of-Way Access

The Project right-of-way and other areas needed for construction (e.g., multi-use construction yards) will require access for Project construction, operation, and maintenance activities. Listed below are ten types of access categories that will be used for this transmission line. The ten types of access categories identified below are a sub-set that has been derived from the access levels in the Environmental Impact Statement (Levels 1 through 5) and provided in Table A3-2 (Appendix A3 – Project Construction). The Table A3-2 access levels are derived primarily from slope conditions and proximity to existing access in the Project area. Refer to Table A3-2 for a correlation of each access level to the ten access types described below.

The ten types of access described below will also be illustrated in Volume II –POD Map Sets 1, 2, and 3. Upon review, the USFS discovered the definitions used for Access Type/Reclamation Level were not

consistent with the Fishlake National Forest Motorized Travel Plan and that adjustments would need to be made to ensure proper National Environmental Protection Act documentation. The off-highway vehicle (OHV) deterrent strategy team identified those discrepancies and included them in the *Sigurd to Red Butte #2, Transmission Line Project, Fishlake National Forest, OHV Deterrents Strategy* (Attachment A). In addition to the Access Type adjustments, all OHV-deterrent locations and types are documented by route and point locations as identified on Volume II –POD Map Sets 2 and 3.

B1.5.1 Type 1: Existing Permanent Access Road – No Improvement

This type includes paved highways and other developed roadways, including well traversed and established dirt roadways (e.g., Black Rock Road, Lund Highway, or a well-graded 14-foot-wide or wider road surface with a road base in good condition) which would not be expected to be affected by inclement weather or degradation due to the construction, operation, and maintenance activities. No improvements to these roads would be required to initiate construction of the Project. These types of roads are typically maintained by entities other than PacifiCorp, doing business as Rocky Mountain Power (Proponent), such as the counties, Utah Department of Transportation, etc. Stabilized construction entrances would be used to transition from paved surfaces to other access types.

B1.5.2 Type 2: Existing Permanent Access Road – Limited Repair Required

Repair is needed, or may be needed, to make these roads suitable for construction and ongoing operation and maintenance activities. An example of this type would be a 14-foot-wide existing road surface with ruts and identified as a public route on the USFS or BLM Transportation Plan or identified as a county road. Examples of conditions requiring repair include road ruts, depressions, washboarding, side slopes that have raveled (diminishing the original road width), or washed-out road. Examples of repair activities include filling/repairing potholes and depressions, removing boulders, compacting soil, adding or improving water bars, applying erosion control design features for environmental protection, outsloping, installing road-side ditches, blading, and removing vegetation. All repairs would take place within the confines of the existing roadway disturbance (i.e., <u>no widening or blading</u> outside of the existing road disturbance would be required). Gravel fill or foundation excavation spoils may be placed in low areas that collect water to make the road passable. In areas where the road is washed out, culverts may be cleaned out, replaced, or installed to accommodate drainage and prevent future washouts and other damage. Stabilized construction entrances would be used to transition from paved surfaces to other access types.

B1.5.3 Type 3: Existing Permanent Access Road – To Be Improved

This category would require widening or blading inside and/or outside of the existing roadway. This access road type pertains to access that must be improved to function as permanent access roads that meet PacifiCorp's construction and maintenance standards. An example of this type of road would be an existing 8-foot-wide road identified as a route on the USFS or BLM Transportation Plan, or identified as a county road, improved to meet PacifiCorp's road surface standards. Some of these roads may not be recognized as authorized existing roads by the BLM or USFS (refer to Appendix A3.3 – Access Roads). In such cases, the appropriate land-management agency must provide approval for the use or improvement of these roads for Project construction, operation, or maintenance purposes. PacifiCorp's standard for traveled surface road width is 14 feet plus an additional 1-foot road width on fill slopes for

sloughing. When fills are over 6 feet high at shoulder, allow a 2-foot additional road width. The maximum total new disturbance for Type 3 - Existing Permanent Access Road – To Be Improved is 22 feet. Trees within 5 feet of the access road surface will be cleared in accordance with PacifiCorp's published standards for road construction (included as Appendix C1 – PacifiCorp's Transmission Construction Standards). The area for tree clearing is not included in the maximum disturbance width.

B1.5.4 Type 4: New Permanent Access Road – Bladed

This type would include areas that do not have existing access and require new permanent access. This access would adhere to PacifiCorp's construction and maintenance standards and have a 14-foot traveled surface width, except in specific circumstances, as defined in PacifiCorp's Transmission Construction Standards (refer to Appendix C1) where, in steeper terrain, the travel surface width could be a maximum of 22 feet for radius of curves and the total disturbance width could be a maximum of 52 feet, depending on site-specific conditions (refer to Appendix A3.3 – Access Roads). In such circumstances, coordination with BLM or USFS is required. Trees within 5 feet of the access road surface will be cleared in accordance with PacifiCorp's published standards for road construction (included as Appendix C1 – PacifiCorp's Transmission Construction Standards). The area for tree clearing is not included in the maximum disturbance width. The constructed travel surface road base shall be compacted to provide a smooth, uniform surface. An example application of this type of road would be in an area where there are no existing roads available for access to proposed towers, new access cannot be achieved by overland construction methods (i.e., clear and cut, or drive and crush), and permanent access is needed for operation and maintenance. This access type could include cuts in steep slopes and/or soil removal. Stabilized construction entrances would be used to transition from paved surfaces to other access types.

On USFS-administered lands, new, permanent access roads will be added to the Forest transportation system as designated administrative routes, but will not be open for use by the general public.

B1.5.5 Type 5: New Temporary Access Road – Bladed

This category would include areas where no permanent access road would be permitted and would require new temporary access. Examples of this type of road would be a road built specifically for a tower pulling/tensioning site, or in an area where there are no existing roads available for access to proposed towers and new access cannot be achieved by clear and cut methods due to mountainous terrain. This access type could include cuts in steep slopes and/or soil removal. This access would adhere to PacifiCorp's construction and maintenance standards and have a 14-foot travel surface width, except in specific circumstances, as defined in PacifiCorp's Transmission Construction Standards (refer to Appendix C1) where, in steeper terrain, the travel surface width could be a maximum of 22 feet for radius of curves and the total disturbance width could be a maximum of 52 feet, depending on site-specific conditions (refer to Appendix A3.3 Access Roads). In such circumstances, coordination with BLM or USFS is required. Trees within 5 feet of the access road surface will be cleared in accordance with PacifiCorp's published standards for road construction (included as Appendix C1 – PacifiCorp's Transmission Construction Standards). The area for tree clearing is not included in the maximum disturbance width. If culverts are required, they would be removed after temporary access to the Project is no longer required. These temporary roads are not necessary to fulfill operation and maintenance needs of the transmission line and will be reclaimed in accordance with Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.

B1.5.6 Type 6: New Permanent Overland Access Route –Clear and Cut

This access type would have a 14-foot or less traveled surface and disturbance width. Vegetation within the travel surface and trees within 5 feet of the travel surface would be cut at the ground surface preserving the root ball (the area for tree clearing outside of the travel surface is not included in the maximum disturbance width). Clear and cut is considered as mowing or grubbing of all vegetation in order to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. The vegetation root ball would be left in place wherever practical to facilitate reestablishment. An example of this access type would be in relatively flat terrain with some sagebrush or other dense vegetation. At some point in the future during the construction and operation phase, a Type 6 route may require clear and cut activities to make the route passable for operation and maintenance activities.

B1.5.7 Type 7 – New Temporary Overland Access Route –Clear and Cut

This access type would be built exactly as described for Type 6; however, these temporary roads are not necessary to fulfill operation and maintenance needs of the transmission line and will be reclaimed in accordance with Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.

B1.5.8 Type 8: New Permanent Overland Access Route – Drive and Crush

This access type would have a 14-foot or less traveled surface and disturbance width. Overland drive-and-crush would occur in areas that are relatively level and have low growing grasses and shrubs. An example of this access type would be driving in an area of sparse, low vegetation with firm soil. Drive-and-crush would not significantly modify the landscape. Vegetation would be crushed but not cropped. Soil is compacted, but no surface soil is removed.

B1.5.9 Type 9 – New Temporary Overland Access Route – Drive and Crush

This access type would be built exactly as described for Type 8; however, these temporary roads are not necessary to fulfill operation and maintenance needs of the transmission line and will be reclaimed in accordance with Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.

B1.5.10 Type 10: New Temporary Access Road – Matted

This access type would have a 14-foot or less traveled surface and disturbance width. Crane mats, geotextiles with gravel, and/or rock would be utilized to access wet or wetland areas. Mats would be placed directly on vegetation. Within 30 days of the completion of the construction and/or maintenance

activity, the mats, geotextile with gravel, and/or rock would be removed allowing the vegetation to naturally re-establish. These temporary roads may also require reclamation in accordance with Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the POD.

B1.6 Mitigation Measures

This section describes practices intended to mitigate potential environmental, traffic, and traffic safety-related impacts associated with access to and from the transmission line. The protection measures described below include Design Features of the Project for Environmental Protection (Section B1.6.1) and Selective Mitigation Measures (Section B1.6.2).

B1.6.1 Design Features of the Project for Environmental Protection

Following are design features for environmental protection to reduce potential impacts resulting from ground disturbance and increased levels of public access associated with the construction and operation of the Project.

Design features for environmental protection are to be applied to all affected Project areas to help reduce potential access related impacts. Listed below are transportation-related (TR) design features for environmental protection to be implemented by the Construction Contractor(s) during construction of the Project facilities:

TR 1 All construction vehicle movement outside the right-of-way normally will be restricted to pre-designated access, Construction Contractor-acquired access, or public roads.

TR 2 On agricultural land, the right-of-way will be aligned, insofar as is practicable, to reduce the impact on farm operations and agricultural production.

TR 3 A Fire Protection Plan will be developed and incorporated into the POD, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.

TR 4 Grading will be minimized by driving overland within pre-designated work areas whenever possible.

TR 5 Fences, gates, and walls will be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land-management agency in the event they are removed, damaged, or destroyed by construction activities. Fences will be braced before cutting. Temporary gates or enclosures will be installed only with the permission of the landowner or the land-management agency and will be removed/reclaimed following construction. Cattle guards with access gates or access gates will be installed where permanent access roads cross fence lines as required by the BLM, USFS, or landowner and in accordance with the Proponents standards (PacifiCorp TA 520). Cattle guards on BLM-administered lands will be all steel with no cleanout, 14 feet by 8 feet by 8 feet painted yellow, set on rough sawn pressure treated timbers (No. 2 or better grade) 12 inches by 12 inches by 16 feet.

TR 6 The spatial limits of construction activities will be predetermined (e.g., 250-foot by 250-foot area for structure work sites), with activity restricted to and confined within those limits. No paint or permanent discoloring agents indicating survey or construction limits will be applied to rocks, vegetation, structures, fences, etc.

TR 7 All requirements of those entities having jurisdiction over air quality matters will be adhered to. Any necessary dust control plans will be developed and permits for construction activities will be obtained. Open burning of construction trash will not be allowed, unless permitted by appropriate authorities. Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance.

TR 8 Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.

TR 9 Refueling and storing potentially hazardous materials will not occur within a 100-meter (328-foot) radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 100-meter (328-foot) radius of any riparian area or water body. Spill preventive and containment measures or practices will be incorporated as needed.

B1.6.2 Selective Mitigation Measures

Selectively recommended mitigation measures to be applied on a site-specific basis to reduce access and transportation-related impacts include the following to be implemented by the Construction Contractor(s) (refer to Volume II – POD Map Sets 1, 2 and 3):

TR 10 Existing access roads will not be widened or otherwise upgraded for construction and maintenance in areas determined by the land-management agency, where soils and vegetation are particularly sensitive to disturbance, except in areas where repairs are necessary to make existing roads passable and safe.

TR 11 There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction (or maintenance). Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. Every crossing must be identified and a crossing plan developed. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM and USFS Authorized Officer or his/her designated representative.

TR 12 The alignment of any new access roads or overland routes in designated areas will follow the landform contours where practicable to minimize ground disturbance

and/or reduce scarring (visual contrast) of the landscape, providing that such alignment does not impact other resource values.

TR 13 To limit unauthorized or unwanted access into the Project area, all new or improved access (e.g., blading, widening existing access) not required for operation or maintenance, and with landowner or land-management agency approval, will be closed or rehabilitated using the most effective and least environmentally damaging methods appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders, pocking), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour in combination with vegetation.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A and illustrated on Volume II –POD Map Sets 2 and 3. The OHV deterrents shown on POD Map Set 2 are approximate locations only. The exact location of OHV deterrents will be verified in the field by a Fishlake National Forest Representative as reclamation occurs. OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan – Implementation Plan* (Attachment B).

TR 14 The Construction Contractor(s) will use overland access to the greatest extent possible in areas where no grading will be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD. Rutting and other similar damage to overland access shall not exceed 4 inches in depth and shall be repaired and reseeded with the approved seed mixes as soon as ground conditions permit. Refer to Section A3.3.1 Snow Removal for additional information.

TR 15 Where feasible, access roads that traverse sensitive habitats (e.g., crucial winter range) will be gated or otherwise blocked to limit public access.

TR 16 To reduce visual contrast, soil amendments, mineral emulsions, or asphalt emulsions (i.e., Permeon™ or approved equivalent) will be applied, or grading techniques such as slope rounding and slope scarification will be used to blend road and pad cuts into the landscape in areas of steep terrain where grading is

necessary, in rocky areas, or where newly exposed rock color will create strong landscape contrasts.

B1.6.3 Other Specific Stipulations and Methods

TR 17 A Traffic and Transportation Management Plan will be developed and implemented by the Construction Contractor(s) to provide site-specific details showing how the Project will comply with the other specific stipulations and methods listed in this appendix. This plan will be submitted to and approved by the appropriate federal, state, and local agencies with authority to regulate use of public roads, and approved prior to the issuance of a Notice to Proceed with construction.

TR 18 Dust suppression techniques will be applied (such as watering construction areas) to prevent powdering of soils on roads, maintain firm working surfaces, limit fugitive dust, protect topsoil for reclamation, and prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates. In addition, dirt tracked onto paved roads will be removed as needed.

TR 19 If the Project proposes to obtain water from wells or surface water sources to suppress dust, written approval from the landowner or land-management agency will be obtained prior to appropriation.

TR 20 If a construction method requires the closure of a state- or county-maintained road for more than one hour, a plan will be developed to accommodate traffic as required by a county or state permit.

TR 21 On county and state maintained roads, caution signs will be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures, such as traffic control personnel, warning signs, lights, and barriers, will be used during construction to ensure safety and to minimize traffic congestion.

TR 22 To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for employee personal vehicles.

TR 23 Unauthorized vehicles will not be allowed within the construction right-of-way or along roadsides near the right-of-way.

TR 24 Construction vehicles will follow a speed limit of 15 miles per hour on unposted Project roads.

TR 25 All temporary culverts and associated fill material will be removed from stream crossings after construction.

TR 26 Landowners will be notified at least 48 hours prior to the start of construction within 0.25 mile of a residence.

TR 27 Emergency vehicle access to private property will be maintained.

TR 28 Roads in residential areas will be reclaimed as soon as possible, and construction areas near residences will be fenced off at the end of the construction day.

TR 29 Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.

TR 30 Roads identified by the Proponent as no longer necessary will be reclaimed as specified in the Reclamation, Revegetation, and Monitoring Framework Plan (Appendix B14).

TR 31 The road or highway within the right-of-way corridor shall be used to the maximum extent possible for construction and maintenance of the new right-of-way.

TR 32 To help set public expectations for when temporary access roads are decommissioned, signs shall be posted on all temporary roads and overland access routes identifying them as reclamation areas. Signs will state "Restoration in Progress – No Vehicle Traffic Allowed."

TR 33 To help ensure hunter safety during big game and wild turkey hunting seasons, construction will be restricted on USFS land on weekends from Friday at noon until Monday morning a 6 a.m. Barrier rocks or an earthen berm shall be placed at the front end of maintenance roads prior to the weekend to discourage use.

TR 34 To help ensure public safety during major OHV activities on the Fishlake National Forest (e.g., Rocky Mountain ATV Jamboree), the Contractor(s) shall coordinate construction activities prior to these events with the CIC and Fishlake National Forest.

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Attachment A
Fishlake National Forest
OHV Deterrent Strategy

Sigurd to Red Butte #2
Transmission Line Project
Fishlake National Forest
OHV Deterrent Strategy

The following OHV Deterrent Strategy was developed for use on the Sigurd to Red Butte #2 Transmission Line Project by a four person team consisting of a Forest Engineer, Forest OHV Program Manager, Fillmore District Recreation Staff and Beaver District Recreation Staff.

Background Information: The Forest was requested to review the EPG proposal and identify locations for and types of OHV deterrents necessary for implementation of the proposed project. Upon initial review, it was discovered the definitions used for Access Type/Reclamation Level were not consistent with the Fishlake National Forest Motorized Travel Plan (MTP) and that adjustments would need to be made to ensure proper NEPA documentation. The OHV deterrent strategy team identified those discrepancies and included them in this document as necessary changes. In addition to the Access Type adjustments, all OHV deterrent locations and types are documented by route and point locations based on information provided by EPG on Map Sets 2 and 3.

General Strategy Information: The Fishlake National Forest has made a decision for consistency purposes that all new Access Types 4-10 shall be reseeded with a seed mix determined to be appropriate for the area by a Forest Ecologist. Also for consistency purposes, upon completion of the project, the majority of new routes must be blocked by boulders unless specifically identified otherwise in the Site Specific Strategy Information. The boulders must be of an adequate size and placed in close enough proximity to each other to prohibit access to all vehicles over 36 inches wide. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs. NEPA documentation will need to reflect the addition, to the Fishlake MTP, of all new permanent routes as identified in the site specific strategy information.

Site Specific Strategy Information: The following information is site specific OHV deterrent and route access type changes as identified by the Forest team.

- Route #030-106 to tower #39 – Block with boulder barrier at point N-65, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-125 to tower #45 – Block with boulder barrier at point N-79, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-127 is an existing 50 inch width restricted trail. A boulder barrier with an opening no wider than 53 and no less than 52 inches must be installed at point N-80. Scarify and seed areas of route outside of 50 inch width restricted trail.
- Route #030-130 to tower #47 – Block with boulder barrier at point N-82, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-132 to tower #48 – Block with boulder barrier at point N-83, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #030-134 to tower #49 – Block with boulder barrier at point N-84, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-136 to tower #50 – Block with boulder barrier at point N-85, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-138 to tower #51 – Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-147 to tower #54 – Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-149 from FS boundary to tower #54 – Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-150 from FS boundary to point N-96 – Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-152, #030-154 and #030-155 to tower #58 – Block with boulder barrier at point N-96, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-156 to tower #59 – Block with boulder barrier at FS boundary, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-163 from FS boundary to point N-102 – Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-175 from FS boundary to tower #67 – Block with boulder barrier at FS boundary, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-177 to tower #68 – Block with boulder barrier at point N-110, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-180 is an existing 50 inch width restricted trail. A boulder barrier with an opening no wider than 53 and no less than 52inches must be installed at point N-112. Scarify and seed areas of route outside of 50 inch width restricted trail.
- Route #030-181 to tower #69 – Block with boulder barrier at point N-113, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-182, #030-184, #030-186, #030-188, #030-190, #030-191, #030-194, #030-196 and #030-203 make up an existing 50 inch width restricted trail (FS526). Due to increased size use of the route, it will be managed as a 60 inch width restricted trail after construction. A boulder barrier with an opening no wider than 63 and no less than 62 inches must be installed at points N-112 and N-124. Scarify and seed areas of route outside of 60 inch width restricted trail.
- Route #030-183 to tower #70 – Block with boulder barrier at point N-114, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #030-187 to tower #72 – Block with boulder barrier at point N-116, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-189 to tower #73 – Block with boulder barrier at point N-117, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-195 to tower #74 – Block with boulder barrier at point N-122, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-201 to tower #76 (continuing on #030-198 to tower #75) – Block with boulder barrier at point N-128, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-192, a portion of this route is an existing 50 inch width restricted trail. Due to increased size use of the route, it will be managed as a 60 inch width restricted trail after construction. A boulder barrier with an opening no wider than 63 and no less than 62 inches must be installed at the road junction as indicated on Map set 2, Panel 17. Scarify and seed areas of route outside of 60 inch width restricted trail.
- Route #030-207, #030-209, #030-210, #030-216, #030-219, #030-221, #030-223, #030-225, #030-227 and #030-229 make up an existing 50 inch width restricted trail (FS528). Due to increased size use of the route, it will be managed as a 60 inch width restricted trail after construction. A boulder barrier with an opening no wider than 63 and no less than 62 inches must be installed at points N-123 and the FS boundary on #030-229 as indicated on Map Set 2, Panel 20. Scarify and seed areas of route outside of 60 inch width restricted trail.
- Route #030-208 to tower #77 – Block with boulder barrier at point N-130a, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-211 to tower #78 (continuing on #030-212 to tower #79) – Block with boulder barrier at point N-131, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-213 (continuing on #030-214 to tower #80, #030-215 to tower #81, and #030-217 to tower #82)– Block with boulder barrier at point N-132, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-218 to tower #83 – Block with boulder barrier at point N-134, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-220 to tower #84 – Block with boulder barrier at point N-135, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-222 to tower #85 – Block with boulder barrier at point N-136, scarify and seed the route. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-224 to tower #86 – Block with boulder barrier at point N-137, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.

- Route #030-226 to tower #87 – Block with boulder barrier at point N-138, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-228 to tower #88 – Block with boulder barrier at point N-139, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-236 from point N-144 north to the FS boundary is not an existing route in our MTP it needs to be changed from Type 3 to Type 6. Block with boulder barrier at the FS boundary, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #030-237, #030-238 to tower #92 and #030-239, scarify and seed. Block with boulder barrier at the FS boundary (point N-146). Do not add to the MTP as a road. The routes may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #030-244 from FS boundary continuing along #030-245 to point N-150, scarify and seed. Block with boulder barrier at the FS boundary. Do not add to the MTP as a road. The routes may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #030-246 and #030-248 from point N-150 to point N-152 are not existing routes in our MTP they need to be changed from Type 3 to Type 6. Block with boulder barrier and standard 4-strand barbed wire fence with steel posts (refer to Exhibit A) at the FS boundary, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-247 to tower #95 – Block with boulder barrier at point N-151, scarify and seed the route. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #030-249, fence along FS boundary with standard 4-strand barbed wire fence with steel posts (refer to Exhibit A) from point N-152a west to boundary corner and east 100 feet to help prohibit OHV access.
- Routes #030-249 through #030-259 (to FS110, Joseph Peak Road) scarify and seed. Block with boulder barrier at point N-156. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #030-262 through #030-272 to point N-163 scarify and seed. Block with boulder barrier at point N-156. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #030-273, #030-274 and #030-276 are not existing routes in our MTP they need to be changed from Type 3 to Type 4. Block with boulder barrier at point N-163, scarify and seed the routes. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #030-275 to tower #108 and #030-277 to tower #109 scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #030-279 to tower #110 and #030-280 to tower #111 scarify and seed. Block with boulder barrier at point N-169. Add to the MTP as new permanent Maintenance

Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #045-281to tower #112, block with boulder barrier at point N-169, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #045-283 through #045-293 scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #045-294 and #045-295 block with boulder barrier on both sides of road FS2309, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #045-296 scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #045-297 through #064-306 block with boulder barrier at road junction near point N-186, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-314, block with boulder barrier at point N-191, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #064-315 through #064-321 to tower #126, block with boulder barrier at road junction near point N-192, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-323 to tower #127, block with boulder barrier at point N-196, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-325 to tower #128, block with boulder barrier at point N-197, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-328 shows as Type 4 new permanent. This route is already in existence as FS476 and needs to show as Type 3.
- Route #064-330, continuing through #064-331to tower #129, block with boulder barrier at point N-200, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-333 to tower #131, block with boulder barrier at point N-201, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-335 to tower #132, block with boulder barrier at point N-202, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-337 to tower #133, block with boulder barrier at point N-203, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-339 to tower #134, block with boulder barrier at point N-204, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #064-342 to tower #135 block with boulder barrier at point N-206, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-343, #064-345, #064-346 and #064-347 need to be identified in the NEPA as a road that will remain open to public use on the Forest Motorized Travel Plan.
- Route #064-344 to tower #136, block with boulder barrier at point N-207, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-348 to tower #139, block with boulder barrier at point N-213, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #063-355, continuing on to #063-356 to tower #141, block with boulder barrier at FS boundary, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #063-358 is not an existing route in the Fishlake MTP. This route needs to be shown as Type 4 new permanent. A boulder barrier needs to be placed at location shown on map, scarify and seed this route continuing across #063-357 to tower #142. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #064-364 continuing on #063-365 to tower #145, block with a locked gate at point N-221, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-369 to tower #146 - if existing fence is removed it will need to be replaced. Scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-370 is not an existing road in the Fishlake MTP. This route needs to be shown as Type 4 new permanent. A boulder barrier needs to be placed at point N-225, scarify and seed this route continuing across #066-371 to tower #147. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-373 is not an existing road in the Fishlake MTP. This route needs to be shown as Type 4 new permanent. A boulder barrier needs to be placed at point N-227, scarify and seed this route continuing across #066-374 to tower #148. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-379, block with boulder barrier at location as shown on map.
- Routes #066-378, #066-376, #066-375, #066-377 and #066-379, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-382, #066-384 and #066-386, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-383 to tower #153 and #066-385 to tower # 154, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-386 block with boulder barrier at point N-235.
- Route #066-390 block with boulder barrier at point N-237, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #066-391 to tower #156, block with boulder barrier at point N-238, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-393 to tower #157, block with boulder barrier at point N-239, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-394 block with boulder barrier at point N-242, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-396 block with boulder barrier at point N-243, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-397 to tower #158, block with boulder barrier at point N-244, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-396, #066-398, #066-400, #066-402 and #066-405 are not existing roads in the Fishlake MTP. These routes need to show as Type 4 new permanent. Scarify and seed these routes. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-400 block with boulder barrier at location shown on map.
- Routes #066-401 to tower #160, #066-403 to tower #161, #066-404 and #066-406 to tower #162, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-411 is not an existing road on the Fishlake MTP. It is classified as a non-motorized trail. This route will need to show as Type 4 new permanent. It will need to be barriered at point N-250 and rehabilitated back to a non-motorized trail. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-412 to tower #163 comes off a non-motorized trail. Scarify and seed. Repair trail to return travel route to pre-existing condition in width and grade at point N-251 and provide directional trail signing. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-429, #066-425, #066-424, #066-422, #066-420 and #066-418 are not existing roads in the Fishlake MTP. These routes need to show as Type 4 new permanent. Scarify and seed these routes. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-426 to tower #171, #066-423 to tower 169 and #066-421 to tower #168 scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #066-419 to tower #167 and #066-417 through #066-413 to tower #164, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-429 barrier with boulders at location shown on map and at junction with FS583.
- Route #066-434 to tower #172, block with boulder barrier at point N-265, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #066-436 to tower #173, block with boulder barrier at point N-266, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-438 to tower #174, block with boulder barrier at point N-267, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-440 to tower #175, block with boulder barrier at point N-268, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Routes #066-445, #066-447 and a portion of #066-448 are existing permanent road in the Fishlake MTP. All maintenance to be done on these routes must meet all FS maintenance and appropriate wetland regulations.
- Routes #066-450 and #066-451 are not existing routes in the Fishlake MTP. These routes need to show as Type 4 new permanent. Block with boulder barrier at point N-274, scarify and seed. Add to the MTP, along with #066-452 to tower #179 as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-458 to tower #182, #066-460 to tower #183, #066-462 to tower #184, #066-464 to tower 185, #066-466 to tower #186 and #066-468 to tower #187, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- The end of route #066-467 is the beginning of a 50 inch width restricted trail. If the boulder barrier at this location is moved it will need to be restored with an opening no wider than 53 inches and no less than 52 inches.
- Route #066-469 to tower #188, block with boulder barrier at point N-285, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-473 to tower #190, block with boulder barrier at point N-287, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-472 and #066-474 are part of a 50 inch width restricted ATV trail. A boulder barrier will need to be placed at location shown on the map with an opening no wider than 50 inches and no less than 52 inches. Scarify and seed areas of route outside of 50 inch width restricted trail.
- Route #066-475 to tower #191, block with boulder barrier at point N-288, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-480 to tower #192, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-482 to tower #193, block with boulder barrier at point N-292, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-484 to tower #194, block with boulder barrier at point N-293, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.

- Route #066-486 to tower #195, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-489 to tower #197, block with boulder barrier at point N-295, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Route #066-491 to tower #198, block with boulder barrier at point N-296, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-493 to tower #199 and #066-495 to tower #200, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #066-497 to tower #201, block with boulder barrier at point N-299, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #066-499 to tower #202 and #068-501 to tower #203, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.
- Route #068-504 to tower #204, block with boulder barrier at point N-303, scarify and seed. Add to the MTP as new permanent Maintenance Level 1 – "Administrative Use Only" under Special Use Permit for Rocky Mountain Power.
- Routes #068-506 to tower #205,#069-508 to tower #206, #068-510 to tower # 207, #068-515 to tower #208 and #068-513 to tower #209, scarify and seed. Do not add to the MTP as a road. The route may be identified as cross country use for maintenance purposes only under Special Use Permit for Rocky Mountain Power.

Prepared by the Fishlake National Forest OHV Deterrent Team specifically for use on the Sigurd to Red Butte No.2 345kV Transmission Line Project, October 11, 2012.

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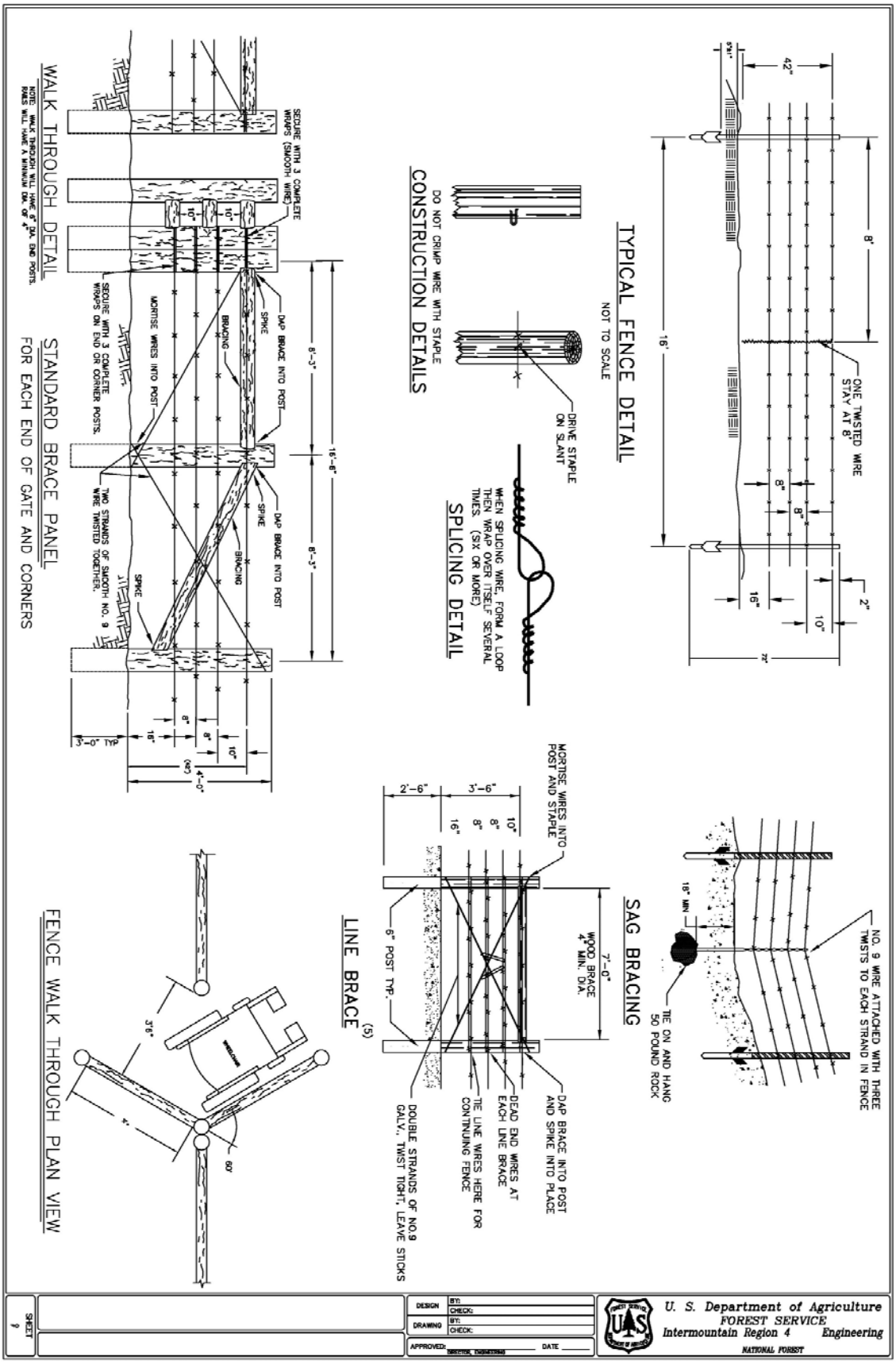
Exhibit A


TYPICAL FENCE DETAIL
NOT TO SCALE
ONE TWISTED WIRE STAY AT 8'
CONSTRUCTION DETAILS
DO NOT CRIMP WIRE WITH STAPLE
DRIVE STAPLE ON SLANT
SPLICING DETAIL
WHEN SPLICING WIRE, FORM A LOOP THEN WRAP OVER ITSELF SEVERAL TIMES. (SIX OR MORE)
WALK THROUGH DETAIL
NOTE: WALK THROUGH WILL HAVE 6" DIA. END POSTS. RAILS WILL HAVE A MINIMUM DIA. OF 4".
SECURE WITH 3 COMPLETE WRAPS (SMOOTH WIRE)
SECURE WITH 3 COMPLETE WRAPS ON END OR CORNER POSTS.
STANDARD BRACE PANEL
FOR EACH END OF GATE AND CORNERS
MORTISE WIRES INTO POST
DAP BRACE INTO POST
SPIKE
BRACING
TWO STRANDS OF SMOOTH NO. 9 WIRE TWISTED TOGETHER.
FENCE WALK THROUGH PLAN VIEW
LINE BRACE (5)
MORTISE WIRES INTO POST AND STAPLE
6" POST TYP.
DOUBLE STRANDS OF NO.9 GALV., TWIST TIGHT, LEAVE STICKS
TIE LINE WIRES HERE FOR CONTINUING FENCE
DEAD END WIRES AT EACH LINE BRACE
DAP BRACE INTO POST AND SPIKE INTO PLACE
SAG BRACING
7'-0" WOOD BRACE 4" MIN. DIA.
NO. 9 WIRE ATTACHED WITH THREE TWISTS TO EACH STRAND IN FENCE
TIE ON AND HANG 50 POUND ROCK
18" MIN
U. S. Department of Agriculture
FOREST SERVICE
Intermountain Region 4
Engineering
NATIONAL FOREST
DESIGN
DRAWING
APPROVED
DATE
SHEET 9

WHEN A FENCE LINE APPROACHES A DITCH, GULLY, OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP-OFF THAT THE WIRE MAY BE STRUNG TO A POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

WHEN THE DEPTH OF A DEPRESSION ON A FENCE EXCEEDS THE TOTAL VERTICAL WIRE SPACING OVER A MAXIMUM HORIZONTAL RUN OF 2 SPACES, AN EXTRA FENCE SHALL BE CONSTRUCTED THROUGH THE DEPRESSION. EXTRA LINE BRACES AND A DEADMAN ARE INCLUDED IN THIS APPLICATION SEE THE SPECIAL APPLICATIONS FOR BARBED WIRE DETAIL.

WHEN WOOD BRACES ARE USED AND THE FENCE CORNER ANGLE EXCEEDS 30° ON THE EXTERIOR ANGLE OF THE FENCE, DOUBLE PANELS SHALL BE USED ON THE CORNER BRACE. DOUBLE PANELS FOR LINE AND TERMINAL BRACES SHALL BE INSTALLED ACCORDING TO THE FENCE BRACE TABLE.

BARBED WIRE ON WOOD POSTS SHALL HAVE ONE STAPLE PER WIRE PER POST AND TWO STAPLES PER WIRE PER POST IN SAG SECTIONS. BARBED WIRE ON METAL POSTS SHALL HAVE ONE WIRE CLAMP PER WIRE PER POST.

BRACING SHALL BE DAPPED 1" INTO POSTS. SPIKES SHALL BE 40D.

STEEL POSTS SHALL CONFORM TO AASHTO M 281.

WIRE STAYS WILL BE OF NO. 9 WIRE.

ALL BARBED-WIRE TO BE 12½ GAUGE, W-POINT, WITH BARBS 4"-5" APART.

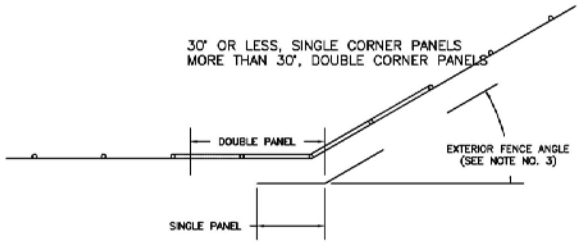
ALL POSTS IN BRACE PANELS SHALL BE SAWN, 6" DIAMETER, DOUGLAS FIR OR WESTERN LARCH, CONFORMING TO THE REQUIREMENTS OF AASHTO DESIGNATION M168-84. THEY SHALL BE NO.2 OR BETTER STRUCTURAL GRADE WHEN GRADED IN ACCORDANCE WITH CURRENT RULES OF EITHER THE WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION.
POSTS SHALL BE TREATED IN ACCORDANCE WITH AWPA C2-91 USING ONE OF THE FOLLOWING:
A.) Water born preservatives per AWPA standard P5-91 to a retention of 0.40 PCF.
B.) Pentachlorophenol meeting AWPA P8-91 using an AWPA P9-91 type A solvent to a retention of 0.40 PCF.
C.) Creosote meeting AWPA P1/P13-91 to a retention of 12 PCF.

PANEL BRACES SHALL BE 4" DIAMETER AND WILL BE OF THE SAME MATERIAL USED FOR POSTS.
SEE NOTE 9.

SAG WEIGHTS, WHERE NECESSARY, WILL BE 9 GAUGE GALVANIZED, WIRE WITH AT LEAST 50 POUND STONE.

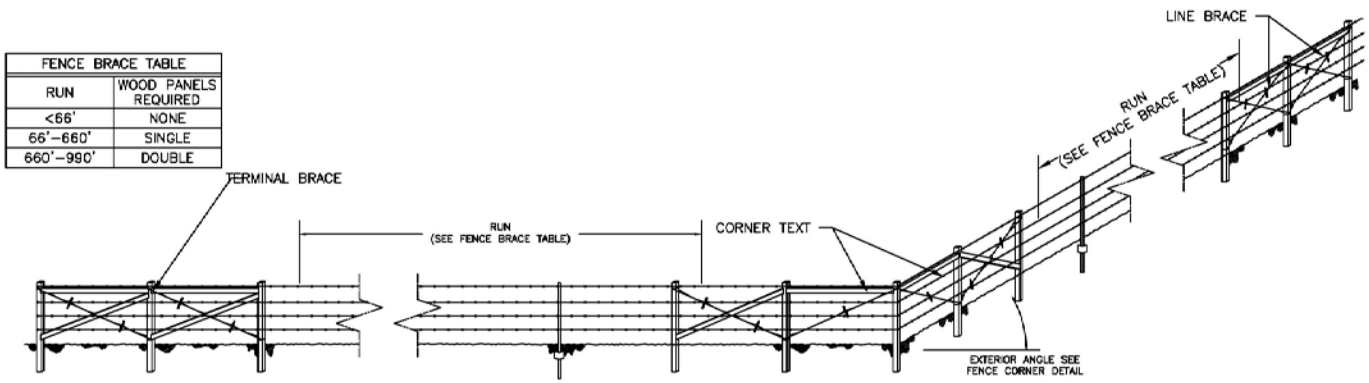
STAPLES SHALL BE 9 GAUGE GALVANIZED WIRE.

INSTALL FENCING AS STAKED IN FIELD BY CONTRACTING OFFICERS REPRESENTATIVE.



FENCE CORNER ANGLE

FENCE BRACE TABLE	
RUN	WOOD PANELS REQUIRED
<66'	NONE
66'-660'	SINGLE
660'-990'	DOUBLE



DOUBLE BRACE PANELS

U. S. Department of Agriculture
FOREST SERVICE
Intermountain Region 4 Engineering
NATIONAL FOREST

DESIGN BY:
CHECK:
DRAWING BY:
CHECK:
APPROVED: DIRECTOR, ENGINEERING DATE

SHEET
9

Attachment B
Dixie National Forest Motorized Travel Plan Implementation Plan

Draft last updated: May 17, 2011

Dixie National Forest Motorized Travel Plan

Implementation Plan

Version 2.0

May 2011

Document available at www.fs.fed.us/r4/dixie/mtp/implementation

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Chapter 1: Introduction

1.1. Background and Motorized Travel Plan Decision

The Dixie National Forest is the largest of the five national forests in Utah, covering close to two million acres and stretching for over 200 miles. The Forest is located in Garfield, Iron, Kane, Piute, Wayne, and Washington counties in southcentral and southwestern Utah. There are currently four ranger districts on the Forest: Cedar City, headquartered in Cedar City; Escalante, headquartered in Escalante; Pine Valley, headquartered in St. George; and Powell, headquartered in Panguitch. The Supervisor's Office is collocated with the Cedar City Ranger District in Cedar City.

In March 2006 the Teasdale Ranger District on the Dixie National Forest and the Loa Ranger District on the Fishlake National Forest were consolidated into the Fremont River Ranger District. This new ranger district is administered by the Fishlake National Forest, though the area that was the Teasdale Ranger District remains part of the Dixie National Forest. As the Motorized Travel Plan analysis was initiated prior to the reorganization, the Teasdale portion of the Fremont River Ranger District was included.

A Draft Environmental Impact Statement for the Motorized Travel Plan (MTP) was published in May 2008, and a Final Environmental Impact Statement and Record of Decision were published in April 2009. Prior to the MTP decision the forest had approximately 5,200 miles of system and non-system (unauthorized or illegal) routes. The decision designated approximately 2,700 miles of motorized routes as open to public use, and approximately 1,000 miles of routes as administratively available for permitted activities and for official resource management. The MTP decision also eliminated motorized cross-country travel (travel off of designated routes) on the forest.

1.2. Purpose of Implementation Strategy

The purpose of this document is to identify a strategy and guideline for implementation of the Dixie National Forest Motorized Travel Plan. The goal of this plan is to provide for the long term sustainability of motor vehicle access to and quality motorized recreation opportunities on the Dixie National Forest in a manner that protects natural and cultural resources.

1.3. How This Plan Will Be Updated

This plan is meant to be adaptive in nature to address the dynamic needs of the implementation process. Subsequently, this plan will be updated as needed. Recommended changes or additions to the plan received from the public, forest employees, the MTP Implementation Taskforce, and the MTP Steering Committee will be reviewed and approved by the Forest Leadership Team (Appendix Q). The most current version of the Implementation Plan will be posted on the Forest's webpage (http://www.fs.fed.us/r4/dixie/).

1.3.1 MTP Steering Committee

The Motorized Travel Plan Implementation Steering Committee consists of the MTP project team lead, Forest Staff Officers (or appropriate appointee), two District Rangers, and the Forest Supervisor. The committee's roles are as follows:

- Provide oversight of the implementation process.
- Address implementation issues as they arise.
- Inform the FLT on small d decisions and present big D decisions as necessary.
- Coordinate staff areas to ensure integration and target accomplishment.
- Provide the FLT with implementation progress updates.
- Coordinate with MTP Taskforce and forest employees and inform FLT of pertinent information and recommended requests or recommendations.
- Update Implementation Strategy annually (not IA priorities).

1.3.2 MTP Implementation Task Force

The Motorized Travel Plan Implementation Taskforce consists of community participants (7-8), one District Ranger, MTP Implementation Team Leader. The taskforce's roles are as follow:

- Meet quarterly
- Consider Forest Service Implementation Plan.
    - Provides yearly input into plan development modification (after first year).
- Monitors MTP implementation and provides feedback to the Steering Committee about areas of success and challenge.
- Listens to public concerns about implementation
    - Troubleshoots options for solving problems – may recommend ideas to Forest Leadership Team through the Steering Committee.
- Makes recommendations to Steering Committee about how the Forest can expand capacity to implement motorized travel plan quicker, more broadly, or in specific areas (e.g., brings money, time, expertise, etc. to the table).

1.4. Roles and Responsibilities

This implementation plan is intended to be applied to those National Forest System lands administered by the Dixie National Forest. The Fishlake National Forest will be responsible for implementing the MTP decision on the Teasdale portion of the Fremont River Ranger District. The Dixie and Fishlake National Forests will coordinate implementation efforts to ensure consistency and clarity of road designation. For example, if a road crosses the boundary between the Escalante and Fremont River Ranger Districts, and is designated as closed under the MTP decision, the two forests will ensure that both ends of the road are closed.

1.5 Implementation Efforts to Date

The Dixie National Forest has been actively implementing the Motorized Travel Plan. At the end of Fiscal Year 2010, the forest had implemented an element of all four "E's". The following is a summary of implementation activities in 2010.

<u>Education</u>
Forest employees:

- Participated in many community events where we handed out maps and talked to people about the MTP.
    - Enterprise 24th Parade, Duck Creek Days, Washington County Fair, Bryce Canyon ATV Rally, Iron County Fair, Cedar City Outdoor Fest, St George Interagency Visitor Center Brown-bag Lunch, and many more.
- Developed an MTP education trailer and set up road-side information stops and contacted over 1,000 visitors.
    -

- Used an AM radio transmitter along Highway 14 to inform visitors about changes in motor vehicle travel.
- Produced two maps (MVUM and Travel Maps). All are free to the public!
    - Printed Maps—the forest spent over $26,000 on MVUMs and $5,500 on Travel Maps. UT Parks and Recreation printed over 20,000 Travel Maps for the forest, saving the forest over $40,000.
        - Printed maps and displays were distributed to local businesses across the forest.
    - On-line versions of both the MVUM and Travel Map.
    - Garmin GPS unit background maps.
- Installed many new signs informing the public about motorized travel.
    - Open roads and trails were signed.
    - Portal signs were installed at major access locations on the forest informing the public that travel off designated roads and trails is prohibited.
- Developed a *Tread Lightly* cinema "pre-view" that showed in movie theaters in southern Utah.
- Made many in-field public contacts with seven-day a week staffing.
- Conducted an internal education session on each of the four districts.
- Produced a Motorized Travel Plan information brochure.
- Worked with local media to get a few focused articles on MTP Implementation.

<u>Engineering</u>
The Forest Road Crew and other employees:

- Improved over 20 miles of forest roads and maintained 610 miles.
- Completed three Implementation Areas (Haycock/Duck-Swains, Pretty Tree Bench, and Mt Dutton North).
    - Decommissioned over 225 miles of closed routes.
    - Physically managed (with gates or other closures) an additional 240 miles of administrative routes.
- Worked with the Utah Dedicated Hunter volunteer program to install a restrictive barrier to keep motor vehicles off of non-motorized trails.

- Installed two major ATV trail bridges and improved over half a mile of the Duck Creek ATV Trail on the Cedar City Ranger District.
- Repaired flood damage to the Casto Canyon ATV Trail on the Powell Ranger District three different times.

Enforcement

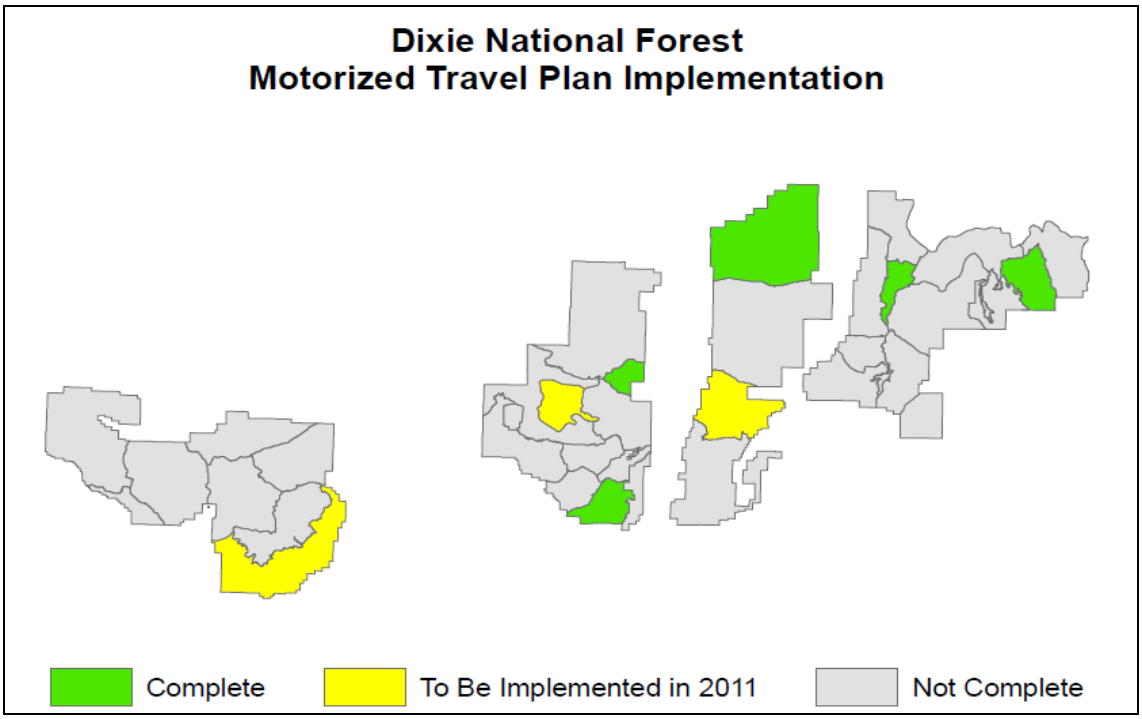
- The forest hired one additional Law Enforcement Officer, for a total of two.
- Each district staffed an additional Forest Protection Officer (FPO).
- FPOs and LEOs issued 56 violation notices related to motor vehicle use.
- Employees documented 129 incidents of illegal motor vehicle use (Incident Reports).

Evaluation

- The forest monitored the effectiveness of the physical implementation in the Duck-Swains (School Wash) Implementation Area. Work was completed in the summer of 2009.

Management Action	# Mgt Actions	% Successful	% Revegetated	Comment
Coarse Woody Debris	6	67%	100%	Wood/debris were moved
Need to Change Decision	2	100%	100%	Both routes are open routes that are not being used. District will propose to close.
No Action/No Visible Route	8	100%	100%	
Restrictive Barrier-Boulder	25	96%	96%	One instance of driving around boulders noted.
Rip/Seed/Barrier-Boulder	42	86%	86%	Some closures naturally did not have vegetation.
Over-all Total	**83**	**90%**	**96%**	

*****Confidence level of 95%, confidence interval of 6.26 and a population of 132


Dixie National Forest
Motorized Travel Plan Implementation
Complete
To Be Implemented in 2011
Not Complete

Chapter 2. Education

2.1. Objectives of the Education Plan

- Forest users understand appropriate motorized use on the forest.
- Forest users know how to get information on open routes.
- Forest users know how to report violations of appropriate uses.
- Youth are educated about why motorized uses need to be limited to the designated system (resource considerations).
- Media provide accurate information about appropriate forest uses.
- Forest employees know how to approach the public and are versed in key messages for helping people use the forest appropriately.
- User groups (e.g., ATV clubs) and advocacy groups understand the forest's commitment to implementing the travel plan decision.

2.2. Audiences

- Local media: radio, newspaper, television
- Local businesses: ATV-oriented, sporting goods, forest communities, eating establishments, gas stations (pumps), outfitters and guides
- Local government, county tourism councils, county trails and natural resource committees
- State government: State Parks, Division of Wildlife Resources, Public Lands Policy Office
- School children: Washington, Iron, Garfield, Wayne, and Kane County School Districts
- Employees: frontliners, visitor centers, field-going employees, Forest Protection Officers
- Other agency partners: Bureau of Land Management (BLM), National Park Service (NPS), State of Utah, local business, and Garfield and Kane Counties.
- Bryce Canyon Natural History Association, Arizona Strip Interpretive Association
- Out-of-town Users: Las Vegas, Wasatch Front
- Homeowner associations
- Camping users
- Campground hosts, concessionaires, good host training
- ATV clubs
- Community groups
- Environmental groups
- Other user Groups: Cycling clubs, Backcountry Horsemen
- Implementation Task Force

2.3. Key Messages

- Motorized use on the forest is limited to the designated route system.

- A map of designated routes is available at Forest Service offices and on the forest website.
- Responsible motorized travel includes:
    - Travel only on designated routes.
    - Obey all State and Federal laws pertaining to motor vehicle use (registration, helmets, etc.)
    - Avoid travel on routes when they are wet/muddy to prevent road/trail damage.
    - Do not harass wildlife.
    - Respect other forest visitor's experiences.
    - Use established access routes to dispersed campsites.
    - Do not create play areas/loops next to dispersed campsites.
- Travel off designated routes is subject to citation.
- The Forest Service manages a variety of multiple-uses and must protect opportunities for all users.
- Designated routes will be signed.
- Travel on unsigned routes may be a violation of travel regulations.
- If you see violations of appropriate use, know the steps to report (e.g., document, call the Forest Service).
- The Implementation Task Force is a public venue for bringing concerns about the system and uses.
- Implementation of this decision is happening in stages across the forest.
    - Implementation areas (IAs)have been identified by district staff using an interdisciplinary approach; IAs provide focus for implementation.
    - Additional attention may be placed on roadless areas, high concentrated use areas, fragile areas, and other areas identified by the public.
- Dispersed camping is allowed within 150 feet of designated routes unless it is in a designated dispersed camping area.
- Requirements for firewood gathering are outlined in the firewood gathering permit.
- Administrative uses (such as maintenance of livestock permits or access to private lands) are provided for by administrative routes or by the permit.
- Routes that previously were available for public use (prior to the decision) are being closed for a variety of reasons including:
    - Route is duplicative.
    - Route creates natural resources damage (e.g., damage to wildlife, cultural resources, soils, water, etc.).
    - Route was intended for short-term administrative use only.
- Users need to "Protect their Privilege."

2.4. Four Education Focus Areas

Education efforts will occur in four areas:

1. Developing and implementing education programs for youth, adults, and forest employees,
2. Improving signs and sign coordination,
3. Developing information materials, and
4. Working with the media to present stories about proper motorized uses.

2.4.1. Education Action Plan

2011 MTP EDUCATION ACTION PLAN

The MTP Steering committee met January 4, 2010 and the following items were agreed upon for the Action Plan.

ACTION #1: Communication to Communities		
Description: Communication to communities (including local municipalities and commissioners) must occur after Rx is completed and prior to implementation of key areas. 2009-Implemented Areas: Griffin Springs IA (D4) and School Wash IA (D2). 2010- Implemented Areas Haycock (D2), N. Dutton (D3), and Pretty Tree Bench (D4). 2011-Areas planned to be Implemeted Oak Grove (D1), Middle Mammoth (D2), and N. Paunsaugunt (D3).	**Who:** Forest Coordinator: District Rangers OR MTP Coordinators for Districts Participating Employees:	**When:** Prior to each key implementation And after areas have been implemented.
ACTION #2: Training for Permanent employees		
Description: Topic Examples for Training: -Training on safety -Talking Points -Dealing with disgruntled folks -Role playing exercises	**Forest Coordinator:** Forest LEO & PAO Participating Employees: All	**When:** April 7
ACTION #3: Training for Seasonal employees		
Description: Topic *Examples* for training: -Training on safety -Talking Points-what they are, how to use them -Dealing with disgruntled folks -Role playing exercises -field trip to a site where it	**Forest Coordinator:** District Rangers and Staff Group Participating Employees:	**When:** Pine Valley District- May 9th –coordination with Micah Suwyn Cedar City District- May 18 Powell District- June 7th

has been implemented. Have discussion of how it has been implemented, what the concerns were and how it has improved.		Escalante District- June 6th
ACTION #4: ATV INDUSTRY Day/User Group Field Trip with Forest Specialists		
Description: -Engage local industry dealers /advocates by going out for a field visit – look at closure/ improvement Invite BLM rep. Chris H.-State- has some 4 wheelers	**Planning:** PAO/Forest Coordinator/Task Force Invitations: District Rangers Participating Employees:	**When:** July or August
ACTION #5: Engage Media-Radio, PSA's, Talk shows, surrogates		
Description: Develop and Implement Media Plan including a Media Day Use Media Contact List (Attached)	**Forest Coordinator:** PAO Participating Employees: PAO and District Rangers	**When: Develop by end of June, Implement Actions by End of FY2011**
ACTION #6: Districts Sign up for Large Events- Sign up on attached event list!		
Description: Large Events in Southern Utah Need to be attended by Employee Leadership for Implementation -OT sign up for critical weekends -Funding for overtime/ flex time	**Forest Coordinator:** Participating Employees:	**When:** See Event List Appendix M
ACTION #7: Forest MTP Brochure		
Description:	Forest Coordinator: PAO & Jessica Grow Participating Employees: Districts-	**When:** Spring 2011
ACTION #8: Give Updates to Forest Key Contacts		
Targeted Briefings to Key Contacts	PAO, District Rangers, Forest Supervisor	Spring, June, September

Long-term Actions

- Work with Garfield, Iron, Kane, Washington, and Wayne County School Districts to incorporate Motorized Travel Curriculum into K-12 instruction.

- Meet with Key Audiences yearly to remind them about proper use and how they can help.
- Continue yearly employee training on Motorized Travel, emphasizing how every employee has a responsibility to help educate and enforce.

2.4.2. Informational Signing

Signs explaining the MTP will be installed at trailheads and roadside informational sites.

2.4.2.1. MTP Informational Trailhead Signing

The standard MTP informational trailhead sign (shown at Appendix K) will be placed at both motorized and non-motorized trailheads that have single or triple panel kiosks. The sign will be updated as needed.

2.4.2.2. Roadside Informational Site Signing

Many roadside informational sites, such as interpretive sites and travel/camping information kiosks, currently exist on the forest. Roadside informational sites can provide a means for additional MTP information. Appropriate sites will be determined, and actions will be taken to expand the information dissemination capabilities. These actions may include expanding the available parking, constructing or reconstructing kiosks, and fabricating or redesigning interpretive and informational panels

Chapter 3. Engineering

3.1. Implementation

The Engineering portion of the Implementation Plan will be implemented at two levels: a forest – wide approach and by smaller geographic areas called Implementation Areas (IAs).

3.1.1. Forest-wide Implementation

Implementation items addressed under a forest-wide approach are as follows:

3.1.1.1. Route Signing

- Roads designated open to public motor vehicle use will be signed according to the Sign and Poster Guidelines for the Forest Service (EM 7100-15 Forest Service Engineering: Programs, Signs and Posters). In addition to the direction provided in the manual, the forest will use use green u-channel metal posts with aluminum signs on Maintenance Level 2, 3 and 4 roads.
- Motorized trails designated open to public motor vehicle use will be signed according to the Sign and Poster Guidelines for the Forest Service (EM 7100-15) and the State of Utah Statewide OHV Trail Signing Standards (included as Appendix I) or online at: (http://static.stateparks.utah.gov/docs/nrcc_trail_sign_standards.pdf)

3.1.1.2. Portal Signing

- Portal signs will be installed at the forest boundary and at the entrance to key secondary routes to notify forest visitors about travel restrictions (see Appendix B, Maps of District Sign Locations). Three sign sizes will be used based on the speed that routes are traveled: Large (42” x 96”), Medium (24” x 68”), and Small (24” x 18”). The sign sizing is based on guidance provided in chapter 6b of the Sign and Poster Guidelines (EM 7100-15). The signs will look as follows:

Figure 1. Example of Large and Medium Signs

MOTORIZED CROSS-COUNTRY TRAVEL PROHIBITED
ONLY USE ROADS AND TRAILS DESIGNATED OPEN ON MOTOR VEHICLE USE MAP

Figure 2. Example of Small Sign

The following table displays the number of each sign needed by each district and the associated approximate cost of the signs as of 2009. The total cost of installing the portal signs will be approximately twice the cost of the signs.

Table 1. Cost of Signs, FY2009

District	Number of Signs Needed			
	Small	Medium	Large	Total
D1	20	18	4	42
D2	53	19	5	77
D3	31	7	2	40
D4	20	12	1	33
Total	124	56	12	192
Approx. Cost Per Sign	$32.50	$138.50	$342.16	
Total Cost	$4,030.00	$7,756.00	$4,105.92	$15,891.92

Costs do not include sign posts, installation hardware, or cost of installation.

3.1.2. Implementation Area Implementation

Implementation Areas (IAs) are geographic sub-units of each district that were developed to focus the physical route closure efforts of the Motorized Travel Plan (IAs listed in Appendix A). Using the following criteria, the District Staff determined the IA boundaries using an interdisciplinary approach:

- Travel patterns
- Road densities
- Resource considerations (e.g., big game winter range)
- Recent (previous), current, and future decision boundaries
- Geographic features/physical landscape.

There are seven IAs on D1, nine IAs on D2, four IAs on D3, and ten IAs on D4, for a total of 31 IAs. The top 15 IAs were prioritized at a forest level using several criteria. The ranking was not based on a strict application of numeric values for the criteria, but rather on managers'

knowledge of the IAs and a subjective application of the criteria. Some criteria were critical in certain IAs and did not apply in others (Appendix L Forest and District IA Prioritization Maps).

The top 15 IAs were prioritized at a forest level using the following criteria:

- Target accomplishment (an assigned incremental metric of annual accomplishment; e.g., acres of terrestrial habitat improvement)
- A mix of IA complexity—large and small areas, many routes/few routes
- Amount of resource impacts from motor vehicles
- Other resource concerns (e.g., big game winter range)
- Potential partnerships
- Potential stewardship projects
- Potential state grants
- Dates of previous decisions

IAs will be implemented in the order of priority as funding is available. Ideally the forest would implement four IAs a year.

3.1.2.1. Physical Route Management

Although the Motorized Travel Plan states the allowed uses of a route, it does not provide details on how to physically manage the route for the identified allowed uses. The method of physical route management, or prescription, will be assigned by District Staff using an interdisciplinary team approach. The prescriptions will be electronically documented and spatially referenced using the Dixie National Forest MTP Implementation Mobile Application (Appendix E Mobile Application User Guide). In order to maintain consistency across the forest and present a recognizable approach to the public, there is a menu of management options for each type of closure or restriction used in the MTP implementation (see Appendix D, Prescription Descriptions). A separate NEPA document may be required depending on the potential resource impacts. All roads with the exception of closed routes will be signed with a road number sign. Prescription options are different for each route classification under the MTP decision. The following is a list of prescription options based on route classification.

3.1.2.1.1. Closed Routes

Closed routes are routes that are closed to all motor vehicle use. Closed routes consist of U routes, classified roads, and illegal routes. The intent for closed routes is that they will blend back into the landscape. Closed routes will not be shown on maps. The closure methods will be one of the following:

Decision	Prescription Options
Closed	Coarse Woody Debris
	No Action/No Visible Route
	No Action/Restricted Elsewhere
	Recontour/Seed/Barrier-Boulder
	Recontour/Seed/Barrier-Metal Fence
	Recontour/Seed/Barrier-Wood Fence
	Restrictive Barrier-Boulder
	Restrictive Barrier-Metal Fence
	Restrictive Barrier-Wood Fence
	Rip/Seed/Barrier-Boulder

Rip/Seed/Barrier-Metal Fence
Rip/Seed/Barrier-Wood Fence
Need to Change Decision

Closed routes will have the following sign on a fiberglass post:

3.1.2.1.2. Administrative Routes

Administrative roads are Maintenance Level 1 roads that are closed to public motor vehicle use but may be used for administrative or permitted purposes. Administrative routes were divided into two categories: current use and future use.

Current Use Administrative Routes
Current use administrative roads are described as routes that forest employees or permittees use routinely for official resource management purposes (range improvements, water line maintenance) or private property access. There are 11 types of current use administrative routes that will be managed with the following methods.

Administrative road (current); closed to public use

Decision	Prescription Options
Admin-Current	Heavy Gate
	Light Gate
	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder
	Restrictive Barrier-Metal Fence
	Restrictive Barrier-Wood Fence
	Sign (Only in Administrative Areas)

Administrative road (current); motorized trail (50”) open for public use

Decision	Prescription Options
Admin-Current/Moto Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road (current); non-motorized trail open for public use

Decision	Prescription Options
Admin-Current/NM Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road and permittee road; closed to public use

Decision	Prescription Options
Admin/Perm	Heavy Gate
	Light Gate
	Need to Change Decision
	No Action/Restricted Elsewhere

Administrative road and permittee road; motorized trail (50”) open for public use

Decision	Prescription Options
Admin/Perm/Moto Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road and permittee road; non-motorized trail open for public use

Decision	Prescription Options
Admin/Perm/NM Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road, permittee access, and private land access; closed to public access

Decision	Prescription Options
Admin/Perm/PVT	Heavy Gate
	Light Gate
	Need to Change Decision
	No Action/Restricted Elsewhere

Administrative road, permittee access, and private land access; motorized trail (50”) open for public use

Decision	Prescription Options
Admin/Perm/PVT/Moto Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road, permittee access, and private land access; non-motorized trail open for public use

Decision	Prescription Options
Admin/Perm/PVT/NM Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Administrative road and private land access; closed to public access

Decision	Prescription Options
Admin/PVT	Heavy Gate
	Light Gate
	Need to Change Decision
	No Action/Restricted Elsewhere

Administrative road and private land access; motorized trail open for public use

Decision	**Prescription Options**
Admin/PVT/Moto Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate

Current use administrative roads will be gated or have a restrictive barrier as listed above with the exception of frequently used administrative sites where forest employee/representatives are usually present (Duck Creek Bunkhouse, Dave's Hollow Work Station).

Routes that access administrative sites will have the following sign on a 4x4 treated wood post or green u-channel post:

Gates that are placed on current use administrative roads that provide access to permittees and private property will be double-locked to allow access to authorized users. Gated administrative roads will have either a heavy or light gate installed (see Appendix H, Restrictive Barrier Drawings). When determining the gate type both snow-load and potential vandalism should be considered. Both style gates will include the following sign located on the gate between the Object Marker signs (center):

Future Use Administrative Routes

Future use administrative routes are described as routes that are not frequently used but are still needed for future official resource management purposes (vegetation management). There are 11 types of future use administrative routes that will be managed with the following methods.

Administrative road (future); closed to public use

Decision	**Prescription Options**
Admin-Future	Coarse Woody Debris
	Heavy Gate
	Light Gate
	Need to Change Decision
	No Action/No Visible Route
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder/Side Gate
	Restrictive Barrier-Metal/Side Gate
	Restrictive Barrier-Wood/Side Gate
	Rip/Seed/Barrier-Boulder
	Rip/Seed/Barrier-Metal Fence
	Rip/Seed/Barrier-Wood Fence

Future use administrative routes will have the following sign on a fiberglass post:

Administrative Future/Motorized Trail

Administrative future use road/motorized trails are designated for ATVs and OHVs that are 50 inches or less in width. These trails will have barriers that restrict motor vehicles wider than 50 inches.

Decision	**Prescription Options**
Admin-future/Moto Trail	Need to Change Decision

No Action/Restricted Elsewhere
Restrictive Barrier-Boulder
Restrictive Barrier-Metal
Restrictive Barrier-Wood

Administrative Future/Non-motorized Trail

Administrative future use roads/Non-motorized trails are routes designated for non-motorized use only. These routes are closed to motor vehicle use and, when necessary, will have barriers (rock, wood, metal) to restrict motor vehicle use.

Decision	Prescription Options
Admin-future/NM Trail	Need to Change Decision
	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder
	Restrictive Barrier-Metal
	Restrictive Barrier-Wood

3.1.2.1.3. Access Restricted Routes

Access restricted routes are routes that have travel restrictions. Access restricted routes are classified into five categories: seasonal closure, full-size vehicles only, motorized trails, motorized trail designated for vehicles 50 inches or less, and non-motorized trails. They will be restricted using the following methods:

Seasonal Closure

Seasonal closure routes are roads that are temporarily closed for resource protection and management.

Decision	Prescription Options
Seasonal	Heavy Gate
	Light Gate
	No Action/Restricted Elsewhere
	Need to Change Decision

The gates will be signed with the following sign with the appropriate explanation:

Full-size Vehicle Only Routes
Full-sized vehicle only routes are open to full-sized vehicles only. These routes are closed to OHV/ATV motor vehicles.

Decision	Prescription Options
Full Size Only	Sign
	Need to Change Decision

These routes will be signed with the following signs (or similar):

Motorized Trails (OHV)
Motorized trails are routes designated for the use of OHV/ATV only. Full-sized vehicles are prohibited on motorized trails. These trails are managed to provide an OHV/ATV experience. Currently there are very few of these trails on the forest.

Decision	Prescription Options
Moto Trail (OHV)	No Action/Restricted Elsewhere
	Restrictive Barrier-Boulder
	Restrictive Barrier-Metal
	Restrictive Barrier-Wood
	Need to Change Decision

Motorized trails will have the following sign on a fiberglass post:

Motorized Trail (50 inches or less)
Motorized trails designated for motor vehicles 50 inches or less in width are designed for ATVs and OHVs that are 50 inches or less wide. These trails will have barriers that restrict motor vehicles wider than 50 inches.

Decision	Prescription Options

Moto Trail (50”)	No Action/Restricted Elsewhere Restrictive Barrier-Boulder Restrictive Barrier-Metal Restrictive Barrier-Wood Need to Change Decision

These trails will be signed with the following signs either on a fiberglass post or a 4x4 treated wood post:

Non-motorized Trails

Non-motorized trails are routes designated for non-motorized use only. These routes are closed to motor vehicle use and, when necessary, will have barriers (rock, wood, metal) to restrict motor vehicle use.

Decision	**Prescription Options**
NM Trail	No Action/Restricted Elsewhere Restrictive Barrier-Boulder Restrictive Barrier-Metal Restrictive Barrier-Wood Need to Change Decision

These trails will have the following sign on a fiberglass post:

Illegal Roads/Trails
Illegal roads and trails are routes that were not part of the orginal inventory and are therefore closed routes. These routes are closed to motor vehicle use and, when necessary, will have barriers (rock, wood, metal) to restrict motor vehicle use.

These trails will have the following sign on a fiberglass post:

3.1.2.2. Mapping Errors and Need to Change Decision

Although there was a thorough review of MTP maps/data and previous decisions by both Forest Service personnel and the public for the last five years, there is a chance there may be errors with the decision map. Potential errors will become more obvious as the district personnel visit each route to perform route prescriptions and the forest users visit these areas.

3.1.2.2.1 What is considered a mapping error?

A mapping error is an error in the decision map/data that is contrary to a previous decision reference in the MTP Final Environmental Impact Statement (2-20). These errors will be corrected according to the previous decision.

Routes that are identified as “need to change decision” that are not supported under a previous decision will need addition NEPA to change the decision.

Chapter 4. Enforcement

4.1. Safety

Employee safety is the most important element to performing law enforcement activities. Employees must follow Forest Service Handbook policy and direction. Many aspects of this document pertain to safety, including the communication plan and training requirements. Never compromise employee safety when performing law enforcement activities.

4.2. Tools

4.2.1. Public Contacts

MTP implementation will bring about a massive change in how the public uses the forest. During the first years of implementation it is critical that forest employees demonstrate the Forest Service's commitment to the success of the MTP by contacting the public at every opportunity and providing accurate information about the new travel regulations.

All forest employees have a responsibility to maintain the positive image of the Forest Service with forest users and our local communities. When contacting the public, employees should act as "Good Hosts" for national forest system lands. Avoid confrontation with users or community members. If problems arise during public contacts, contact line officers, the Forest Public Affairs Officer, or Forest Law Enforcement.

All employees should strive to make contacts with the public during the normal course of their field duties. Even an employee conducting a field survey should take the time to speak to a member of the public if the opportunity is available. Violations do not have to be observed in order to make a contact. Most forest users have questions about the forest and are glad when someone representing the Forest Service stops to talk with them.

4.2.2. Patrols

4.2.2.1. Regular and Busy Weekend Patrols

The majority of visitors to the Dixie National Forest visit on weekends. In order to make the Dixie National Forest's Motorized Travel Plan (MTP) a success it is critical to have a law enforcement presence on weekends, especially busy weekends. Due to the limited number of Forest Protection Officers (FPOs) and fulltime Law Enforcement Officers (LEO) it is important to identify busy weekends to maximize enforcement efforts. In addition, it is important to have all forest personnel, including non-FPO certified employees from all disciplines, participate in patrol efforts on busy weekends. Non-FPOs must be paired up with FPOs or LEOs to participate in enforcement efforts.

It is important to have an enforcement presence on all weekends from May to October; however the following table lists those weekends that are historically busier than others.

Table 2. Busy Weekends on the Dixie National Forest

Holiday/Event	Date	Area/Ranger District
Early Spring	Mid-March to Mid-May	Pine Valley Ranger District: Oak Grove, Browse, Danish Ranch Road, and Enterprise Reservoir.
Memorial Day Weekend	Fourth Monday in May (three-day Weekend)	Entire Forest; Concentrated high use levels around Enterprise Reservoir and Pine Valley Campground; Duck Creek Village and Yankee Meadows; Red Canyon and the East Fork.
Independence Day	July 4	Entire Forest, especially the higher elevation areas.
Pioneer Day	July 24	Entire Forest, especially the higher elevation areas. The Duck Creek Chili Cook-off, traditionally held this weekend; draws thousands of people to the Duck Creek area.
Opening of General Archery Deer, Spike Elk, Bull Elk Hunt	Third Saturday in August (four weeks long)	Entire Forest, especially in the higher elevation areas. Past trends have shown more use on D2, D3, and D4 than D1.
Labor Day Weekend	First Monday in September (three-day weekend)	Entire Forest; Concentrated high use levels around Enterprise Reservoir and Pine Valley Campground; Duck Creek Village and Yankee Meadows; Red Canyon and the East Fork.
Opening of Muzzle Loader Deer Hunt	Third Wednesday in September (10 days)	Entire Forest, especially in the higher elevation areas.
Opening of General Riffle Elk Hunt	First Saturday in October (10 days)	Cedar Mountain general elk unit (South of Hwy 14), Boulder Mt. Spike Elk Hunt
Opening of Paunsaugunt Riffle Deer Hunt	First Saturday in October (10 days)	East Fork
Opening of General Deer Riffle Hunt	Third Saturday in October (9 days)	Entire Forest, especially in the middle to low elevation areas. Past trends have shown more use on D1 than on D2.

Hunt dates tend to change from year to year; seasons must be checked annually.

4.2.2.2. Saturation Patrols

In an attempt to maximize the efforts of the limited number of law enforcement employees on the forest, saturation patrols should routinely be executed. A saturation patrol is a procedure in which a number of law enforcement patrol units are dedicated to a limited geographic area for the purpose of creating law enforcement presence. Saturation patrols are concentrated enforcement efforts that focus on the distribution of education materials and enforcement of forest laws and regulations. In addition, saturation patrols provide additional safety to employees when making forest visitor contacts and issuing citations.

During saturation patrols employees should attempt to contact all forest visitors they encounter within the identified focus area. A variety of transportation methodologies (ATV, truck, foot, bicycle) should be used to cover all levels of travel routes/areas (all roads, trails, and dispersed camp sites). To ensure all routes/areas are covered efficiently in the focus areas, a pre-field briefing and coordination meeting should be conducted. In addition, an after action review should be conducted to improve future saturation patrol efforts.

Saturation patrol focus areas should be based on the Motorized Travel Plan Implementation Areas (IAs). Focus areas should be prioritized by recently and/or previously implemented IAs and identified problem areas. When scheduling saturation patrols, the district should consider the identified busy weekends.

It is important to have all Forest personnel, including non-FPO certified employees from all disciplines, participate in saturation patrol efforts.

4.2.2.3. Patrol Focus Areas

Enforcement efforts need to be conducted forest-wide, however additional patrols and law enforcement presence will be focused on seasonal closures and Implementation Areas that have been or are currently being implemented. It is important to have a law enforcement/education presence in areas that have restrictions/closures to communicate the forest's commitment to the implementations efforts to the public. A list of district seasonal closures will be maintained at each District Office and a master list will be maintained at the Supervisor's Office.

4.3. Consistency and Helpful Hints

4.3.1. Tolerances: Defining Enforcement Decision Space

Education is the primary methodology of ensuring compliance with forest rules and regulations. However, education efforts do not always ensure compliance and violations notices must sometimes be issued. The following are considerations when deciding if a violation notice needs to be issued to a forest visitor.

- **Intent of the individual's action.** Employees should consider the individual's intent, and determine if the action was driven by ignorance of the law or misunderstanding of the law. For example, did the individual pull off of a road to park at a safe distance to avoid causing an accident (a few feet), or did the individual travel an excessive distance off a designated route?
- **Assessment of individual's knowledge of forest laws and regulations.** Some forest laws and regulations are common sense behavior issues and are well known, while others are not. When considering issuing a violation notice, employees should take into account the visitor's knowledge of the forest, the presence of signage and/or education materials, and previous contact with Forest Service employees or volunteers. For example, has the visitor frequently visited the forest and therefore should know the rules; did the individual drive by a "do not drive on meadow" sign; was the individual contacted recently by a forest employee? In addition, some consideration should be given to the duration of existence of the laws or regulations being violated. For example, was motorized travel off of designated routes previously prohibited in this area?

- **Need for an incident report.** Even if a violation notice is not issued, an incident report should be completed. This form includes a copy of the written documentation of the incident that can be provided to the violator. It does not carry a penalty and does not become part of a permanent record, but serves as a reminder to the violator of the regulations and that we are keeping track of these incidents, and may serve as a future deterrent.

4.3.2. Information Needed to Prosecute

- A good Probable Cause (PC) statement (who, what, when, where, why, and how) is necessary to prosecute a violation. If PC statements do not include all the necessary information the case may be dropped. A long story does not need to be written, but all of the facts that led the employee to writing the citation should be articulated well.
- What the suspect says is very powerful information that should be included in the PC statement. It is important to write down what the suspect states in the PC statement. Questions like, “Did you see the sign?,” “Do you have a map of the area?,” and “How long have you been riding in this area?” are good questions to ask. Always document the individual’s responses.
- A picture is worth a thousand words! Take pictures of pertinent signs in the area; pictures of the damages from the individuals going off a designated route; pictures of the motor vehicle off a designated route; any images that may help explain the reason the violation was issued. If the case goes to trial, often the prosecutor will want pictures of the violation, resulting damage, and the areas the violation occurred in. Employees should take as many pictures as possible of useful elements of the case. Although it is important to take pictures, employees need to be respectful of the individual.

4.3.3. Useful Equipment

The following tools may help with law enforcement efforts.

- **Current maps, brochures, and closure information.** It is crucial to use current and accurate information to educate the public and enforce laws and regulation.
- **Digital camera.** A digital camera is important to document violations and/or resource damage. Make sure the batteries are charged and there is space on the data card.
- **Binoculars.** Binoculars are a useful tool to survey areas from a distance to determine if a possible situation may be dangerous.
- **Global Positioning System (GPS).** A GPS is an important tool used to document the location of a violation or the location of resource damage. A GPS is also useful tool for navigating in unfamiliar areas.
- **Trail cameras/trail counters.** Trail cameras and trail counters can be useful tools to determine when violations are occurring and temporally focus law enforcement efforts.
- **Personal Digital Assistants (PDAs) with the MTP database.** PDAs can be loaded with the MTP database, and the status of all routes in an area can be accessed to answer questions about a route. The MTP GIS data can be accessed in the field using ArcPad and a GPS unit. The Implementation Crew uses this system to identify each road and the associated decision and route prescription.

4.3.4. Closure Orders

36 CFR 261.13 is the Code of Federal Regulations (CFR) number to be used by employees when writing violation notices for laws/rules imposed under the MTP. Note that a critical element in this regulation is that the designated routes must be identified on a motor vehicle use map:

Sec. 261.13 Motor vehicle use. Fine: $150.00

After National Forest System roads, National Forest System trails, and areas on National Forest System lands have been designated pursuant to 36 CFR 212.51 on an administrative unit or a Ranger District of the National Forest System, and these designations have been identified on a motor vehicle use map, it is prohibited to possess or operate a motor vehicle on National Forest System lands in that administrative unit or Ranger District other than in accordance with those designations, provided that the following vehicles and uses are exempted from this prohibition:

(a) Aircraft;
(b) Watercraft;
(c) Over-snow vehicles;
(d) Limited administrative use by the Forest Service;
(e) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;
(f) Authorized use of any combat or combat support vehicle for national defense purposes;
(g) Law enforcement response to violations of law, including pursuit;
(h) Motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations; and
(i) Use of a road or trail that is authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

4.3.5. Communication Plan

It is required that all employees have adequate communication capabilities when performing law enforcement activities. Due to poor cell phone coverage in most areas of the forest, Forest Service radios are necessary to meet the adequate communications requirements.

All employees must know how operate Forest Service radios. Training on operation should include, but is not limited to, proper maintenance, selecting appropriate tones, selecting appropriate repeaters, appropriate and effective communications, and the ability to identify when a radio transmission is reaching a repeater.

Color Country Dispatch is available for check-in/check-out for employees performing law enforcement duties provided that:

- Employees provide dispatch with their phone number and their supervisor's phone number. Phone numbers will be used in the event the FPO forgets to check out. Forest Law Enforcement Officers (LEOs) will refresh this list annually at the FPO refresher.
- FPOs will not perform routine check-in/check-out with dispatch when the Color Country is experiencing emergency situations, such large or multiple fires. However, if an employee feels unsafe or is experiencing an emergency situation, then they should immediately call dispatch. Emergency situations have priority on the radio channels in all situations. Dispatch will determine when they are too busy to do routine check-in/check out procedures. If dispatch is unavailable to perform check-in/check outs, then an

alternative communication plan will be established between employees and their supervisors. The alternative communication plan must direct employees to check-in/check-out with co-workers or supervisors frequently.

- Not only should FPOs check-in/check-out with dispatch frequently, they should also notify dispatch in the event when they are going into a camp to issue a violation notice. However it is not required to call dispatch for every contact.
- Employees must reference established response areas when they check-in/check-out. This will allow dispatch to track employees in the event that dispatch receives a law enforcement call or an employee does not check back in (see Appendix C, Maps of Law Enforcement Response Areas).

4.3.6. Training Needs

All employees should know the background legislation, planning process, and subsequent implications of the Dixie National Forest Motorized Travel Plan Decision. More information is provided in the Education Plan section beginning on page 7.

Currently there are 26 permanent employees and 11 seasonal employees on the Dixie National Forest that are certified as Forest Protect Officers (see Appendix F, Annual FPO Call List) Employees should be encouraged by their supervisors to obtain and maintain FPO certification.

4.3.7. MOUs with Other Law Enforcement Agencies

A Memorandum of Understanding (MOU) already exists between the Federal agency's in Utah.

- Federal type 1 officers (not FPOs) can stop on another agencies land and deal with a violation in progress. This MOU does not state that a BLM officer will go on a planned routine patrol on the forest. This MOU is set up for officers to deal with situations when encountered when crossing other agencies land or something is observed where no other officers are available.

-*In the works*-meeting with the DWR officers to inform them on the MTP and what it means and how they can help.

Chapter 5. Monitoring and Accomplishment Reporting

5.1. Monitoring Implementation Efforts

The forest will monitor motor vehicle activities to ensure that travel management actions are effective in meeting the intent of the Motorized Travel Plan. Monitoring the effectiveness of the Dixie National Forest MTP implementation efforts is critical to the improvement of this plan. In addition to annual tracking of regionally assigned targets that relate to implementation efforts, such as Miles of Road Maintained to Standard, monitoring of implementation efforts will take four forms:

1. Route closure effectiveness,
2. Number of motor vehicle law enforcement violations and incident reports recorded,
3. Number of Motorized Travel Plan education products and presentations, and
4. Number of new illegal routes recorded.

These four monitoring elements collectively will be used as a metric to monitor overall implementation effectiveness. Monitoring data will be reported annually in the Dixie National Forest MTP Implementation Effectiveness Monitoring Report.

5.1.1. Road Closure Effectiveness

Road closure effectiveness will be monitored using the Dixie National Forest MTP Implementation Mobile Application (see user manual in Appendix E). A sample of previously implemented route closure locations will be randomly selected from each implementation area (IA) for monitoring. Monitoring of route closures will occur the first year and the fifth year after implementation. Results from effectiveness monitoring will be used to evaluate different route management methodologies, closed route rehabilitation rates, and overall implementation effectiveness.

5.1.2. Number of Motor Vehicle Violations/Incident Reports

The number of motor vehicle violations and incident reports will be monitored annually using the Forest Service LEMAR (Law Enforcement Monitoring and Reporting) tracking system. LEMAR data will be used to track trends in motor vehicle violations, warnings, and incident reports.

5.1.3. Number of MTP Education Products and Presentations

The number of Motorized Travel Plan education products produced and presentations made will be documented annually. Although the visitor surveys would be the most common and effective means to monitor the effectiveness of products and presentations, the cost of completing these surveys is prohibitive. The number of products and presentation does however provide information about the potential numbers of individuals receiving MTP information.

5.1.4. Number of Illegal Routes Recorded

The number of illegal routes recorded will be documented and entered into the GIS database annually. The number of illegal routes will be recorded using the MTP Implementation Mobile Application. The data will be used to dispatch resource response crews to address the route in the short-term and will be added to the GIS database to document the route so it will be addressed during that IA's implementation. The number of illegal routes will be used as a metric of public compliance with the MTP Record of Decision.

5.2 Funding

The execution of the Dixie National Forest MTP Implementation Plan will be an expensive, multi-year commitment. The forest plans to fund the project with a number of BLIs and internal funding sources. The forest has also been working with the State of Utah OHV Grant program, Bryce Canyon Natural History Association (BCNHA), and numerous OHV groups to secure additional funding sources. The forest plans to expand its partnership base to include wildlife habitat improvement organizations (RMEF, UDWR, etc).

5.3. Accomplishment Reporting

The Dixie National Forest will annually draft a report documenting implementation accomplishments. The report will include both assigned targets and non-assigned target accomplishments.

5.3.1. Assigned Target Accomplishment

The forest will accomplish targets in multiple program areas during the implementation process. Because the targets are resource specific (e.g., Wildlife, Roads, Trails, etc.) and not all implementation areas will involve all resource areas, target accomplishment will vary annually between programs. Targets attached to the Forest's annual budget that may be accomplished during the MTP implementation process are as follows:

- Recreation (NFRW):
    - Number of interpretive and conservation education plans implemented
- Roads (CMRD):
    - Miles of road maintained to standard
    - Miles of road decommissioned
- Trails (CMTL):
    - Miles of trail improved to standard
    - Miles of trail maintained to standard
- Wildlife (NFWF):
    - Miles of inland stream habitat enhanced
    - Acres of non-threatened/endangered terrestrial habitat enhanced
- Vegetations and Watershed Management (NFWV):
    - Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions.

Acronyms

CFR	Code of Federal Regulations
D1	District 1 (Pine Valley Ranger District)
D2	District 2 (Cedar City Ranger District)
D3	District 3 (Powell Ranger District)
D4	District 4 (Escalante Ranger District)
EM	Engineering Manual
FPO	Forest Protection Officer
GPS	Global Positioning System
IA	Implementation Area
LEO	Law Enforcement Officer
MOU	Memorandum of Understanding
MTP	Motorized Travel Plan
NEPA	National Environmental Policy Act
NM	Non-motorized
OHV	Off-highway Vehicle
PC	Probable Cause
U route	Unauthorized route

List of Appendices

All appendices are separate files. All may be updated independently of the body of this plan as needed.

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Appendix B: Maps of District Sign Locations
Appendix C: Maps of Law Enforcement Response Areas
Appendix D: Prescription Descriptions
Appendix E: MTP Personal Digital Assistant (PDA) Instructions
Appendix F: Annual FPO Call List
Appendix G: FPO Direction in the Forest Service Manual
Appendix H: Restrictive Barrier Drawings
Appendix I: Statewide OHV Trail Signing Standards
Appendix J: Motor Vehicle Travel Information Brochure
Appendix K: Travel Restrictions Sign
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Appendix M: Education Event List (2011)
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Appendix B2 – Stormwater Pollution Prevention Plan Framework

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B2 – STORMWATER POLLUTION PREVENTION PLAN FRAMEWORK

B2.1 Introduction

In compliance with criteria in the Environmental Protection Agency's (EPA) Clean Water Act, all construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more, must obtain a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges (Code of Federal Regulations, Title 40, Parts 122 and 123).

NPDES permits are issued by the EPA or a similar authorized state entity. In Utah, the EPA delegates the authority under NPDES program to the state and as such, the NPDES permit obtained in Utah is the Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities and is issued by Utah Department of Environmental Quality (DEQ). The UPDES permit is issued only after submittal of a Notice of Intent (NOI) for construction activities, and preparation of a Stormwater Pollution Prevention Plan (SWPPP) that describes how erosion and sediment transport will be minimized to adjacent waterbodies. Measures to ensure construction activities comply with state and EPA requirements for stormwater management to be incorporated into the SWPPP are outlined in this plan framework.

The Construction Contractor(s) will be responsible for developing a SWPPP, and obtaining coverage under the UPDES Storm Water General Permit for Construction Activities by filing a NOI and appropriate fee with the Utah DEQ in accordance with the NOI instructions.

B2.2 Purpose

The purpose of a SWPPP for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) is to identify and implement storm water pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner minimizing environmental impacts during construction, operation, and maintenance of the Project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement mitigation measures in a manner minimizing environmental impacts. The SWPPP will also spell out design features for environmental protection specific to storing and handling fuel and oil, concrete, and all other hazardous materials. Temporary stabilization methods (silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout construction activities. In addition to conventional methods of erosion control there are numerous new and improved products and the Construction Contractor(s) is encouraged to review these progressive or improved materials in the development and implementation of a SWPPP.

The proper implementation of mitigation measures associated with a SWPPP is imperative during all construction activities. These activities will be conducted in an environmentally sensitive and responsible manner so no discharge of sediment or contaminants may be conveyed as either direct or indirect discharge to wetlands, waters of the United States, or the waters of State of Utah.

Development, implementation, and maintenance of the SWPPP will provide the Construction Contractor(s) with the mechanisms for reducing soil erosion and minimizing pollutants in stormwater during construction.

At a minimum, the SWPPP prepared for the Project will include:

- Defining the characteristics of the site and the type of construction that will be occurring.
- Describing the practices that will be implemented to control erosion and the release of pollutants in stormwater.
- Creating an implementation schedule to ensure the practices described in the SWPPP are in fact implemented, and to evaluate the plan's effectiveness in reducing erosion, sediment, and pollutant levels in stormwater discharge from the site.
- Describing the final stabilization/termination design to minimize erosion and prevent stormwater impacts after construction is complete.

B2.3 Notification Requirements and Implementation

Before construction begins, the Construction Contractor (s) will be responsible for developing a SWPPP, and obtaining coverage under the UPDES Storm Water General Permit for Construction Activities by filing a NOI and appropriate fee with the Utah DEQ in accordance with NOI instructions. The Construction Contractor(s) will be responsible for implementing a SWPPP and will be required to perform routine inspections throughout the duration of construction activities.

The primary intent of the erosion and sediment control measures is to control and minimize erosion at the source. For the Project, the main source of potential stormwater contamination will be erosion of soils from construction activities. It will be the responsibility of the Construction Contractor(s) to implement erosion control measures where necessary to minimize pollutants in stormwater and to keep the Project in compliance with Utah DEQ regulations. It is meant to be a controlled document that identifies potential impacts through inspections and maintenance and also serves as a measure of final site stabilization as part of the requirements for contract termination once work has finished.

A copy of the SWPPP shall remain at the multi-use construction yard(s), and be readily available while the transmission line and substations are under construction, from the start of construction activities until completion of reclamation for the Project.

The Construction Contractor(s) must retain a set of construction site maps (refer to Plan of Development, Volume II – Map Sets 1, 2 and 3) for the duration of the Project and for three years after the Notice of Termination, that delineate the following items:

- Areas of soil disturbance that have been stabilized
- Areas to be graded along with a time schedule
- Areas of potential soil erosion where control practices will be implemented
- Types of control practices and time schedule for implementation
- Locations of any post-construction projects
- Copies of all inspections performed over the duration of the Project

B2.4 Project Modifications

The Construction Contractor is responsible for maintaining an up-to-date SWPPP and shall amend the SWPPP whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters or groundwater. The SWPPP shall also be amended if it is in violation of the Storm Water General Permit for Construction Activities or has not achieved the general objective of eliminating pollutants in stormwater discharges. The SWPPP shall be amended and implemented in a timely manner, but in no case more than 14 days after it has been determined the SWPPP is inadequate. All amendments should be dated and directly attached to the SWPPP. The Utah DEQ may require the discharger to amend the SWPPP.

PacifiCorp, doing business as Rocky Mountain Power (Proponent) must approve the SWPPP and any amendments. Up-to-date copies of the SWPPP must be maintained by the Construction Contractor(s) and will be provided to the Proponent on a monthly basis, as changes occur.

B2.5 Other Specific Stipulations and Methods

Stormwater protection measures (SW) to assure construction activities comply with state and EPA requirements for stormwater management to be incorporated into the SWPPP include:

SW 1 The appropriate UPDES Storm Water General Permit for Construction Activities for construction activities that disturb one acre or more of land will be obtained from Utah DEQ and EPA.

SW 2 The UPDES Storm Water General Permit for Construction Activities requirements will be met. This includes implementing and maintaining appropriate industry standards for minimizing impacts to surface water.

SW 3 One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the UPDES Storm Water General Permit for Construction Activities.

SW 4 The SWPPP will be modified as necessary to account for changing construction conditions.

SW 5 The SWPPP will identify areas with critical erosion conditions that may require special construction activities or additional industry standards to minimize soil erosion.

SW 6 Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.

SW 7 Stormwater industry standards will be maintained on all disturbed lands during construction activities as described in the SWPPP.

SW 8 Approved sediment and erosion control meeting industry standards will be installed and maintained until disturbed areas meet final stabilization criteria.

SW 9 Temporary industry standards will be used to control erosion and sediment at multi-use construction yards (equipment storage yards, fly yards, multi-use construction areas) and substations.

SW 10 The construction schedule may be modified to minimize construction activities in rainsoaked or muddy conditions. Existing roads and trails would be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than 4 inches remaining on the roads from the Project would be repaired at the Bureau of Land Management or U.S. Forest Service Authorized Officer's discretion.

SW 11 Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.

SW 12 Upon completion of construction, 70 percent of the disturbed area along the transmission line within the right-of-way, at substations, and at related facilities will be revegetated with approved vegetation (refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan) as required by the UPDES Storm Water General Permit for Construction Activities and in accordance with the SWPPP. The specific areas to be revegetated will be coordinated with and approved by the BLM and USFS.

SW 13 In areas of drought susceptible soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture.

B2.6 Mitigation Maintenance, Inspection, Repair, and Monitoring

The Construction Contractor(s) will be required to conduct routine maintenance and emergency repair on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. As part of the SWPPP, the Construction Contractor(s) will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or contact of stormwater with storm drainages or surface waters. Schedules will be established for regular inspections of equipment and areas. Inspections of the construction site shall occur within 24 hours following any rainfall event of 0.5 inch or greater to identify areas contributing to a stormwater discharge and to evaluate whether industry standards are in place and functioning properly. For storm events with extended durations, observations shall be performed every 24 hours. During inspections, the Construction Contractor(s) also will determine if the industry standards identified in the SWPPP are adequate and whether additional control practices are needed. All monitoring and inspection records that have been produced in association with this SWPPP will be retained for a period of at least three years.

B2.7 Training

The Construction Contractor(s) will be responsible for the SWPPP implementation, amendments, and revisions. Onsite construction personnel will be responsible for installation and maintenance of onsite mitigation measures.

Properly trained personnel are more capable of preventing spills, responding safely and effectively to accidents, and recognizing situations that could lead to stormwater contamination. The Construction Contractor(s) will be responsible for familiarizing their personnel with the information contained within the SWPPP. Training meetings will need to be held for new personnel who join the Project after the initial training has been provided. The purpose of these meetings will be to review the proper installation methods and maintenance of all erosion control measures to be used for the Project. The monitoring/inspection program and all required maintenance and repair will be conducted by trained personnel.

B2.8 Post-Construction Stormwater Management

Mitigation measures used to reduce pollutants in stormwater discharges after all construction phases have been completed at the sites should take into account local post-construction stormwater management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. Post-construction mitigation measures will be assessed during future line maintenance. During Project maintenance, any areas disturbed by the line installation observed to be eroding sediment into drainages will be assessed for the appropriate permanent mitigation measure to control sediment movement off the disturbed area. Disturbed areas will also be reclaimed per Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

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Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework

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B3 – SPILL POLLUTION PREVENTION, CONTAINMENT, AND COUNTERMEASURES PLAN FRAMEWORK

B3.1 Purpose

PacifiCorp, doing business as Rocky Mountain Power (Proponent), has developed this Spill Prevention, Containment, and Countermeasures (SPCC) Plan Framework for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project).

The SPCC Plan Framework provides preventive procedural actions, mitigation measures, and other specific stipulations and methods to minimize the environmental impact associated with spills or releases of fuel, lubricant, or hazardous materials, during construction and refueling activities and during special refueling activities within 100 meters (328 feet) of waterbodies, wetland boundaries, or within municipal watersheds.

This SPCC Plan Framework serves as the baseline document for the development of a complete SPCC Plan to be developed by the Construction Contractor(s).

B3.2 Responsibility of Implementation

The Proponent, through its Construction Contractor(s) and their inspectors, shall be responsible for the implementation of the procedural actions, mitigation measures, and other specific stipulations and methods. The Construction Contractor(s) will ensure compliance with applicable federal, state, and local regulations applicable to the location of refueling, storage, waste removal, and other activities involving fuels and hazardous materials in coordination with the Proponent. The Construction Contractor's final plan shall be reviewed by the Proponent.

B3.3 Preventive Procedural Actions

The following preventive actions and procedures shall be completed prior to the beginning of construction.

B3.3.1 Storage, Refueling, and Lubrication Areas

Prior to the start of construction in an area, the Construction Contractor(s) shall designate locations for storage, refueling, and lubrication of equipment and materials, minimizing the environmental and safety impacts associated with releases of fuel, lubricants, or hazardous substances. Construction vehicles (trucks, bulldozers, etc.), helicopters, and equipment (pumps, generators, etc.) generally will be fueled and serviced in designated areas at least 100 meters (328 feet) from streams (including intermittent and perennial) and wetlands (including dry or seasonal). Precautions shall be taken to ensure contamination of maintenance sites by fuels, motor oils, grease, etc., does not occur and such materials are contained and properly disposed of offsite. Inadvertent spills of petroleum-based or other toxic materials shall be cleaned up and removed immediately. These areas will be designated using the following actions.

- Storing of fuel, lubricant, or hazardous materials within 100 meters (328 feet) of a waterbody, wetland boundary, or within a designated municipal watershed shall be prohibited, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.

- No potentially hazardous materials, other than essential equipment fuels (e.g., gasoline, diesel, etc.) or standard lubricants (e.g., engine oils, grease, etc.) shall be transported onto the right-of-way or construction area without Compliance Inspection Contractor (CIC) coordination and approval.

- Heavy equipment used in the Project area will be inspected daily for leaks. No leaking equipment may be used within 100 meters (328 feet) of any water of the United States, including wetlands.

- To prevent introduction of petrochemicals into the waters of Utah, fuel, oil, hydraulic fluid, lubricants, and other petrochemicals stored within a floodplain must have an appropriately sized impervious secondary containment system to prevent spills. The permittee shall contain and remove any petrochemical spills, including contaminated soil, and dispose of these materials at an approved disposal site.

B3.3.2 General Petroleum Products, Quantities, and Storage

Typical fuels used in the Project area include diesel and gasoline. Typical lubricants used include engine oil, transmission/drive train oil, hydraulic oil, gear oil, and general lubricating grease. Typical coolants used are glycols (anti-freeze).

Quantity of fuel storage varies, but is usually approximately 6,000 to 12,000 gallons stored in tanks or tankers at contractor yards. Smaller quantities are sometimes stored temporarily in the construction area along the right-of-way. Fuel transport is typically accomplished by the use of fuel trucks for larger quantities and by pickup trucks transporting smaller quantities from 5 to 100 gallons. Lubricants and coolants are generally stored in bulk or retail packaging at contractor yards in quantities typically less than 500 gallons and transported in trucks to the construction area as needed.

Fuel and lubricant containers of all volumes will be stored within secondary containment. Secondary containment will be able to hold the volume of the largest container stored within the containment structure. The secondary containment structure will be able to be covered in the event of precipitation to prevent water from collecting within the basin.

B3.3.2.1 Special Refueling Activities

When unique conditions require refueling within 100 meters (328 feet) of a waterbody, wetland boundary, or within any designated municipal watersheds, a determination of necessary emergency response actions shall be conducted prior to refueling activities. At a minimum, any determination shall be based on the environmental risks of relocating equipment to a refuel/lubrication area versus risks involved with refuel/lubrication in place. The CIC must determine there is no reasonable alternative and the contractor will take appropriate steps (including secondary containment) to prevent spills. In addition, absorbent materials or other spill containment materials shall be available for immediate application prior to commencing refueling activities.

Fuel trucks transporting fuel to onsite equipment will travel only on approved access roads.

Each construction crew shall have on hand sufficient supplies of absorbent, barrier materials, and U.S. Department of Transportation approved containers to allow for rapid containment and recovery of any spill of hazardous material.

If pumps used for hydrostatic testing will be within 100 meters (328 feet) of any waterbody or wetland or within 200 feet of any private water well, the pump will be placed within a portable secondary containment structure capable of capturing any fuel leaks. Also, all refueling of the pump will occur within the secondary containment and all fuel containers will be stored within appropriately sized secondary containment. The pump for secondary containment will be routinely monitored and cleaned of fuel leakage.

B3.3.2.2 Waste Removal

Procedures and individual responsibilities regarding excavation, transportation, and offsite disposal of any soil-contaminated material from a spill of a hazardous material shall be established prior to construction.

Whenever any spill of a hazardous or potentially hazardous substance occurs, the CIC shall be notified. The CIC will help direct further response actions in accordance with Environmental Protection Agency and other regulatory requirements and assist throughout the cleanup and disposal of wastes.

B3.3.3 Spill and Emergency Response for Hazardous Substances

Prior to the beginning of construction, the Construction Contractor(s) shall submit a Spill and Emergency Response for Hazardous Substances Plan to the Proponent for approval. The Spill and Emergency Response for Hazardous Substances Plan shall comply with all applicable federal, state, and local regulations and shall reference the applicable regulations.

The Spill and Emergency Response for Hazardous Substances Plan shall include measures and procedures for characterizing, storing, handling, and disposing of hazardous substances and for emergency response operations.

The Spill and Emergency Response for Hazardous Substances Plan shall include, but not be limited to, spill control, clean up, notification, characterization, and disposal procedures. All Construction Contractor(s) supervisors and personnel handling hazardous substances shall be familiar with these procedures.

- **Spill Control.** Following a spill, efforts shall be made to immediately control the source of the discharge and contain the spill. Absorbent materials shall be deployed with efforts directed to limiting the area of contamination. Every effort shall be made to prevent any spill from reaching wetlands or waterbodies. If a spill should reach surface waters, straw bales, booms, and absorbent materials shall be immediately deployed to contain and reduce downstream migration of the spilled material.

- **Cleanup.** Once a spill is contained, cleanup activities shall begin immediately. All spilled material, contaminated soil, and absorbent material shall be picked up and contained for disposal. In the event of a large spill or a spill that migrates into surface waters, waste cleanup specialists

shall be called to assist in cleanup efforts. Prior to beginning construction, the contractor shall be required to submit a list of cleanup contractors for approval.

- **Spill Report Form.** Following any spill, the contractor shall submit a spill report form for distribution to the Construction Contractor(s) Environmental Reporting Coordinator (refer to Section A6.3.3.7 of Appendix A6 – Environmental Compliance Management Plan).

- **Disposal.** The Construction Contractor(s) will provide a list of commercial disposal facilities for Proponent's reference. The Construction Contractor is responsible for arranging disposal with these facilities or other approved facilities as appropriate.

- **Waste Identification.** All waste identification/characterization, handling, labeling, storage, manifesting, transportation, record-keeping, and disposal shall be in accordance with all applicable federal, state, and local regulations and ordinances and shall be the responsibility of the contractor.

- **Documentation.** The Construction Contractor(s) will be required to provide the Proponent with copies of sample results, shipping manifests, chain-of-custodies, and bill-of-lading for wastes transported for disposal on request. The documentation will also describe the type and quantity of waste material disposed of.

- **Material Safety Data Sheet.** Contractor shall have available at each spread office a Material Safety Data Sheet for diesel fuel, gasoline, lubrication oil, and other hazardous materials used on the Project.

- **Field Notification.** As soon as possible after beginning spill control and cleanup activities, the Construction Contractor(s) shall notify the CIC. The CIC will determine if the spill is reportable. Notification of appropriate agencies will be the responsibility of the Construction Contractor(s).

- **Utah's Hazardous Substance Reportable Requirements.**

  - Spill of one kilogram of "acutely hazardous waste," which includes:
    - "P" wastes,
    - F999 wastes (chemical warfare agents), and
    - "F" wastes with a hazard code of "H" (identified in 40 Code of Federal Regulations 261.31 and include wastes from the production or use of chlorphenols and chlorobenzenes) (Utah Administrative Code R315-9-1(b)).

  - Spill of 100 kilograms of other hazardous waste. Notify for a spill of a lesser quantity if there is a potential threat to human health or the environment (Utah Administrative Code R315-9-1(b)).

  - Spill of 25 gallons of lubrication oil.

  NOTE: Any amount of any material in such quantity as may, with reasonable probability, injure or be detrimental to human health, animal, plant life, property, or may unreasonably interfere with the public welfare or the use of property must be reported. This includes chemical, biohazardous, petroleum-product, and sewage spills and incidents. In addition to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or groundwater, also must be reported.

- **Agency Notification.** Agency notification will be made of reportable spills. Written reports of the spills into state waters of oil or hazardous substances and materials will be provided as directed. The Proponent will review any written letters to the state or agencies prior to submittal.

B3.4 Mitigation Measures

The mitigation measures provided in Section B3.4.1 – Design Features of the Project for Environmental Protection and Section B3.4.2 – Other Specific Stipulations and Methods will serve as the baseline measures for inclusion in the complete SPCC Plan to be developed by the Construction Contractor(s).

B3.4.1 Design Features of the Project for Environmental Protection

Design features of the Project for environmental protection are applied Project-wide and will address many of the concerns associated with spills developed in accordance with the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) standards. Following is a description of design features of the Project for environmental protection to address spills during the construction and operation of Project facilities.

SPCC 1 Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.

SPCC 2 Refueling and storing potentially hazardous materials would not occur within a 100-meter (328-foot) radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 100-meter (328-foot) radius of any riparian area or water body. Spill preventive and containment measures or practices would be incorporated as needed.

B3.4.2 Other Specific Stipulations and Methods

Other specific stipulations and methods are resource-specific protection measures that supplement the design features of the Project for environmental protection in this SPCC Plan Framework.

SPCC-3 Construction industry standard practices will be used for spill prevention and containment.

SPCC-4 Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.

SPCC-5 All multi-use construction yards will contain fueling areas with containment of 150 percent capacity of the largest vehicle to be refueled therein. Fueling of vehicles would take place within the transmission line right-of-way under guidance of the right-of-way grant/special-use authorization.

SPCC-6 If an upland spill occurs during construction, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated materials will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 meters (328 feet) away from any wetland or waterbody until proper disposal is arranged.

SPCC-7 If a spill occurs which is beyond the capability of onsite equipment and personnel, an Emergency Response Contractor will be identified and available to further contain and clean up the spill.

SPCC-8 For spills in standing water floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.

SPCC-9 If pre-existing contamination is encountered during operations, work will be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination, responsible party, and local, state, and federal regulations will determine the appropriate cleanup method(s) for these areas.

SPCC-10 The complete SPCC Plan will include details on the types and quantities of absorbent and protective materials (e.g., Visqueen plastic, booms) that must be readily available to construction personnel and requirements for the restocking of materials.

SPCC-11 Pumps and temporary fuel tanks for the pumps will be stored in secondary containment. Containment will provide a minimum volume equal to 150 percent of the volume of the largest storage vessel located in the yard.

SPCC 12 Should it become necessary to perform vehicle or equipment maintenance onsite, these activities will avoid identified Utah prairie dog colonies by a minimum of 350 feet.

B3.5 Emergency Contacts

B3.5.1 Federal

National Response Center (Washington, D.C.)	800-424-8802
U.S. Environmental Protection Agency Region 8 Emergency Response Center	303-293-1238/800-424-8802
BLM, Cedar City Field Office	435-865-3000
BLM, St. George Field Office	435-688-3200
BLM, Fillmore Field Office	435-743-3100
BLM, Richfield Field Office	435-896-1500
USFS – Fishlake National Forest	435-896-9233
USFS – Dixie National Forest	435-865-3700

B3.5.2 State of Utah

Utah Department of Environmental Quality (DEQ) – Division of Solid and Hazardous Waste	801-538-6170
Utah DEQ – Division of Environmental Response and Remediation	801-536-4100
Utah DEQ – Division of Water Quality	801-538-6146
Utah DEQ – Division of Radiation Control	801-536-4250

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Appendix B4 – Historic Properties Treatment Plan

B4 – HISTORIC PROPERTIES TREATMENT PLAN

Appendix B4 is a confidential appendix that will contain the Historic Properties Treatment Plan (HPTP) that is being developed for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project. As identified in the Programmatic Agreement, the Historic Properties Treatment Plan will provide information on the following:

- A brief description of the proposed action
- A list of the properties where data recovery is to be carried out
- A list of properties that will require archaeological monitoring during construction
- An archaeological construction monitoring plan
- Research questions to be addressed
- Methods to be used during fieldwork for data recovery
- A cultural resource unanticipated discovery plan
- Methods to be used during analysis
- Reporting and curation of artifacts
- Schedule for the submission of progress reports
- Recommendations for treatment of cultural resources during operation and maintenance of the Project
- Qualifications of consultants employed to undertake the work
- Training protocols for contractors

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Appendix B5 – Blasting Plan Framework

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B5 – BLASTING PLAN FRAMEWORK

B5.1 Introduction

The Blasting Plan Framework outlines methods to mitigate risks and potential impacts associated with blasting procedures that may be required for construction of the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project). Also included in this section is a preliminary outline for the Blasting Plan to be prepared by the Construction Contractor(s) and submitted to PacifiCorp, doing business as Rocky Mountain Power (Proponent), if blasting is required. If blasting is to occur on federal lands, the Proponent will submit the Blasting Plan to the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) for final review and approval.

B5.2 Purpose

Once completed, the Blasting Plan will provide construction crews, the Compliance Inspection Contractor (CIC), and environmental monitors with Project-specific information concerning blasting procedures, including the safe use and storage of explosives. The objective of the Blasting Plan is to prevent adverse impacts on human health and safety, property, and the environment that could potentially result from the use of explosives during Project construction.

Blasting may be needed in certain areas with rocky terrain to excavate tower footings, prepare substation pads, and for construction of access roads. Blasting will be used only in areas where traditional excavation and earth moving equipment and practices are unable to accomplish the excavation. In addition, the Construction Contractor(s) may elect to use implosive sleeves during line stringing activities to fuse conductor wire together. Areas where blasting likely will occur will be identified based on the geologic setting of the proposed alignment as identified in the geotechnical investigation for the Project.

B5.3 Regulatory Compliance and Procedures

The Construction Contractor(s) will be responsible for preparing and implementing the Blasting Plan and must comply with all applicable federal, state, and local laws and regulations that pertain to explosives. No blasting operations will be undertaken until approval and appropriate permits have been obtained from the applicable agencies. Failure to comply with such laws could result in substantial financial penalty and/or imprisonment.

The Construction Contractor(s) will use qualified, experienced, and licensed blasting personnel that will perform blasting using current and professionally accepted methods, products, and procedures to maximize safety during blasting operations. Blasting procedures will be carried out according to, and in compliance with, applicable laws and will be closely monitored by the CIC.

B5.4 Blasting Plan Guidance

Prior to blasting, the Construction Contractor(s) shall prepare a Blasting Plan for review and approval by the Proponent, BLM, USFS, CIC, and any other relevant jurisdictional organization (i.e., School and Institutional Trust Lands Administration, county, city), as applicable. The plan will address safety as well

as design for production and controlled blasting. The Blasting Plan also will contain the full details of the drilling and blasting patterns, as well as the controls the Construction Contractor proposes to use for both controlled and production blasting. Review of the plan by the parties shall not relieve the Construction Contractor(s) of the responsibility for the accuracy and adequacy of the Blasting Plan when implemented in the field. A minimum of two weeks should be allowed for review and approval of the Blasting Plan by the BLM, USFS, and other appropriate agencies. If at any time changes are proposed to the Blasting Plan, the Construction Contractor(s) shall submit them to the Proponent, who will then submit the proposed changes to the BLM and/or USFS, and CIC for review and approval.

B5.4.1 Overview of Blasting Principles

B5.4.1.1 Locations

The Construction Contractor(s) will avoid blasting in potential rockslide/landslide areas to the maximum extent possible and will consult with a geologist before blasting in such areas. A common practice for fusing conductor wire together is the use of implosive sleeves, which use explosive materials. The Construction Contractor(s) should be knowledgeable about this practice and should coordinate with the CIC, particularly with regard to the locations of these practices.

B5.4.1.2 Materials

The Construction Contractor(s) will determine the specific materials needed for blasting operations. These materials will be included on the hazardous materials list for the Project, and their use and storage will comply with applicable federal, state, and local laws and regulations.

B5.4.2 Blasting Plan Contents

The Blasting Plan prepared by the Construction Contractor(s) shall contain the following minimum information in the following format:

1. Purpose
2. Scope of the Blasting
3. Definitions
4. Responsibilities
    a. Management Organization
    b. Authority Responsibility
    c. Blaster in Charge (licensed in Utah)
5. Location of Blasting Area
    a. Description of Blasting Area
    b. Description of Bedrock and Geological Problems
    c. Description of Adjacent Utility Facilities
6. Environmental Considerations
7. Safety Considerations
    a. General
    b. Warning Signs and Signals
    c. Procedures around Adjacent Utility Facilities
    d. Traffic Control
    e. Emergency Blast Initiation

   f. Safety Publications
   g. Fire Prevention
   h. Safety Hazards
   i. Emergency Services and Communication
   j. Minor or Nonemergency Medical Care
   k. First Aid
8. Risk Management
   a. Protection of Adjacent Utility Facilities
   b. Lightning
   c. Flyrock (Note: Flyrock will be controlled with blasting mats.)
   d. Carbon Monoxide
   e. Ground Vibrations
   f. Seismically Sensitive Receptors
   g. Pre-blast Survey and Inspection
   h. Blast Damage Complaints
   i. Airblast
9. Blast Design Concept
   a. Station limits of proposed shot
   b. Plan and section views of proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameter, blasthole angles, lift height, and sub-drill depth
   c. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming
   d. Initiation sequence of blastholes, including delay times and delay system
   e. Manufactures' data sheets for all explosives, primers, and initiators to be employed
10. Procedures
   a. Delivery of Explosives
   b. Storage of Explosives and Blasting Agents
   c. Blast Hole Drilling
   d. General Handling of Explosives
   e. Blast Hole Loading
   f. Notification
   g. Initiation of Blast
   h. Misfire Management
   i. Test Blasting
11. Records
12. Attachments

B5.5 Safety Procedures

Safe storage and use of explosive materials will be a top priority during construction. The safety measures discussed in this section are intended to prevent theft and/or vandalism of the explosive materials, protect against fire, and prevent personal injury and property damage. These measures are intended as general guidelines.

B5.5.1 Storage

Explosives must be stored in an approved structure (magazine) and kept cool, dry, and well-ventilated. The Proponent's Construction Contractor(s) will provide the Bureau of Alcohol, Tobacco, Firearms, and

Explosives Salt Lake City Field Office in Utah with a list of dates and locations for the explosives and blasting agent storage facilities to be used on the Project at least 14 days before the establishment of such storage facilities.

At a minimum, the following storage requirements will be implemented:

- Explosives must be stored in an approved structure (magazine), and storage facilities will be bullet, weather, theft, and fire resistant.
- Magazine sites will be located in remote (out-of-sight) areas with restricted access; kept cool, dry, and well ventilated; and will be properly labeled and signed.
- Detonators will be stored separately from other explosive materials.
- The most stringent spacing between individual magazines will be determined according to the guidelines contained in the Bureau of Alcohol, Tobacco, Firearms, and Explosives publication or state or local explosive storage regulations.
- Both the quantity and duration of temporary onsite explosives storage will be minimized.

The Construction Contractor(s) will handle and dispose of dynamite storage boxes in accordance with relevant federal, state, and local laws.

B5.5.2 Blasting Notification and Safety Procedures

The Construction Contractor(s) will obtain a permit from the appropriate county as needed, for the period when blasting may occur and will comply with the following requirements developed by the BLM and USFS:

- The holder shall publish a proposed blasting schedule in the local newspaper one week prior to any blasting taking place. The schedule shall identify the location, dates, and times blasting will occur. No blasting shall occur outside of the published schedule, except in emergency situations.

- The holder shall post warning signs at all entry points for the Project. Warning signs shall include information on blasting, including the general hours blasting might take place, and audible signals to be used warning of impending blasting and to indicate the site is all clear.

- Access points to areas where blasting will take place will be blocked to prevent access by the public at least 30 minutes prior to blasting. The site shall be swept 5 minutes prior to blasting to ensure no unauthorized personnel have wandered onto the site. An audible warning signal, capable of carrying for 0.5 mile, shall be used at least 2 minutes prior to blasting. An “all-clear” signal will be given once it has been determined the area is safe.

- Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as needed.

- Damages that result solely from the blasting activity will be repaired or the owner fairly compensated.

A determination that the blasting area is all clear of danger will be derived once the blasting area has been inspected for undetonated or misfired explosives. The blasting area will also be inspected for hazards such as falling rock and rock slides. Once the area has been inspected and these issues have been addressed, the all-clear signal as described above will sound and persons will be able to safely re-enter the blast zone.

Additional safety precautions will be developed to address site-specific conditions at the time of the blast. Special attention will be given to preventing potential hazards in the blasting area resulting from flying rock, destabilized walls or structures, presence of low flying aircraft, and dispersion of smoke and gases.

B5.5.3 Fire Safety

The presence of explosive materials on the Project site could potentially increase the risk of fire during construction. Special precautions will be taken to minimize this risk in conjunction with the Fire Protection Plan (Appendix B11), including but not limited to the following:

- Prohibiting ignition devices within 50 feet of explosives storage areas
- Properly maintaining magazine sites so they are clear of fuels and combustible materials, well ventilated, and fire-resistant
- Protecting magazines from wildfires that could occur in the immediate area
- Posting fire suppression personnel at the blast site during high fire danger periods
- Prohibiting blasting during extreme fire danger periods

B5.5.4 Transportation of Explosives

Transportation of explosives will comply with all applicable federal, state, and local laws, including Title 49 of the Code of Federal Regulations, Chapter III. These regulations are administered by the U.S. Department of Transportation and govern the packaging, labeling, materials compatibility, and safety of transported explosives, as well as driver qualifications. In general, these regulations require vehicles carrying explosive materials be well-maintained, properly marked with placards, and have a nonsparking floor. Materials in contact with the explosives will be nonsparking, and the load will be covered with a fire- and water-resistant tarpaulin. Vehicles also must be equipped with fire extinguishers and a copy of the Emergency Response Guidebook (U.S. Department of Transportation 2008). Every effort will be made to minimize transportation of explosives through congested or heavily populated areas.

Prior to loading an appropriate vehicle for carrying explosives, the vehicle shall be fully fueled and inspected to ensure its safe operation. Refueling of vehicles carrying explosives shall be avoided. Smoking shall be prohibited during the loading, transporting, or unloading of explosives. In addition, the following specific restrictions apply to transport of other items in vehicles carrying explosives:

- Tools may be carried in the vehicle, but not in the cargo compartment.
- Detonation devices can, in some cases, be carried in the same vehicle as the explosives, but they must be stored in a specially constructed compartment(s).
- Batteries and firearms shall never be carried in a vehicle with explosives.
- Vehicle drivers must comply with the specific laws related to the materials being transported.

Vehicles carrying explosives shall not be parked or left unattended except in designated parking areas with approval of the State Fire Marshall. When traveling, vehicles carrying explosives will avoid congested areas to the maximum extent possible.

B5.6 Other Specific Stipulations and Methods

Blasting has the potential to cause environmental impacts. Implementing the blasting (BLA) protection measures listed below will mitigate these impacts.

BLA 1 The Blasting Plan will identify blasting procedures, including safety, use, storage, and transportation of explosives that will be employed where blasting is needed, and will specify the locations of needed blasting.

BLA 2 All blasting will be performed by registered licensed blasters who will be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives and blast vibration limits for nearby structures, utilities, wildlife, and fish (where blasting is conducted in waterbodies).

BLA 3 Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats will be used when needed to prevent damage and injury from flyrock.

BLA 4 Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as needed.

BLA 5 Damage that results from blasting will be repaired or the owner fairly compensated.

BLA 6 Proper blasting techniques, including proper cover of charges, should be followed.

BLA 7 Matting will be used in rock blasting operations to minimize and control dust

BLA 8 Notification of blasting activities will be provided to nearby residents.

BLA 9 The Construction Contractor(s) will prepare site specific blasting plans.

BLA 10 The blasting plan for the proposed Project will also stipulate the following:

- Explosives will not be stored on federal land without prior written permission from the land-management agency. Copies of this permission will be posted on each magazine.
- Seventy-two hours advance notice of blasting activities will be given to the land-management agency, railroads, highway departments, and local communities; occupants of nearby residences, buildings, and businesses; and local farmers.
- Warning signs will be erected and maintained at all approaches to the blast areas and flaggers will be stationed on all roadways passing within 1,000 feet of blasting activities.
- Explosives will not be primed or fused until just before use.

- Blasting will take place during daylight hours only and will be monitored with three axis seismographs to ensure safe vibration levels are not exceeded.

- Vibration measured as peak particle velocity will not exceed 4 inches per second adjacent to an underground pipeline and 2 inches per second for any aboveground structure (including water wells).

Stipulations developed by the BLM and USFS will be followed for protection of sensitive species as well as the required notification discussed above in Section B5.5.2 – Blasting Notification and Safety Procedures. The Construction Contractor(s) will notify the CIC and environmental monitors 72 hours prior to scheduled blasting and comply with the permit requirements for notification by appropriate counties, including any requirements for dust abatement. Regular field meetings will be held with the CIC and environmental monitors to review the process and its implementation. If changes are needed to the notification process, changes will be made to facilitate protection of environmental resources.

B5.7 Literature Cited

U.S. Department of Transportation. 2008. Emergency Response Guidebook. Available at http://www.ehso.com/hmerg.php.

Appendix B6 – Plant and Wildlife Species Conservation Measures Plan

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B6.0 – PLANT AND WILDLIFE SPECIES CONSERVATION MEASURES PLAN

B6.1 Introduction

The purpose of the Plant and Wildlife Species Conservation Measures Plan for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) is to assist the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and project personnel in meeting their obligations to protect biological resources during the planning, design, and implementation of the proposed Project. The plan includes information on (1) regulatory requirements and agency concerns pertaining to biological resources and (2) specific plant and wildlife species conservation (PWC) mitigation measures to reduce Project-related impacts on biological resources.

The plan provides information on anticipated impacts on plant and wildlife resources associated with the Project and identifies the mitigation measures, stipulations, protocols, and/or techniques required to reduce these impacts. The plan does not identify mitigation measures for aquatic biological resources. Perennial waters have been spanned in design of the Project and activities within 100 meters (328 feet) of perennial waters are limited to improvement of existing roads, vegetation management, and limited temporary work areas. Only a small fraction of intermittent and ephemeral drainages will be affected by ground disturbance. Protection for water resources, including mitigation measures identified in Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan, have met agency requirements to protect aquatic species. The plan is not intended to provide comprehensive, location specific restrictions within the Project area.

B6.2 Regulatory Framework

The following provides a brief overview of federal and state legislation and regulatory compliance applicable to biological resources in the Project area that have been considered in the development of this plan.

B6.2.1 Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) of 1973, the U.S. Fish and Wildlife Service (FWS) has authority over actions that may affect the continued existence of a species federally listed as Threatened or Endangered. Take of federally listed species is prohibited without specific exceptions or permits issued under Sections 7 or 10 of the ESA. Under the ESA, the definition of “take” includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. FWS has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Federal agencies must consult with the FWS under Section 7 of the ESA on actions they authorize, fund, or carry out to insure these actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

BLM, as the lead federal agency in preparation of an EIS for the Project, consulted with FWS on the potential effects of the Project on federally listed species. The FWS concurred on November 9, 2012, that

the Project may affect, but is not likely to adversely affect, Utah prairie dog. The Project may effect but is not likely to adversely affect California condor. The Project will not jeopardize California condor in designated nonessential experimental population areas. The Project will have no effect on all other federally listed species.

B6.2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 United States Code [U.S.C.] 668) applies primarily to taking, hunting, and trading activities that involve bald or golden eagles. The act prohibits the taking of any individuals of these two species, as well as any part, nest, or egg. The term "take" as used in the act includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (16 U.S.C. 668).

B6.2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory bird, part, nest, or egg of such bird listed in wildlife protection treaties among the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former USSR. This act also contains a clause that prohibits baiting or poisoning of these bird species. A list of species covered by MBTA can be found in Title 50, Code of Federal Regulations Sec. 10.13. The MBTA applies to many bird species, including raptors, and protects them from prohibited activities during construction, operation, and maintenance of the Project.

B6.2.4 Bureau of Land Management – Land Use Plans

The BLM Resource Management Plans provide management guidance and desired population and habitat conditions for wildlife on BLM-administered land. BLM field offices monitor habitat conditions and manage crucial wildlife habitat jointly with the Utah Division of Wildlife Resources (UDWR). The BLM manages habitat for wildlife species by assessing the ability of a land area to supply the forage, cover, water, and space requirements of wildlife. Trend studies determine the directional change of a habitat from or toward desired conditions. These habitat and trend studies (BLM Manual 6630.2, 6630.3, and 6630.4) allow the BLM to adjust management prescriptions through grazing or other public uses to improve habitat.

B6.2.5 Bureau of Land Management – Special Status Species Management Policy

BLM Manual 6840, Special Status Species Management Policy, authorizes each BLM State Director to designate and protect sensitive species on lands managed by the BLM. Under this authority, the Utah BLM has developed lists of sensitive wildlife and plant species for BLM-administered lands in Utah. Species designated as sensitive by the BLM may require specific protection measures.

B6.2.6 Bureau of Land Management – Executive Order 13112

Executive Order 13112 (Invasive Species) requires federal agencies prevent the introduction and spread of invasive species and "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

B6.2.7 Bureau of Land Management – Executive Order 11990

Executive Order 11990 (Wetlands) requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

B6.2.8 Executive Order 13186

Executive Order 13186 (Migratory Birds) requires federal agencies to protect migratory birds and to consider impacts on migratory bird species during Project planning. Refer to full text in Attachment A.

B6.2.9 Sections 401, 402, and 404 of the Clean Water Act

Sections 401, 402, and 404 of the Clean Water Act regulate drainage and discharge of dredged or fill materials into waters of the United States, including wetlands.

B6.2.10 Federal Land Policy Management Act of 1976

In accordance with the Federal Land Policy Management Act, BLM and USFS must make land use decisions based on principles of multiple use and sustained yield. As such, a grant of right-of-way must be limited to its necessary use and must contain terms and conditions that reflect BLM's and USFS's management responsibilities under the Federal Land Policy Management Act, including minimizing impacts on fish and wildlife habitat.

B6.2.11 Wild Free-Roaming Horses and Burros Act of 1971

Wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; they contribute to the diversity of life forms within the Nation and enrich the lives of the American people. It is the policy of the Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found as an integral part of the natural system of the public lands.

B6.2.12 National Forest Management Act of 1976

The National Forest Management Act of 1976, as amended, and its implementing regulations under 36 Code of Federal Regulations 219, consolidate and articulate USFS's management responsibilities for lands and resources of the National Forest System. The National Forest Management Act of 1976 requires each national forest develops a management program and identifies Management Indicator Species. The

Management Indicator Species are used to establish forest plan objectives for wildlife and fish habitats and to estimate the effects of forest plans and projects on overall forest health.

B6.2.13 BLM Instruction Memorandum UT-IM-2010-071

Instruction Memorandum (IM) UT-IM-2010_071 identifies management actions necessary at some sites to ensure environmentally responsible exploration, authorization, leasing, and development of renewable and nonrenewable energy resources within the ranges of the Gunnison sage-grouse and greater sage-grouse.

B6.2.14 U.S. Forest Service Manual 2670

Manual 2670 directs each Regional Forester to designate sensitive species on public lands administered by USFS. Per the manual, sensitive species are defined "as plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce an existing distribution of the species."

The USFS Manual 2670 also establishes the following management direction and objectives for USFS sensitive species:

- Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on USFS-administered lands.
- Review programs and activities as part of the National Environmental Policy Act of 1969 process, through a biological evaluation, to determine their potential effect on sensitive species.
- Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

The Project's compliance with these objectives and direction was evaluated in the Biological Evaluation, which was completed by USFS prior to the Record of Decision. The mitigation measures described in this Plant and Wildlife Species Conservation Measures Plan will ensure that the Project is constructed, operated, and maintained in compliance with USFS Manual 2670.

B6.2.15 State Statute 23-14-1

State statutes include Section 23-14-1 of the Utah Code, which directs the UDWR to protect, propagate, manage, conserve, and distribute protected wildlife throughout the state. This statute also authorizes UDWR to identify and delineate crucial seasonal wildlife habitats.

B6.2.16 State Administrative Rule R657-48

Administrative Rule R657-48 directs UDWR to maintain the Utah Sensitive Species List. This list is comprised of species (1) that are listed, or candidates for listing, pursuant to the ESA, (2) for which a conservation agreement is in place, or (3) whose population viability is threatened in Utah ("wildlife species of concern").

B6.2.17 State Partners in Flight Avian Conservation Strategy 2.0

Utah Partners in Flight Avian Conservation Strategy, Version 2.0, prioritizes avian species and their habitats and sets objectives designed to determine which species are most in need of immediate and continuing conservation effort. The other purpose of the strategy is to recommend appropriate conservation actions required to accomplish stated objectives.

B6.2.18 State Comprehensive Wildlife Conservation Strategy

Utah Comprehensive Wildlife Conservation Strategy directs the integration and implementation of ongoing and planned management actions that will conserve native species and thereby prevent the need for additional listings.

B6.2.19 Executive Order 13443

Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) requires federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

B6.2.20 Memorandums of Understanding to Promote Conservation of Migratory Birds

BLM MOU WO-230-2010-04 (*Memorandum of Understanding between the U.S. Department of the Interior Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds*) directs the BLM to evaluate the effects of BLM's actions on migratory birds on a project level and implement approaches to reduce these effects.

Forest Service Agreement #08-MU-1113-2400-264 (*Memorandum of Understanding Between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds)* identifies specific activities where cooperation between these parties will contribute to the conservation of migratory birds and their habitats.

B6.3 Plant and Wildlife Concerns and Issues

Biological resource concerns and issues were identified throughout the planning stages of the Project. Several sensitive biological resources that potentially occur within the Project area were identified through discussions with biologists from the BLM, USFS, FWS, and UDWR. These included:

- Federally listed species
- Wildlife species managed by the agencies as sensitive or Management Indicator Species
- Raptors and their nesting habitats
- Crucial seasonal habitats for pronghorn, mule deer, and elk
- Migratory birds
- Plant species managed by the agencies as sensitive or Management Indicator Species
- Noxious weeds
- Wild horses and burros

The BLM and USFS performed resource studies in 2010, 2011, and 2012 to determine the presence of sensitive biological resources that may be affected by the Project. These studies identified the presence of BLM, USFS, and state sensitive plant and wildlife species, federally listed and candidate wildlife species, active raptor nests, and noxious weeds within the Project area. Federal agencies have required mitigation measures for some impacts identified to ensure the Project is consistent with management objectives for these resources.]

This plan identifies mitigation measures that will be implemented to protect specific plants and wildlife in the Project area. Mitigation measures, including stipulations to minimize disturbance levels and reclamation practices, can also be found in Section 5 – Environmental Mitigation Measures and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan of the Plan of Development (POD).

B6.3.1 Plan Priorities and Goals

Mitigation measures for the Project were designed to reduce three types of Project-related impacts on plant and wildlife resources: (1) disturbance and displacement, (2) habitat loss and fragmentation, and (3) plant and wildlife mortality. This section describes the impact types evaluated for each resource and identifies mitigation goals used to develop and apply mitigation measures. General mitigation measures are described in Section 5 – Environmental Mitigation Measures of this POD.

B6.3.1.1 Disturbance and Displacement

The Project will result in disturbance and displacement of plants and wildlife within and adjacent to the Project area. Disturbance and displacement of wildlife includes temporary changes in habitat use related to construction activities and long-term changes related to the presence of Project features and increased human activity associated with operation and maintenance of the Project and new public access. Disturbance and displacement of plant species includes effects related to increases in erosion and dust associated with the Project, the creation of temporary work areas during construction, maintenance, and physical disturbance associated with new public access.

Mitigation Goal

Implement measures compatible with Project design standards to minimize disturbance and displacement of wildlife as a result of construction, operation, and maintenance activities in the Project area.

B6.3.1.2 Habitat Loss and Fragmentation

The Project will result in the permanent loss and fragmentation of plant and wildlife habitat due to clearing and grading for access roads, work areas, and substation sites; installation of transmission structures; and vegetation management within the right-of-way. These actions will remove or alter plant and wildlife habitat within the right-of-way to accommodate Project features. Habitats outside of the right-of-way could experience reduced suitability for plant and wildlife species as the linear Project may fragment previously connected populations. The Project may also impact plant and wildlife habitat by increasing the potential for the establishment and spread of noxious weeds and the frequency of human-caused wild fire.

Mitigation Goal

Implement measures compatible with Project design standards to address potential impacts associated with habitat loss and fragmentation.

B6.3.1.3 Plant and Wildlife Mortality

Implementation of the Project will result in mortality of plants and wildlife in the Project area. Plant species and wildlife species with limited mobility will experience mortality during vegetation management, clearing, and grading operations associated with construction, operations, and maintenance of the Project. Wildlife species that occupy burrows may experience mortality if burrows are damaged by heavy machinery. The Project will also result in increased potential for avian mortality due to collisions with shield wires/fiber optical ground wire and/or conductors. The presence of transmission line structures will increase perching and roosting habitat for raptors and ravens, and may lead to increased predation of wildlife that are prey to these species. Use of herbicides for vegetation management within the right-of-way will result in plant mortality. Additionally, the creation of new access roads will increase public accessibility and associated plant mortality from trampling and vehicle trespass and may increase wildlife mortality from hunting, poaching, and vehicle collisions.

Mitigation Goal

Implement measures compatible with Project design features for environmental protection to reduce the potential for increased plant and wildlife mortality.

B6.4 Biological Resource Mitigation Measures

This section of the plan describes mitigation measures designed to achieve the goals for plant and wildlife resources previously identified in Section B6.3.1 – Plan Priorities and Goals. This discussion includes (1) an overview of each resource's presence in the Project area, (2) resource specific agency concerns and impacts for which mitigation was identified, and (3) mitigation measures to address concerns and reduce resource impacts during the design, construction, operation, and maintenance of the Project.

At least one biological monitor will be present on each construction spread to ensure impacts on plant and wildlife resources are minimized and mitigation measures are used. The number of monitors will depend on the resource being impacted and the BLM or USFS Authorized Officer's determination of a sufficient monitoring level. Activities which occur in biologically sensitive areas or during periods of heightened sensitivity (e.g., occupied sensitive species habitat, migratory bird nesting seasons, brood-rearing seasons, fawning seasons, etc.), are likely to require additional monitoring.

The responsibilities of the Biological Monitor during construction would include, but not be limited to, the following:

- Preconstruction wildlife surveys
- Identification of resource presence/absence in biologically sensitive areas
- Daily briefing of construction crews outlining restrictions associated with biologically sensitive areas
- Daily contact with the environmental inspectors

- Immediate notification of the Compliance Inspection Contractor (CIC) and authorized agency (BLM, USFS, UDWR, and/or the FWS) in the event construction operations violate terms and conditions of the POD and/or Project Record of Decision
- A summary of plan compliance given to BLM, USFS, UDWR, and FWS biologists on completion of the construction phase of the Project

B6.4.1 Raptors

B6.4.1.1 Background

Resource inventories performed for the Project EIS identified many raptor species known to nest and forage in the Project area. All raptors are protected under the MBTA. Eagles are afforded additional protections under the Bald and Golden Eagle Protection Act.

Raptor nest surveys were conducted along the entire Project area in April 2012. A total of 336 raptor nests, including 66 active nests, were identified within 0.5 mile of the Project area during these surveys. Surveys for peregrine falcon and bald eagle nests were conducted in suitable habitat between 0.5 and 1.0 mile of the Project area, though no peregrine falcon or bald eagle nests were located in this area. As outlined in Section 6.4.1.3, mitigation measures will be applied to protect active raptor nests during construction and maintenance activities. Activities should not occur within the spatial/seasonal buffer of any nest (occupied or unoccupied) when raptors are in the process of courtship and nest-site selection. The location of active nests and the species that occupy each nest may or may not change from year to year. Locations of seasonal restrictions around active nests depicted in Volume II – POD Map Set 2 represent active nests in 2012 and should be used only for planning purposes to identify areas where raptors are likely to nest in subsequent nesting seasons. The construction contractor(s) will be required to conduct raptor nest surveys prior to conducting ground disturbing activities if construction occurs within the raptor nesting season (December 1 to September 30)). The raptor nest survey protocol is described in Attachment B. BLM and USFS will supply the construction contractor(s) with the nest data collected in 2012 upon request.

If a nest site within a territory is deemed unoccupied after sufficient surveys have been conducted, as described in Attachment B – Preconstruction Raptor Nest Survey Protocol, human activity could be allowed within the nesting area in the current breeding season and prior to the beginning of the next year's breeding season. This period varies dependent on raptor species. BLM and USFS concurrence is required before raptor nests or territories can be deemed unoccupied.

B6.4.1.2 Concerns

Project-related impacts to raptors identified as significant concerns of federal agencies include (1) destruction of nests and loss of nesting habitat associated with construction of access roads, the transmission line, and substations and vegetation management operations; (2) disruptions to nesting activities and loss of raptor productivity due to Project-related increases in human activity and new public access; (3) increased mortality due to poaching associated with increased public access; and (4) fragmentation and loss of high quality raptor habitat.

B6.4.1.3 Mitigation Measures

Mitigation measures to minimize potential adverse effects to raptors were developed in consultation with the BLM, USFS, FWS, and UDWR. Mitigation will be implemented that includes limiting removal of nesting habitat, conducting raptor nest surveys to identify active nests prior to construction, implementing seasonal restrictions for construction and maintenance activities where active nests have been identified, and restricting public use of access roads. Specific mitigation measures for plant and wildlife species conservation (PWC) are included below.

The BLM or USFS Authorized Officer or his/her designated representative may permit construction and maintenance activities to be performed within seasonal and spatial restrictions outlined in PWC 2. Written permission to perform work within these restrictions may be obtained from the BLM or USFS Authorized Officer or his/her designated representative, in consultation with agency resource specialists, as outlined in Attachment C – Adaptive Wildlife Management Plan If the federal agency grants an exception or modification (through the variance process) of a mitigation measure to PacifiCorp, doing business as Rocky Mountain Power (Proponent), daily monitoring of permitted activities and resource conditions will be required in the affected area unless otherwise specified by the BLM or USFS Authorized Officer or his/her designated representative.

Design and Engineering

PWC 1 Guy wires on portions of the transmission line that cross through, or are adjacent to, susceptible raptor nest territories and brood rearing areas will be marked with agency-approved flight diverters to increase visibility and further minimize potential for impacts/collisions. These areas will be determined through consultation with the appropriate agencies. Examples of flight diverters can be viewed in Attachment D).

Construction, Operation, and Maintenance

PWC 2 To minimize disturbance to nesting raptors, no construction or maintenance activities will be performed during the raptor nesting season (December 1 to September 30) (Attachment B – Preconstruction Raptor Nest Survey Protocol). If construction and maintenance activities cannot be avoided during the nesting season, preconstruction raptor nest surveys and nest monitoring using agency approved methods will be performed to identify active nests (Attachment B – Preconstruction Raptor Nest Survey Protocol). Spatial avoidance buffers and seasonal restrictions for active nests will be applied in accordance with FWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (construction restrictions range from December 1 to September 30, depending on the species) (Romin and Much 2002; BLM UT-IM 2006-096). The CIC will ensure compliance with seasonal and spatial restrictions during Project construction.

PWC 3 Clearing of trees in and adjacent to the right-of-way will be minimized to limit disturbance to timber resources, reduce visual contrast, reduce habitat fragmentation, and protect raptor nesting and foraging habitat, to the extent practicable to satisfy conductor-clearance requirements (i.e., PacifiCorp Vegetation Management Standards). Trees and other vegetation will be removed selectively

(e.g., wire zone-border zone technique) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate. Trees will be removed selectively in riparian habitats to protect biological resources, including raptor nesting habitat.

Special attention shall be given to vegetation clearing on USFS-administered lands along the area of the I-70 corridor between structures 125 and 195 at major drainages (e.g., Cove Creek, Shingle Creek, Snow Creek, Fish Creek, and Mill Creek) and where the cleared vegetation has the potential to create a notched or gun-sited view in relationship to the existing vegetation from sensitive viewing locations, as identified by the Fishlake National Forest Landscape Architect or approved representative to minimize impacts to the visual and ecological resources within this area. Prior to right-of-way preparation and vegetation clearing in this area, the Construction Contractor(s) shall facilitate a preconstruction meeting with the Proponent, the Fishlake National Forest Landscape Architect or approved representative, the Construction Contractor(s) or Subcontractor(s) responsible for right-of-way clearing, the Environmental Inspector, and the Lead CIC to discuss vegetative management objectives for this area. The Construction Contractor(s) shall coordinate with the Fishlake National Forest Landscape Architect or approved representative to ensure the Fishlake National Forest Landscape Architect or approved representative is present, at the discretion of the Fishlake National Forest Landscape Architect or approved representative, during vegetation clearing activities on USFS-administered lands in this area. Refer to Section 5, Table 5-2, mitigation measures 4 and 11 and Volume II – POD Map Set 2 Vegetation Clearing Monitoring and Selective Mitigation for Vegetation Clearing plan and profile mapping.

PWC 4 Prior to construction, the CIC will instruct all personnel on the protection of cultural, ecological, and other natural resources including (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources; and (c) the purpose and necessity of protecting them.

PWC 5 Where feasible, access roads that traverse sensitive habitats will be gated or otherwise blocked to limit public access.

B6.4.2 Big Game Habitats

B6.4.2.1 Background

Resource inventories performed for the Project EIS identified important seasonal habitats for mule deer and pronghorn along the proposed route as described below.

Seasonal Mule Deer Habitat

- Crucial winter range: Links 027, 030, 033, 045, 063, 064, 066, 068, 220, 221, 275, 305, 320, 345, 348, 441, and 455.
- Crucial summer range: Links 270 and 272

Seasonal Pronghorn Habitat

- Crucial year-long range: Links 155, 160, 163, 165, 220, 320, 330, 345, 348, 350, 381, 385, 386, and 455

B6.4.2.2 Concerns

Project related impacts to big game species identified as significant concerns of federal agencies include (1) loss of habitat associated with construction of access roads, the transmission line, and substations; (2) disturbance and displacement of animals during sensitive periods due to increases in Project-related human activity and new public access; and (3) mortality due to increases in hunting and poaching associated with increased public access.

B6.4.2.3 Mitigation Measures

Mitigation measures to minimize potential adverse effects to big game seasonal habitats were developed in conformance with applicable land use plans for the Project and in consultation with the BLM, USFS, and UDWR. Specific mitigation measures that will be implemented include restricting public use of Project-related access roads and seasonal restrictions for construction and maintenance activities in crucial big game habitats. Below are specific PWC mitigation measures for big game identified in the EIS.

The BLM or USFS Authorized Officer or his/her designated representative may permit construction and maintenance activities within seasonal and spatial restrictions outlined in PWC 6. Written permission to perform work within these restrictions may be obtained from the BLM or USFS Authorized Officer(s) or his/her designated representative, in consultation with agency resource specialists, as outlined in Attachment C – Adaptive Wildlife Management Plan. If the federal agency grants an exception or modification (through the variance process) of a mitigation measure to the Proponent, daily monitoring of permitted activities and resource conditions will be required in the affected area unless otherwise specified by the BLM or USFS Authorized Officer or his/her designated representative.

Construction, Operation, and Maintenance

PWC 6 To minimize disturbance to big game during sensitive periods, construction and maintenance activities will be restricted in designated crucial habitats (refer to Attachment E – Seasonal Restrictions) as follows:

- No construction or maintenance activities within mule deer crucial winter range from November 1 to May 15 (UDWR 2010).
- No construction or maintenance activities within mule deer crucial summer range from May 1 to June 15 (UDWR 2010).
- Coordinate with UDWR and BLM when construction or maintenance activities are planned within pronghorn crucial year-long habitat between April 15 and June 15

PWC 7 Where feasible, access roads that traverse sensitive habitats (i.e., crucial winter range) will be gated or otherwise blocked to limit public access.

PWC 8 There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction or maintenance. Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. To reduce habitat loss and fragmentation, existing or overland access routes are to be used for construction and maintenance in these select areas. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM or USFS Authorized Officer or his/her designated representative.

PWC 9 To limit new or improved access into the Project area and reduce habitat loss and fragmentation, all new or improved access (e.g., blading, widening existing access) that would not be required for maintenance will be closed or rehabilitated using the most effective and least environmentally damaging methods, appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Plan. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs.

OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (refer to Attachment B of Appendix B1 – Traffic and Transportation Plan).

PWC 10 To reduce habitat loss and fragmentation, the Construction Contractor(s) will use overland access to the greatest extent possible in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes would be staked to a minimum width of 14 feet wide and as specified in the POD.

B6.4.3 Migratory Birds

B6.4.3.1 Background

Migratory birds breed, nest, and forage in a variety of habitats identified in the EIS as being present in the Project area. Nearly all bird species are protected under the MBTA, and many species are managed as sensitive species by the BLM and USFS. Specific migratory bird nesting locations were not identified during the EIS process but are known to occur throughout the Project area. Nesting locations will be identified and protected during the construction, operation, and maintenance of the Project.

B6.4.3.2 Concerns

Project-related impacts to migratory birds identified as significant concerns of federal agencies include (1) loss of habitat associated with construction of access roads, the transmission line, and substations and vegetation management operations; (2) mortality and loss of production due to destruction of eggs and occupied nests in work areas; and (3) loss of production due to occupied nest disturbance during construction or maintenance activities.

B6.4.3.3 Mitigation Measures

Mitigation measures to minimize potential adverse effects to migratory birds and their nests were developed in consultation with the FWS, BLM, and USFS. Mitigation measures that will be implemented include limiting removal and clearing of vegetation, reclamation of disturbed areas, preconstruction nest surveys in work areas, and implementation of restrictions and buffers around active nests. Migratory bird surveys must occur at each spread where active construction is occurring during the nesting season. PWC mitigation measures listed below were developed to protect migratory birds in the Project area.

Design and Engineering

PWC 11 Guy wires on portions of the transmission line that cross through, or are adjacent to, waterfowl habitat and or habitat for high priority avian species will be marked with agency-approved flight divers to increase visibility and further minimize potential for impacts/collisions. These areas will be determined through consultation with the appropriate agencies. Examples of flight-diverts can be viewed in Attachment C.

Construction, Operation, and Maintenance

PWC 12 To minimize disturbance to nesting migratory birds, construction and maintenance activities will be performed outside of the primary nesting season (February 15 to July 31) (Attachment E – Seasonal Restrictions). If construction and maintenance activities must be performed during the nesting season, surveys for migratory bird nests must occur at each spread where active construction is scheduled to occur. Surveys must be completed by a biological monitor and take place within 72 hours of the initiation of any work. No construction or maintenance activities within the FWS's recommendation of 100 feet from nesting (non-raptor) migratory birds from February 15 to July 31. These restrictions will be enforced within 100 feet of active

nests unless the nest fails or until the young successfully fledge, as determined by the biological monitor. Mitigation measures that will be applied to raptor nests are outlined in Section B6.4.1 – Raptors. The CIC will ensure compliance with seasonal and spatial restrictions during Project construction.

PWC 13 To minimize disturbance to migratory birds and potential impacts on construction schedules, vegetation may be removed in certain areas (e.g., multi–use construction yards) outside of the primary nesting season (February 15 to July 31). Written permission to perform vegetation clearing or blading may be obtained from the BLM or USFS Authorized Officer or his/her designated representative, in consultation with agency resource specialist(s).PWC 14To reduce habitat loss and fragmentation, there will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction or maintenance. Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM or USFS Authorized Officer or his/her designated representative.

PWC 15 Clearing of vegetation in and adjacent to the right-of-way will be minimized to reduce loss and fragmentation of migratory bird nesting habitat, to the extent practicable to satisfy conductor-clearance requirements (i.e., PacifiCorp Vegetation Management Standards). Trees and other vegetation will be removed selectively (e.g., wire zone-border zone technique) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate. Trees will be removed selectively in riparian habitats to protect biological resources, including migratory bird nesting habitat.

PWC 16 To reduce habitat loss and fragmentation, the Construction Contractor(s) will use overland access to the greatest extent possible in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD.

PWC 17 To limit new or improved access into the Project area and reduce habitat loss and fragmentation, all new or improved access (e.g., blading, widening existing access) that would not be required for maintenance will be closed or rehabilitated using the most effective and least environmentally damaging methods, appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders), revegetating the surface

of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Plan. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs.

OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (refer to Attachment B of Appendix B1 – Traffic and Transportation Plan).

B6.4.5 Special Status Wildlife Species

B6.4.5.1 Background

Resource inventories performed for the Project EIS identified special status wildlife species that potentially occur in the Project area. Special status wildlife species include species listed as threatened, endangered, or candidates under the ESA; classified as sensitive by the State of Utah, BLM, or USFS; and/or identified as Management Indicator Species by the USFS.

The selected route crosses habitats mapped by UDWR as crucial sage-grouse brood-rearing and winter habitat. Field surveys were performed to identify greater sage-grouse leks (2010 and 2012), dark kangaroo mouse habitat (2012), and raptor nests (2012), as well as Utah prairie dog (2010), pygmy rabbit (2012), and kit fox (2012) burrows along the selected route. These surveys, as well as analysis performed in the EIS, identified special status wildlife species listed in Table B6-1 could potentially occur along the route. Mitigation measures were designed to reduce Project impacts on sensitive habitats identified during field surveys.

TABLE B6-1
SPECIAL STATUS AND USFS MANAGEMENT INDICATOR SPECIES LIKELY TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Likelihood of Occurrence
Special Status Species		
American white pelican	*Pelecanus erythrorhynchos*	Transients may occur – no preconstruction surveys performed
Arizona toad	*Bufo microscaphus*	May occur – no preconstruction surveys performed
Bald eagle	*Haliaeetus leucocephalus*	Likely to occur – no active nests detected during preconstruction surveys; winter roosting may occur
Bonneville cutthroat trout	*Oncorhynchus clarki utah*	Known to occur – no preconstruction surveys performed
Burrowing owl	*Athene cunicularia*	Known to occur – active nests detected during preconstruction surveys
California Condor	*Gymnogyps californianus*	Not likely to occur – no preconstruction surveys performed
Cutthroat trout	*Oncorhynchus clarki*	Known to occur – no preconstruction surveys performed

TABLE B6-1 SPECIAL STATUS AND USFS MANAGEMENT INDICATOR SPECIES LIKELY TO OCCUR IN THE PROJECT AREA		
Common Name	**Scientific Name**	**Likelihood of Occurrence**
Dark kangaroo mouse	*Microdipodops megacephalus*	Likely to occur – potentially suitable habitat detected during preconstruction surveys
Desert Sucker	*Catostomus clarki*	May occur – no preconstruction surveys performed
Ferruginous hawk	*Buteo regalis*	Known to occur – active nests detected during preconstruction surveys
Greater sage-grouse	*Centrocercus urophasianus*	Known to occur – active lek detected during preconstruction surveys and an incidental observation of a single sage-grouse hen was recorded near the town of Newcastle in 2012
Kit fox	*Vulpes macrotis*	Known to occur – active den detected in Project area in 2010; however, no active dens detected along the selected route during kit fox surveys in 2012
Long-billed curlew	*Numenius americanus*	Likely to occur – no preconstruction surveys performed
Peregrine falcon	*Falco peregrinus anatum*	Known to occur – single active nest detected during 2012 surveys within 0.5 mile of selected route; no active nest detected in 0.5 to 1.0 mile of selected route
Pygmy rabbit	*Brachylagus idahoensis*	Not likely to occur – no individuals detected during preconstruction surveys
Short-eared owl	*Asio flammeus*	Known to occur – individuals observed during preconstruction surveys
Southern leatherside chub	*Lepidomeda aliciae*	May occur – no preconstruction surveys performed
Spotted bat	*Euderma maculatum*	Likely to occur – breeding and foraging habitat present
Townsend's big-eared bat	*Corynorhinus townsendii*	Likely to occur – breeding and foraging habitat present
Utah prairie dog	*Cynomys parviden*	Not likely to occur – no colonies detected during surveys conducted for Section 7 consultation
Western toad	*Bufo boreas*	May occur – no preconstruction surveys performed
USFS Management Indicator Species		
Black-throated grey warbler	Dendroica nigrescens	Likely to occur - no preconstruction surveys performed
Brewer's sparrow	*Spizella breweri*	Likely to occur – no preconstruction surveys performed
Brown trout	*Salmo trutta*	Known to occur – no preconstruction surveys performed
Hairy woodpecker	*Picoides villosus*	Likely to occur – no preconstruction surveys performed
Lincoln's sparrow	*Melospiza lincolnii*	Likely to occur – no preconstruction surveys performed
MacGillivray's warbler	*Oporornis tolmiei*	May occur – no preconstruction surveys performed
Macroinvertebrates	Multiple species	Known to occur – no preconstruction surveys performed
Mountain bluebird	*Sialia currucoides*	Likely to occur – no preconstruction surveys performed
Mule deer	*Odocoileus hemionus*	Known to occur – no preconstruction surveys performed
Northern flicker	*Colaptes auratus*	Likely to occur – no preconstruction surveys performed
Northern goshawk	*Accipiter gentilis*	May occur – no nesting habitat but may forage in Project area
Rainbow trout	*Oncorhynchus mykiss*	Known to occur – no preconstruction surveys performed
Rocky Mountain elk	*Cervus canadensis*	Known to occur – no preconstruction surveys performed
Sage thrasher	*Oreoscoptes montanus*	Likely to occur – no preconstruction surveys performed
Song sparrow	*Melospiza melodia*	Likely to occur – no preconstruction surveys performed
Vesper sparrow	*Pooecetes gramineus*	Likely to occur – no preconstruction surveys performed
Virgin spinedace	*Lepidomeda mollispinis*	Known to occur – no preconstruction surveys performed

TABLE B6-1 SPECIAL STATUS AND USFS MANAGEMENT INDICATOR SPECIES LIKELY TO OCCUR IN THE PROJECT AREA		
Common Name	**Scientific Name**	**Likelihood of Occurrence**
Western bluebird	*Sialia mexicana*	Likely to occur – no preconstruction surveys performed
Wild turkey	*Meleagris gallopavo*	Likely to occur – no preconstruction surveys performed
Yellow warbler	*Dendroica petechia*	Likely to occur – no preconstruction surveys performed

B6.4.5.2 Concerns

Project-related impacts to special status wildlife species identified as significant concerns of federal agencies include (1) habitat loss and fragmentation associated with construction of access roads, the transmission line, and substations; vegetation management operations; and spread of non-native species; (2) loss of production due to disturbance and displacement of wildlife during breeding periods as a result of increased Project-related human activity and new public access; (3) mortality due to vehicle collisions and destruction of occupied nests and burrows with heavy machinery; and (4) mortality of species preyed on by avian predators that use transmission towers as hunting perches.

B6.4.5.3 Mitigation Measures

Mitigation measures to minimize potential adverse effects to special status species and their habitats were developed in consultation with the BLM, USFS, FWS, and UDWR. Mitigation measures include limiting removal and clearing of vegetation, minimizing new or improved accessibility, tower design and siting modification, the use of helicopters during construction and seasonal restrictions. The specific mitigation measures below will be implemented for the Project.

Design and Engineering

PWC 18 Special status species will be considered in accordance with management policies set forth by appropriate land-management agencies (e.g., BLM, USFS, FWS, etc.). Surveys for special status species will be conducted along the proposed transmission line route and associated facilities (e.g., access and spur roads, multi-use construction yards, etc.) as agreed on by the agencies. Where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and its habitat, which may include altering the placement of roads or towers where practicable or spatial and temporal restrictions on constructions activities and as approved by the landowner and CIC, as well as monitoring activities.

PWC 19 The tower design will be modified or an alternative tower type will be used to address site-specific constraints (e.g., terrain, airports, raptor perching etc.).

- All guy wires used on structures within occupied sage-grouse habitat will be marked with agency-approved flight diverters to increase visibility and further minimize potential for impacts/collisions. Examples of flight diverters can be viewed in Attachment D.
- Agency-approved perch deterrents would be installed on all transmission towers within 4.0 miles of active sage-grouse leks to reduce raptor and raven

use of the line and the potential predation of sage-grouse. Examples of perch deterrents can be viewed in Attachment D.

PWC 20 Structures will be located to allow conductors to span identified sensitive features within the limits of standard tower design. Structures will be placed so as to avoid sensitive features, including, but not limited to, wetlands, riparian areas, water courses, hazardous substance remediation, and cultural sites. Avoidance measures may include selective tower placement, spanning sensitive features, or realigning access routes.

Construction, Operation, and Maintenance

PWC 21 To minimize impacts on sage-grouse, the following seasonal restrictions will apply to construction and maintenance activities occurring within UDWR-mapped sage-grouse habitats:

- No construction or maintenance activities within 4.0 miles of sage-grouse leks between February 15 and July 31.
- No construction or maintenance activities within UDWR-mapped crucial sage-grouse winter habitat between November 15 and March 15.
- No construction or maintenance activities would occur within UDWR-mapped sage-grouse habitat, between March 15 and June 15, to avoid impacts on nesting sage-grouse.

PWC 22 During construction and maintenance activities, a speed limit of 20 mph would be posted and implemented on all roads in occupied sage-grouse habitat to reduce potential for sage-grouse mortality due to collisions with moving construction and maintenance vehicles.

PWC 23 Utah prairie dog preconstruction surveys will be conducted a minimum of 2 weeks prior to surface disturbance within suitable habitat between towers 445 and 610 to verify ESA Section 7 consultation conclusions, unless species occupancy and distribution information is complete, current, and available. Surveys must be completed between April 1 and August 31. Methodology for conducting preconstruction surveys, methods for determining suitable habitat and Utah prairie dog surveyor qualifications are included in Attachment F – Utah Prairie Dog Preconstruction Methodology.

PWC 24 To reduce habitat loss and fragmentation, there will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction or maintenance. Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM or USFS Authorized Officer or his/her designated representative.

PWC 25 To limit new or improved access into the Project area and reduce habitat loss and fragmentation, all new or improved access (e.g., blading, widening existing access)

that will not be required for maintenance will be closed or rehabilitated using the most effective and least environmentally damaging methods, appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Plan. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs.

OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (refer to Attachment B of Appendix B1 – Traffic and Transportation Plan).

PWC 26 Clearing of vegetation in and adjacent to the right-of-way will be minimized to limit disturbance to wildlife habitat and reduce habitat loss and fragmentation, to the extent practicable to satisfy conductor-clearance requirements (i.e., PacifiCorp Vegetation Management Standards). Trees and other vegetation will be removed selectively (e.g., wire zone-border zone technique) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate. Trees will be removed selectively in riparian habitats to protect biological resources.

PWC 27 All construction vehicle movement outside the right-of-way will be restricted to pre-designated access, contractor acquired access, or public roads.

PWC 28 Helicopter placement of towers during construction and helicopter patrol and maintenance will be used where practicable to reduce surface impacts in environmental constraint areas or steep terrain locations.

PWC 29 To reduce habitat loss and fragmentation, overland access will be used to the greatest extent possible during construction and maintenance in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD.

PWC 30 Where feasible, access roads that traverse sensitive habitats (e.g., crucial winter range) will be gated or otherwise blocked to limit public access.

PWC 31 The use of herbicides for vegetation management and noxious weed control would be prohibited within 500 feet of sensitive plant occurrences. Appendix B 10 – Noxious Weed Plan identified species-special restrictions for biologically sensitive habitats.

B6.4.6 Special Status Plant Species

B6.4.6.1 Background

Resource inventories performed for the Project EIS identified special status plant species that potentially occur in the Project area. Special status plant species include species listed as threatened, endangered, or candidates under the ESA; classified as sensitive by the BLM or USFS; and identified as Management Indicator Species by the USFS.

Habitat for plant species listed as threatened, endangered, or candidate species under the ESA and those identified as Management Indicator Species by the USFS were not identified in the Project area in the EIS. USFS and BLM sensitive plant species identified in the EIS that are likely to occur on the selected route include Elsinore buckwheat (*Eriogonum batemanii* var. *ostlundii*), Sevier townsendia (*Townsendia jonesii var. lutea*), Utah phacelia (*Phacelia utahensis*), and Ward penstemon (*Penstemon wardii*).

Field surveys were performed in 2011 and 2012 to identify occurrences of USFS and BLM sensitive plants along the selected route. Sensitive plant locations were mapped and mitigation measures were designed and implemented to reduce Project impacts to these resources. Sensitive plant species identified during field surveys along the selected route are shown in Table B6-2 and sensitive plant populations are mapped as Environmentally Sensitive Areas in Volume II – POD Map Sets 1 and 2.

TABLE B6-2
SPECIAL STATUS PLANTS WITH LIKELIKHOOD OF OCCURRENCE ALONG THE PROJECT ROUTE

Common Name	Scientific name	Likelihood of Occurrence
Pink egg milkvetch	*Astragalus oophorus* var. *lonchocalyx*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Welsh milkvetch	*Astragalus welshii*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Mound cryptanth	*Cryptantha compacta*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Nevada willowherb	*Epilobium nevadense*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Elsinore buckwheat	*Eriogonum batemanii* var. *ostlundii*	Known to occur – detected during preconstruction surveys
Wirestem buckwheat	*Eriogonum pharnaceoides* var. *cervinum*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Spoon-leaf buckwheat	*Eriogonum spathulatum* var. *kayeae*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Franklin's penstemon	*Penstemon franklinii*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys

TABLE B6-2 SPECIAL STATUS PLANTS WITH LIKELIKHOOD OF OCCURRENCE ALONG THE PROJECT ROUTE		
Common Name	**Scientific name**	**Likelihood of Occurrence**
Pinyon penstemon	*Penstemon pinorum*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Ward's penstemon	*Penstemon wardii*	Known to occur – detected during preconstruction surveys
Jones globemallow	*Sphaeralcea caespitosa* var. *caespitosa*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys
Sigurd townsendia	*Townsendia jonesii var. lutea*	May occur – unoccupied potentially suitable habitat detected during preconstruction surveys
Utah phacelia	*Phacelia utahensis*	Not likely to occur – no individuals or suitable habitat detected during preconstruction surveys

B6.4.6.2 Concerns

Project-related impacts to special status plant species identified as significant concerns of federal agencies include (1) habitat loss and fragmentation associated with construction of access roads, the transmission line, and substations; vegetation management operations; alteration of local hydrology; and spread of non-native species; (2) disturbance and displacement associated with creation and use of temporary work areas and vehicle trespass off of new public access; and (3) mortality due to removal of special status plant species during construction and maintenance operations.

B6.4.6.3 Mitigation Measures

Surveys designed to locate special status plant species were conducted in 2012. Mitigation measures to minimize potential adverse effects to special status plants were developed in consultation with the BLM and USFS. Mitigation measures include limiting disturbance outside designated work areas and avoiding disturbance of special status plants and/or communities. The specific mitigation measures below will be implemented for the Project.

Design and Engineering

PWC 32 Special status species will be considered in accordance with management policies set forth by appropriate management agencies (e.g., BLM, USFS, FWS, etc.). Surveys for special status plant species will be conducted along the proposed transmission line route and associated facilities (e.g., access and spur roads, multi-use construction yards, etc.) as agreed on by the agencies. Where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and its habitat, which may include altering the placement of roads or towers, where practicable and as approved by the landowner and CIC, as well as monitoring activities.

PWC 33 The alignment of any new access roads or cross-country routes in designated areas will follow the landform contours where practicable to minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, providing that such alignment does not impact other resource values.

PWC 34 To reduce mortality of sensitive plants, as well as habitat loss and fragmentation, structures will be located to allow conductors to span identified sensitive features within the limits of standard tower design. Structures will be placed so as to avoid sensitive features, including, but not limited to, wetlands, riparian areas, water courses, sensitive plant populations, and cultural sites. Avoidance measures may include selective tower placement, spanning sensitive features, or realigning access routes.

Construction, Operation, and Maintenance

PWC 35 To reduce mortality of sensitive plants, as well as habitat loss and fragmentation, there will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction or maintenance. Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM or USFS Authorized Officer or his/her designated representative.

PWC 36 To limit new or improved access into the Project area, all new or improved access (e.g., blading, widening existing access) that would not be required for maintenance will be closed or rehabilitated using the most effective and least environmentally damaging methods, appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Plan. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs.

OHV deterrents are to be located at the beginning of each new temporary access route on the Dixie National Forest (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (refer to Attachment B of Appendix B1 – Traffic and Transportation Plan).

PWC 37 Overland access will be used to the greatest extent possible during construction and maintenance in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for

removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD.

PWC 38 All construction vehicle movement outside the right-of-way will be restricted to pre-designated access, contractor acquired access, or public roads.

PWC 39 Helicopter placement of towers during construction and helicopter patrol and maintenance will be used where practicable to reduce surface impacts in environmental constraint areas or steep terrain locations.

PWC 40 Clearing of the right-of-way will be minimized to reduce visual contrast and avoid sensitive features including, but not limited to, land uses, biological resources, and cultural sites. In select areas, the right-of-way width will be modified (within the limits of PacifiCorp Vegetation Management Standards and standard tower design) to protect sensitive resources, but current land uses would be allowed to continue unabated, provided the use meets applicable standards.

Special attention shall be given to vegetation clearing on USFS-administered lands along the area of the I-70 corridor between structures 125 and 195 at major drainages (e.g., Cove Creek, Shingle Creek, Snow Creek, Fish Creek, and Mill Creek) and where the cleared vegetation has the potential to create a notched or gun-sited view in relationship to the existing vegetation from sensitive viewing locations, as identified by the Fishlake National Forest Landscape Architect or approved representative to minimize impacts to the visual and ecological resources within this area. Prior to right-of-way preparation and vegetation clearing in this area, the Construction Contractor(s) shall facilitate a preconstruction meeting with the Proponent, the Fishlake National Forest Landscape Architect or approved representative, the Construction Contractor(s) or Subcontractor(s) responsible for right-of-way clearing, the Environmental Inspector, and the Lead CIC to discuss vegetative management objectives for this area. The Construction Contractor(s) shall coordinate with the Fishlake National Forest Landscape Architect or approved representative to ensure the Fishlake National Forest Landscape Architect or approved representative is present, at the discretion of the Fishlake National Forest Landscape Architect or approved representative, during vegetation clearing activities on USFS-administered lands in this area. Refer to Section 5, Table 5-2, mitigation measures 4 and 11 and Volume II – POD Map Set 2 Vegetation Clearing Monitoring and Selective Mitigation for Vegetation Clearing plan and profile mapping.

PWC 41 The use of herbicides for vegetation management and noxious weed control shall be limited to hand application methods (e.g., backpack spraying) that target individual plants in areas within 500 feet of sensitive plant occurrences unless otherwise approved by the BLM or USFS Authorized Officer or his/her designated representative. Weed management within 500 feet of sensitive plant occurrences shall occur under the supervision of a qualified botanist in order to ensure general herbicide is not used within or near sensitive plant occurrences.

PWC 42 A qualified botanist, meeting the requirements for Botany Occupational Series 0430 at a GS 7 level or higher, shall be present during all ground disturbance activities occurring within 500 feet of all mapped sensitive plant occurrences. The botanical monitor is to make construction personnel aware of the presence of sensitive plants and ensure that impacts on plants do not exceed impacts described in the Project Biological Evaluation.

PWC 43 Where ground disturbance occurs on tower, tensioning, and pulling locations (or other flat or low angle work areas) within sensitive plant populations, equipment shall be used to collect and store topsoil onsite prior to all other grading, ground disturbance, and construction activities. During reclamation, the collected topsoil from these areas shall be redistributed over the same areas from which it was taken after site recontouring and decompaction.

PWC 44 In order to favor recolonization by sensitive plant species and reduce competition among sensitive plants and other plant species, the Construction Contractor(s) shall prepare site-specific revegetation/reseeding/soil stabilization plans for all areas disturbed by construction or maintenance within 500 feet of mapped sensitive plant occurrences. The site-specific revegetation/reseeding/soil stabilization plans shall be approved by the BLM or USFS Authorized Officer or his/her designated representative prior to implementation. The plans shall be designed to ensure sensitive plant species are re-established and are not disadvantaged. The plans shall include proposed seed mixes, seeding application rates, seeding methodologies, seeding timeframes, and any other revegetation or soil stabilization techniques (e.g., natural recolonization, alternative seeding, supplemental planting, supplemental watering, supplemental mulch, surface pocking, the use of soil stabilizers). The seed mixes shall be developed in consultation with the BLM or USFS botanist, favor the sensitive plant species, and be based on the site-specific vegetation found on the undisturbed areas adjacent to the areas to be revegetated or reseeded.

B6.4.7 Wild Horses and Burros

B6.4.7.1 Background

Potential impacts to the Chloride Canyon Herd Management Area (HMA) were identified during analysis of data collected from the wild horse and burro program within the BLM Utah State Office for the Project EIS. The selected route crosses 9.5 miles of the 44,285-acre HMA in the southern part of the Project area. Wild horses and burros within the HMA are managed by the BLM. There is an estimated population of 59 horses and no burros in the HMA (BLM 2010).

B6.4.7.2 Concerns

Project-related impacts to wild horses and burros identified as significant concerns of federal agencies include (1) loss of habitat associated with construction of access roads, the transmission line, and substations and (2) disturbance and displacement of animals during sensitive periods due to increases in Project-related human activity associated with construction and maintenance activities and new public access.

B6.4.7.3 Mitigation Measures

Mitigation measures to minimize potential adverse effects to wild horses and burros were developed in conformance with applicable land use plans for the Project and in consultation with the BLM. Specific mitigation measures that will be implemented include restricting public use of Project-related access roads and seasonal restrictions for construction and maintenance activities in wild horse and burro management areas. Below are specific PWC mitigation measures for wild horses and burros identified in the EIS.

The BLM or USFS Authorized Officer or his/her designated representative may permit construction and maintenance activities to be performed within seasonal and spatial restrictions outlined in PWC 40. Written permission to perform work within these restrictions may be obtained from the BLM or USFS Authorized Officer or his/her designated representative, in consultation with agency resource specialists, as outlined in Attachment C – Adaptive Wildlife Management Plan. If the federal agency grants an exception or modification (through the variance process) of a mitigation measure to the Proponent, daily monitoring of permitted activities and resource conditions will be required in the affected area unless otherwise specified by the BLM or USFS Authorized Officer or his/her designated representative.

Construction, Operation, and Maintenance

PWC 45 To minimize disturbance to wild horses during foaling season (refer to Attachment E – Seasonal Restrictions), construction and maintenance activities will be restricted as follows:

- No construction or maintenance activities within wild horse HMAs from March 1 to June 15.
- When feasible, construction and maintenance operations within wild horse HMAs will be avoided from June 15 to July 1.

PWC 46 Where feasible, access roads that traverse sensitive habitats (i.e., crucial winter range) will be gated or otherwise blocked to limit public access.

PWC 47 To limit new or improved access into the Project area and reduce habitat loss and fragmentation, all new or improved access (e.g., blading, widening existing access) that would not be required for maintenance will be closed or rehabilitated using the most effective and least environmentally damaging methods, appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.

PWC 48 To reduce habitat loss and fragmentation, overland access will be used to the greatest extent possible during construction and maintenance in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include

mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width of 14 feet wide and as specified in the POD.

B6.5 Literature Cited

Romin, L.A., and J.A. Muck. 2002. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. U.S. Fish and Wildlife Service, Utah Field Office Salt Lake City, January 2002 update.

U.S. Department of the Interior (USDI), Bureau of Land Management (BLM). 2010. Personal communication from Dan Fletcher, Range Conservationist, Cedar City Field Office BLM, via BLM/USFS Sigurd to Red Butte EA comment period. March 2010.

_____. 1999. St. George Resource Management Plan. St. George Field Office, Utah. USDI. St. George, Utah.

Utah Division of Wildlife Resources (UDWR). 2010. Personal communication between C. Gaughn, EPG, and R. Boswell, UDWR, regarding seasonal wildlife restrictions.

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Attachment A
Responsibilities of Federal Agencies to Protect Migratory Birds

Federal Register
Vol. 66, No. 11
Wednesday, January 17, 2001

Presidential Documents

Title 3—

The President

Executive Order 13186 of January 10, 2001

Responsibilities of Federal Agencies To Protect Migratory Birds

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in furtherance of the purposes of the migratory bird conventions, the Migratory Bird Treaty Act (16 U.S.C. 703–711), the Bald and Golden Eagle Protection Acts (16 U.S.C. 668–668d), the Fish and Wildlife Coordination Act (16 U.S.C. 661–666c), the Endangered Species Act of 1973 (16 U.S.C. 1531–1544), the National Environmental Policy Act of 1969 (42 U.S.C. 4321–4347), and other pertinent statutes, it is hereby ordered as follows:

Section 1. *Policy.* Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of Americans who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. Such conventions include the Convention for the Protection of Migratory Birds with Great Britain on behalf of Canada 1916, the Convention for the Protection of Migratory Birds and Game Mammals-Mexico 1936, the Convention for the Protection of Birds and Their Environment- Japan 1972, and the Convention for the Conservation of Migratory Birds and Their Environment-Union of Soviet Socialist Republics 1978.

These migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act (Act), the United States has implemented these migratory bird conventions with respect to the United States. This Executive Order directs executive departments and agencies to take certain actions to further implement the Act.

Sec. 2. *Definitions.* For purposes of this order:

(a) ''Take'' means take as defined in 50 C.F.R. 10.12, and includes both ''intentional'' and ''unintentional'' take.

(b) ''Intentional take'' means take that is the purpose of the activity in question.

(c) ''Unintentional take'' means take that results from, but is not the purpose of, the activity in question.

(d) ''Migratory bird'' means any bird listed in 50 C.F.R. 10.13.

(e) ''Migratory bird resources'' means migratory birds and the habitats upon which they depend.

(f) ''Migratory bird convention'' means, collectively, the bilateral conventions (with Great Britain/Canada, Mexico, Japan, and Russia) for the conservation of migratory bird resources.

(g) ''Federal agency'' means an executive department or agency, but does not include independent establishments as defined by 5 U.S.C. 104.

(h) ''Action'' means a program, activity, project, official policy (such as a rule or regulation), or formal plan directly carried out by a Federal agency. Each Federal agency will further define what the term ''action'' means with respect to its own authorities and what programs should be included

in the agency-specific Memoranda of Understanding required by this order. Actions delegated to or assumed by nonfederal entities, or carried out by nonfederal entities with Federal assistance, are not subject to this order. Such actions, however, continue to be subject to the Migratory Bird Treaty Act.

(i) ''Species of concern'' refers to those species listed in the periodic report ''Migratory Nongame Birds of Management Concern in the United States,'' priority migratory bird species as documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 C.F.R. 17.11.

Sec. 3. *Federal Agency Responsibilities.* (a) Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird populations.

(b) In coordination with affected Federal agencies, the Service shall develop a schedule for completion of the MOUs within 180 days of the date of this order. The schedule shall give priority to completing the MOUs with agencies having the most substantive impacts on migratory birds.

(c) Each MOU shall establish protocols for implementation of the MOU and for reporting accomplishments. These protocols may be incorporated into existing actions; however, the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included them in each agency's formal planning processes (such as revision of agency land management plans, land use compatibility guidelines, integrated resource management plans, and fishery management plans), including public participation and NEPA analysis, as appropriate. This order and the MOUs to be developed by the agencies are intended to be implemented when new actions or renewal of contracts, permits, delegations, or other third party agreements are initiated as well as during the initiation of new, or revisions to, land management plans.

(d) Each MOU shall include an elevation process to resolve any dispute between the signatory agencies regarding a particular practice or activity.

(e) Pursuant to its MOU, each agency shall, to the extent permitted by law and subject to the availability of appropriations and within Administration budgetary limits, and in harmony with agency missions:

(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;

(2) restore and enhance the habitat of migratory birds, as practicable;

(3) prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable;

(4) design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes (natural resource, land management, and environmental quality planning, including, but not limited to, forest and rangeland planning, coastal management planning, watershed planning, etc.) as practicable, and coordinate with other agencies and nonfederal partners in planning efforts;

(5) within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance, ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as Partners-in-Flight, U.S. National Shorebird Plan, North American Waterfowl Management Plan, North American Colonial Waterbird Plan, and other planning efforts, as well as guidance from other sources, including the Food and Agricultural

Organization's International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries;

(6) ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern;

(7) provide notice to the Service in advance of conducting an action that is intended to take migratory birds, or annually report to the Service on the number of individuals of each species of migratory birds intentionally taken during the conduct of any agency action, including but not limited to banding or marking, scientific collecting, taxidermy, and depredation control;

(8) minimize the intentional take of species of concern by: (i) delineating standards and procedures for such take; and (ii) developing procedures for the review and evaluation of take actions. With respect to intentional take, the MOU shall be consistent with the appropriate sections of 50 C.F.R. parts 10, 21, and 22;

(9) identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;

(10) within the scope of its statutorily-designated authorities, control the import, export, and establishment in the wild of live exotic animals and plants that may be harmful to migratory bird resources;

(11) promote research and information exchange related to the conservation of migratory bird resources, including coordinated inventorying and monitoring and the collection and assessment of information on environmental contaminants and other physical or biological stressors having potential relevance to migratory bird conservation. Where such information is collected in the course of agency actions or supported through Federal financial assistance, reasonable efforts shall be made to share such information with the Service, the Biological Resources Division of the U.S. Geological Survey, and other appropriate repositories of such data (e.g, the Cornell Laboratory of Ornithology);

(12) provide training and information to appropriate employees on methods and means of avoiding or minimizing the take of migratory birds and conserving and restoring migratory bird habitat;

(13) promote migratory bird conservation in international activities and with other countries and international partners, in consultation with the Department of State, as appropriate or relevant to the agency's authorities;

(14) recognize and promote economic and recreational values of birds, as appropriate; and

(15) develop partnerships with non-Federal entities to further bird conservation.

(f) Notwithstanding the requirement to finalize an MOU within 2 years, each agency is encouraged to immediately begin implementing the conservation measures set forth above in subparagraphs (1) through (15) of this section, as appropriate and practicable.

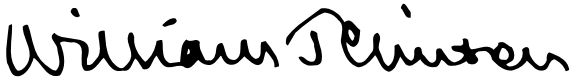
(g) Each agency shall advise the public of the availability of its MOU through a notice published in the **Federal Register**.

Sec. 4. *Council for the Conservation of Migratory Birds.* (a) The Secretary of Interior shall establish an interagency Council for the Conservation of Migratory Birds (Council) to oversee the implementation of this order. The Council's duties shall include the following: (1) sharing the latest resource information to assist in the conservation and management of migratory birds; (2) developing an annual report of accomplishments and recommendations related to this order; (3) fostering partnerships to further the goals of this order; and (4) selecting an annual recipient of a Presidential Migratory Bird Federal Stewardship Award for contributions to the protection of migratory birds.

(b) The Council shall include representation, at the bureau director/administrator level, from the Departments of the Interior, State, Commerce, Agriculture, Transportation, Energy, Defense, and the Environmental Protection Agency and from such other agencies as appropriate.

Sec. 5. *Application and Judicial Review.* (a) This order and the MOU to be developed by the agencies do not require changes to current contracts, permits, or other third party agreements.

(b) This order is intended only to improve the internal management of the executive branch and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.



THE WHITE HOUSE,
January 10, 2001.

[FR Doc. 01–1387
Filed 1–12–01; 8:45 am]
Billing code 3195–01–P

Attachment B
Preconstruction Raptor Nest Survey Protocol

ATTACHMENT B – PRECONSTRUCTION RAPTOR NEST SURVEY PROTOCOL

Introduction

Raptor nest surveys will be required to identify locations of active raptor nests if construction activities are to take place during the active raptor nesting season (December 1 to September 30). The purpose of the surveys will be to identify active raptor nests within 0.5 mile of the Project (1.0 mile for bald eagle and peregrine falcon) that may be disturbed by construction activities. Appropriate seasonal and spatial buffers will be applied to protect active nests (Romin and Muck 2002; BLM Instruction Memorandum UT 2006-096).

Early and frequent coordination with BLM and USFS is essential to ensure surveys are accepted by the agencies and can be used as a basis for identifying locations where seasonal restriction are and are not required. Upon request, BLM will supply locations and WLRNest Numbers (unique identifiers) of known nests to the survey team so the activity status of these nests can be monitored. However, another goal of preconstruction raptor nest surveys will be to identify nests that were not present or not detected during previous survey efforts. A pre-survey meeting should be held with BLM and USFS at least 2 weeks prior to the initiation of raptor nest surveys.

Raptor behavior and nesting phenology exhibit annual variability due to fluctuations in environmental and climactic conditions. Temporal modifications to the protocol described here may be required to ensure appropriate protections are provided for nesting raptors within the Project area. During monitoring of nests for activity status, weekly or biweekly written reports will be submitted to the BLM and USFS lead biologists.

Qualifications

Raptor nest surveyors must meet the educational requirements (or possess a combination of education and experience) for Wildlife Biology Occupational Series 0486 and be pre-approved by the BLM and USFS. Surveyors should have experience in raptor behavior as well as excellent raptor-identification skills. Raptor surveyors should be able to identify raptor species visually and be familiar with the calls of those raptors expected to be within the Project area and any similar sounds that they could be confused with. The act of surveying has the potential to disturb or molest the species surveyed. The qualified biologist will be responsible to prevent “take” during the survey.

Methods

Preconstruction raptor nest surveys will be performed using both pedestrian and aerial methods, as determined in coordination with BLM and USFS. Aerial methods are most appropriate for when construction activities are scheduled to begin after or during the incubation period for raptors found within the Project Area. Aerial surveys are most appropriate for documenting the location of nests on a broad scale; however, due to variability in raptor species territory establishment and nest building, surveyors should exercise caution when making occupancy and species determinations during aerial surveys alone. Supplemental pedestrian surveys should be employed whenever a conclusive occupancy determination cannot be established.

Pedestrian methods are most appropriate for construction seasons where construction activities will begin before or during the territory-establishment and nest-building periods. It should be noted that aerial methods are not suitable for detecting ground-nesting raptors, species that commonly nest in thick vegetative cover or when repeated visits to individual nests during the early breeding season would be necessary in order to determine nest occupancy. Therefore, pedestrian surveys will be performed in areas likely to be selected for nesting by species that nest at or near ground level or species that nest in thick vegetative cover and in situations where a nest needs to be visited several times.

Raptor nesting phenology in the Project Area can exhibit annual variation, and timing of surveys should be coordinated with BLM and USFS. General nesting phenology for raptors identified during 2012 raptor nest surveys is presented in Table 1 (Call 1978).

TABLE 1
NESTING PHENOLOGY OF RAPTORS FOUND
IN THE PROJECT AREA DURING AERIAL SURVEYS IN 2012

Species	Nest Building	Egg Laying	Incubation	Hatching	Fledging
Osprey	April 22 to May 31	May 21 to June 7	May 25 to July 10	June 23 to July 10	July 11 to August 1
Red-tailed hawk	February 6 to March 25	March 5 to April 21	March 23 to May 2	April 6 to May 23	May 16 to July 1
Ferruginous hawk	March 10 to 16	March 17 to April 1	March 21 to May 21	April 16 to May 21	June 4 to July 2
Golden eagle	February 2 to 26	March 6 to 30	March 10 to May 14	April 2 to May 14	June 7 to June 21
Peregrine falcon		March 21 to April 16	March 23 to May 16	April 22 to May 16	June 1 to June 26
Prairie falcon		April 20 to May 1	April 28 to June 6	May 26 to June 6	July 2 to July 15
Great horned owl	January 1 to February 28	January 20 to April 10	January 25 to May 12	February 27 to May 12	March 31 to June 17
Burrowing owl	April 17 to May 25	April 30 to June 6	May 1 to June 17	June 4 to June 17	July 3 to July 10
Barn owl	January 6 to April 10	February 6 to May 18	February 14 to June 17	March 4 to June 17	April 28 to July 23
Short-eared owl	March 6 to April 12	March 28 to May 3	April 2 to May 28	April 25 to June 28	June 1 to July 29

SOURCE: Call 1978

Survey Area

Preconstruction raptor nest surveys for most species will encompass all areas within 0.5 mile from the transmission line right-of-way, access roads, work areas, and other Project features. For areas presenting suitable nesting habitat for bald eagle and peregrine falcon, the survey area should extend 1.0 mile from these features. Surveys will be focused on previously identified nests but should also be intended to detect newly-constructed, reoccupied or previously unrecorded nests.

Potentially suitable bald eagle nesting habitat is defined as areas with cliffs or large trees near lakes, reservoirs, or streams capable of supporting a productive fishery. In addition, potentially suitable nesting habitat for bald eagles should be relatively free from direct and indirect human disturbance. Potentially suitable peregrine falcon nesting habitat consists of large cliff habitat adjacent to vegetation types capable

of providing an adequate prey base for raising young (e.g., coniferous forest and/or well-developed riparian forest).

Aerial Raptor Nest Surveys

No comprehensive, agency-sanctioned, formal protocol exists to describe the field methodology for conducting aerial surveys for raptor nests in all situations. Guidance for the method described here was provided by the *BLM Nesting Survey Protocols for Common Western Raptors* (Call 1978) and by the U.S. Fish and Wildlife *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002).

Aerial surveys in the Project area are designed and conducted primarily to detect nests of golden eagle, bald eagle, peregrine falcon, prairie falcon, red-tailed hawk, ferruginous hawk, Swainson's hawk, barn owl and great horned owl. As previously mentioned, pedestrian surveys should be employed for detecting species that nest at or near ground level or in thick vegetative cover.

Aerial raptor surveys should be conducted with a helicopter with the objective of minimizing disturbance to nesting raptors. Therefore, the helicopter should not approach any closer to nests than is absolutely necessary to identify nest status and species.

No fixed survey transect lines are used for aerial raptor nest surveys. Instead, the helicopter should fly a variable flight path within the raptor survey area to investigate the most likely substrates capable of hosting raptor nests. These substrates include, but are not limited to, electric transmission towers, wooden power poles, cottonwood trees, lone trees of any species, groves of riparian trees, forested or wooded habitat, cliffs, bluffs, rocky outcrops, canyons, ridges, knolls, barns, windmills, abandoned structures, and water towers. Aerial flight paths will be recorded using a global positioning system and will be provided to the BLM and USFS as an electronic deliverable.

Observers will locate and record the status of all previously occupied, unoccupied, and actively maintained alternate nests (i.e., for golden eagles) and locate nests previously unknown or unrecorded. For all occupied nests, the species occupying the nest should also be recorded if the surveyors are confident that the species has been positively identified. All data gathered must conform to standards employed by the BLM Cedar City Field Office. The BLM will also provide Raptor Nest-Eyrie Data Sheets that will be completed for each raptor nest identified during the surveys and a list of previously unassigned WLRNest Numbers (unique identifiers) that will be assigned to any new or previously unrecorded nests.

Occupied (Active) Nests are defined as those nests that are repaired or tended in the current year by a pair of raptors. Presence of raptors (e.g., adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current years' mute remains (whitewash) suggest site occupancy. Additionally, all nest sites within a nesting territory are deemed occupied while raptors are demonstrating pair-bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

Unoccupied (Inactive) Nests are defined as those nests not selected by raptors for use in the current year. Nests would also be considered unoccupied for the non-breeding period of the year (refer to Table 2 in Exhibit B, Attachment 2, of the Adaptive Wildlife Management Plan included in Attachment C of this

document). The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon knowledge that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.

Some nests and raptor observation sites resulting from the aerial survey are likely to require follow-up ground visits if certain conditions are met. Pedestrian revisits should follow the methodology described below under Pedestrian Raptor Nest Surveys. Follow-up ground visits should be conducted at locations where:

- Inactive nests contained fresh greenery but no adults, young, eggs, or other evidence of current use observed during the aerial survey;
- Nests are classified as occupied, but the species of raptor cannot be positively identified during the aerial survey;
- Required information cannot be gathered successfully during the aerial survey; or
- A raptor is seen to flush from a perch during the aerial survey, exhibits strong site attachment behavior, and/or exhibits territorial behavior but no nest is found during a subsequent aerial search.

Pedestrian Raptor Nest Surveys

Pedestrian raptor nest surveys described in this section are designed to detect raptor nesting activity as well as raptor behaviors characteristic of establishment of nesting territories. Pedestrian methods are advantageous in comparison to aerial methods in that they are more suited to identifying site attachment behavior and territory establishment, which are precursors to nest building and occupancy. Disturbance to raptors during territory establishment is considered by the agencies to be disturbance of nesting activities. Seasonal and spatial buffers will be applied to areas where raptors exhibit site attachment. Pedestrian surveys are usually necessary to detect ground-nesting raptors, including burrowing owls and short-eared owls. Pedestrian surveys should also be employed to detect species that commonly nest in thick vegetative cover, including Cooper's hawks. Similar to methods described for aerial raptor nest surveys, surveyors should attempt to investigate the most likely substrates capable of hosting raptor nests. Raptors detected during pedestrian surveys should be observed for up to 20 minutes, as these sightings often can lead surveyors to raptor nests.

A minimum of three visits of extended durations will be conducted for each identified raptor nest/territory. Each visit must occur at least 2 weeks after the previous visit, and the first visit must not occur prior to the initiation of courtship and establishment of nesting territories for the species with a reasonable probability of occupying the nest in question (Table 1). Courtship and territory establishment behavior exhibit annual temporal variability due to fluctuations in environmental and climactic conditions. Temporal modifications to the protocol as described here (coordinated with BLM and USFS) may be required.

Each visit will be conducted during favorable weather conditions by observers meeting the qualifications described above. Visits will be conducted during hours when raptors are most likely to be active, generally at first light or before dark. The use of both a high-powered telescope and binoculars is recommended in order to enable Biological Monitors to make observations far enough away from nests to minimize stress and avoid eliciting a sustained territorial behavior from raptors.

Detailed field notes will be taken during each visit using the Raptor Observation Cards provided by BLM, which will be digitized and submitted as a separate excel file. All previously documented nests will use

the same unique identifier (WLRNest No.) and new nests (not previously known) will be assigned a new number.

A territory/nest will be determined to be occupied (active) when a pair of raptors are present (two adults or an adult/sub-adult mixed pair). A territory/nest will be determined unoccupied when no raptors are observed in the area during the monitoring period. If the known nest location does not appear to be occupied, a realistic survey effort (to be determined in coordination with BLM and USFS) will be expended to try and locate potential alternate nest sites within the territory. If a nest site within a territory is deemed unoccupied after sufficient surveys have been conducted, as described above, human activity could be allowed within the nesting area in the current breeding season and prior to the beginning of the next year's breeding season which varies dependent on raptor species (Table 1). BLM and USFS concurrence is required before any raptor nests or territories can be deemed unoccupied.

Any request for work within an active nest buffer must use the procedures outlined in Attachment B – Adaptive Wildlife Management Plan. If the raptor nest surveys described in this document are conducted so that they also meet all of the criteria described for determining resource status in the Adaptive Wildlife Management Plan, the results may be used to prepare a Request for Adaptive Management.

Species Specific Considerations

Golden Eagle

Golden eagle courtship in southern Utah may begin as early as January and continues through the end of February. Each nest territory will be visited every 2 weeks, beginning as early as the week of January 1 through the week of February 25, to identify and document territory occupancy and courtship initiation activity.

Literature Cited

Call, M.W. 1978. Nesting habitats and surveying techniques for common western raptors. BLM Technical Note TN-316, BLM Denver Service Center, Co. 115 pp.

Romin, L.A., and J.A. Muck. 2002. Utah Field Office guidelines for raptor protection from human and land use disturbances. U.S. Fish and Wildlife Service Utah Field Office, Salt Lake City, UT.42 pp.

Attachment C
Adaptive Wildlife Management Plan

ATTACHMENT C – ADAPTIVE WILDLIFE MANAGEMENT PLAN

Introduction

This Adaptive Wildlife Management Plan (AWMP) provides a framework for the Bureau of Land Management (BLM), U.S. Forest Service (USFS), Utah Division of Wildlife Resources (UDWR), and Project personnel to engage in flexible management of certain biological resources when conditions warrant. Biological resources, including raptor nests, big game seasonal ranges, and wild horse and burro management areas were determined to be suitable for adaptive management by the federal agencies due to (1) the annually variable nature of these resources, (2) their relative abundance in the project area, and (3) the relatively large spatial extent of restrictions associated with the resources. Adaptive management will not be performed for biological resources not described in this document.

The AWMP contains procedures for granting exceptions to or modifying seasonal and spatial restrictions identified as Project mitigation measures in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan of the Plan of Development (POD), Plant and Wildlife Species Conservation Measures Plan. The AWMP provides methodology that facilitates the approval or denial of these requests through the Level 2 variance procedure outlined in Section A6.4.2 – Variance Procedures (Unforeseen Circumstances) of the POD and avoids the need for amendments to the right-of-way grant or special-use authorization.

To ensure biological resources are appropriately protected, the AWMP contains:

- Roles and responsibilities of involved parties
- Resource conditions that would permit modifications or exceptions to mitigation measures
- Procedures for determining resource conditions
- Procedures for communicating resource conditions and granting modifications or exceptions to mitigation measures
- Procedures for monitoring resource conditions after alterations are granted

Adherence to the mitigation measures included throughout the POD will be mandatory unless a variance request has been approved via the procedures outlined in section A6.4.2 – Variance Procedures (Unforeseen Circumstances) of the POD, modifications or exceptions to seasonal and spatial mitigation measures must be granted in writing by the BLM or USFS Authorized Officer or his/her designated representative. Modifications or exceptions will be based on site-specific conditions and will not be applied Project-wide. Modifications or exceptions may pertain only to specific actions, which will be defined prior to approval of the action by the BLM or USFS Authorized Officer or his/her designated representative. The federal agency may restore the spatial and seasonal extent of mitigation measures outlined in the POD after granting modification or exception in the event resource conditions change, additional resource protections are needed as determined by a qualified biologist, or in response to a violation of terms and conditions of the modification or exception to a mitigation measure.

Roles and Responsibilities

The parties involved in the Project and the AWMP include PacifiCorp, doing business as Rocky Mountain Power (the Proponent), BLM, USFS, UDWR, Compliance Inspection Contractor (CIC),

Biological Monitors, and the Proponent's Construction Contractor(s). Subcontractors to the involved parties may be engaged as needed. Each of the involved parties has other Project roles and responsibilities which are outlined in Section 2 of the POD.

The Proponent

The Proponent is responsible for providing requests for modifications or exceptions to seasonal and spatial mitigation measures to the Biological Monitors, CIC (during construction), and appropriate federal agency (during operation and maintenance). All requests for modifications or exceptions must be made using the standard Request for Adaptive Management Form (Exhibit A) and include a comprehensive description of the location, nature, and duration of activities that will be performed if the modification or exception is granted. Additionally, the Proponent is responsible for contracting and retaining qualified Biological Monitors.

Bureau of Land Management/U.S. Forest Service

The BLM and USFS will be responsible for reviewing written requests using the Request for Adaptive Management Form provided by the CIC (during construction) or Proponent (during operation and maintenance) for modification of or exceptions to seasonal and spatial mitigation measures. The BLM and USFS will coordinate with UDWR to determine if exceptions or modifications are appropriate using professional knowledge, criteria outlined in the AWMP, and resource conditions presented in the request from the CIC. The BLM and USFS will provide copies of Request for Adaptive Management Forms and weekly reports submitted by the CIC, Proponent, and Biological Monitors to UDWR. BLM and USFS will allow adequate time for UDWR to review reports and requests to provide management recommendations. If resource conditions permit site specific modifications or exceptions to mitigation measures, the BLM or USFS Authorized Officer or his/her designated representative will provide written notification to the CIC of the modification or exception and identify work that is permissible at that location. The BLM or USFS Authorized Officer or his/her designated representative will also provide written notice to the CIC in the event that a modification or exception is not granted, or is granted with conditions. Permission granted may also be revoked by written notice at any time if conditions warrant such action.

Utah Division of Wildlife Resources

The UDWR will act as a cooperating agency to the BLM and USFS in administration of the AWMP. UDWR will provide Project and resource management recommendations to the BLM and USFS for resources identified in Appendix B6 – Plant and Wildlife Species Conservation Measures Plan of the POD. UDWR has designated the Habitat Biologist of the Southern Region as the lead contact for the Project.

UDWR will review requests for exceptions or modification of mitigation measures by reviewing Request for Adaptive Management Forms provided by the BLM and USFS. UDWR will provide recommendations to the BLM and USFS regarding modification of mitigation measures using professional knowledge, criteria outlined in the AWMP, and resource conditions outlined in the request. If exceptions or modifications are granted, UDWR will be given the opportunity to review weekly reports submitted by the Biological Monitors to the BLM and USFS detailing resource conditions and Project

activities within affected areas. UDWR will submit questions or concerns regarding weekly reports through BLM and USFS.

U. S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (FWS) will provide technical guidance to the BLM and USFS, if requested, for resources over which the FWS has authority under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. If requested by the BLM or USFS, the FWS will review requests for adaptive management, which will be provided to the FWS by BLM or USFS. The FWS may provide management recommendations to the BLM or USFS after reviewing these requests, however, adaptive management decisions will remain at the discretion of BLM and USFS.

Biological Monitors

To help ensure construction activities are conducted in a manner that complies with all federal, state, and local regulations, the Proponent will contract a team of environmental inspectors that will include Biological Monitors. Biological Monitors will be contracted during the construction phase of the project and may be contracted during operation and maintenance if the Proponent wished to engage in adaptive management. The Biological Monitors will work under the direction of the CIC and federal agencies to facilitate the AWMP.

Biological monitors must be pre-approved by the BLM/USFS to ensure they meet the educational requirements (or possess a combination of education and experience) for Wildlife Biology Occupational Series 0486 and/or Botany Occupational Series 0430. Biological monitors may be required to meet the requirements for other occupational series based on the work to be performed.

When a request for modification or exception to seasonal and spatial restrictions is received, Biological Monitors will be responsible for determining the status of resources affected by the AWMP. Biological Monitors will document and communicate resource status in writing to the CIC (during construction) or to the appropriate state and federal agencies (during operation and maintenance). If modifications or exceptions to mitigation measures identified in the POD are granted by federal agencies, it will also be the responsibility of the Biological Monitor to monitor resource conditions and Project activities within the affected area and provide weekly written reports to the CIC or appropriate federal agency. The Biological Monitor will be responsible for notifying the CIC or appropriate federal agency immediately if Project activities authorized using the AWMP cause unintended impacts to sensitive resources.

Compliance Inspection Contractor

The CIC is an on-the-ground agent of the BLM and other cooperating agencies, retained by the Project Proponent during the construction phase of the Project. The CIC provides on-site compliance inspections and monitoring for the Project. This service helps to promote environmental protection and ensures compliance with requirements of the BLM and USFS based on the commitments established in the POD.

The CIC will review reports provided by Biological Monitors regarding resource conditions to determine if an exception or modification to mitigation measures identified in the POD may be warranted as outlined by the AWMP. If an exception or modification may be appropriate, the CIC will submit a written request to the BLM or USFS Authorized Officer or his/her designated representative and the UDWR. If

modifications or exceptions to mitigation measures are approved by federal agencies, the CIC will be responsible for reviewing the Biological Monitors' weekly reports to ensure resource conditions identified in the AWMP continue to indicate the exception or modification is appropriate. The CIC will immediately notify the appropriate federal agency and UDWR if Biological Monitors report unanticipated resource impacts are occurring, resource conditions have changed and no longer meet criteria for exceptions or modification identified in the AWMP, or the terms and conditions of the modification or exception are violated.

Construction Contractor(s)

The Construction Contractor(s) will be responsible for communicating with Biological Monitors, the Proponent, and the CIC to identify Project locations where work that would otherwise be restricted by the POD may be allowed using procedures outlined in the AWMP. The Construction Contractor(s) will develop and maintain a construction schedule that will be distributed to the CIC, BLM, and USFS. The construction schedule will allow agencies to anticipate where requests for exceptions or modifications may occur. The Construction Contractor(s) will provide a written request to the Proponent to investigate biological resource conditions at a particular site if the contractor wishes to engage in adaptive management at the location as outlined in the AWMP.

Communication and Notification Protocol

Timely, clear, and effective communication between the involved parties is a critical component to the success of the Project and implementation of the AWMP. This section of the AWMP identifies major steps in the development and evaluation of individual requests for modification of or exceptions to spatial and seasonal biological resource mitigation measures and necessary communications for each step. These communications and notifications are meant to clarify those outlined in Section A6.4.2 – Variance Procedures (Unforeseen Circumstances) of the POD for level 2 variances.

Request for Adaptive Management

Requests for adaptive management of biological resources will be initiated by the Proponent. Communications and notifications required to initiate a request include the following:

- Proponent, Biological Monitor, and CIC (during construction) or appropriate federal agency (during operation and maintenance) coordinate to determine if the proposed disturbance may be appropriate for adaptive management of biological resources. Adaptive management may be appropriate if the proposed activity will not adversely impact the resource for which adaptive management is requested.

- If deemed appropriate, the Proponent will submit a written request to the Biological Monitor to determine the condition of the biological resource at the location for which adaptive management is requested. The written request will include a Request for Adaptive Management Form describing the location, nature, and duration of activities that will be performed if the modification or exception is granted.

- If a request is submitted to the Biological Monitor, the Proponent will concurrently submit a written notification to the CIC (during construction) or appropriate federal agency (during

operation and maintenance). The notification will include a Request for Adaptive Management Form describing the location, nature, and duration of activities that will be performed if the modification or exception is granted.

Determination of Resource Condition

On receipt of a written request from the Proponent, the Biological Monitor will perform the necessary fieldwork to determine the condition of the resource for which adaptive management is requested. On completion of fieldwork, communications and notifications required include the following:

- Biological Monitor will submit a written description of the resource condition to the CIC (during construction) or appropriate federal agency (during operation and maintenance) for which adaptive management has been requested. The written request will include a Request for Adaptive Management Form describing the location, nature, and duration of activities that will be performed if the modification or exception is granted and the observed resource conditions at the location.

Request Submitted to Federal Agency

During construction, the CIC will compile information provided by the Construction Contractor(s) and Biological Monitors. The CIC will use the compiled information to provide a recommended action to the federal agency Authorized Officer or his/her designated representative. All information will be included in a Request for Adaptive Management Form. The CIC will review the location, nature, and duration of activities that will be performed if the modification or exception is granted and the observed resource conditions at the location. During operation and maintenance, the Biological Monitors will submit resource conditions directly to the BLM or USFS Authorized Officer or his/her designated representative. The BLM or USFS Authorized Officer or his/her designated representative will compile the resource information with the request previously received from the Proponent. The following communications and notifications will be necessary during the construction phase:

- CIC will submit a compiled Request for Adaptive Management Form to the BLM or USFS Authorized Officer or his/her designated representative.

Federal Agency Determination

On receipt of a request for exception or modification of mitigation measures from the CIC (during construction) or Proponent and Biological Monitor (during operation and maintenance) the BLM or USFS Authorized Officer or his/her designated representative will collaborate with UDWR to determine if resource conditions and required protections are compatible with the requested exception or modification. Collaboration and review of a complete request for adaptive management will be completed within 10 business days, unless the federal agencies require additional time to review the request. The federal agency may grant, grant with condition(s), or deny the request for exception or modification of mitigation measures. On determination of the federal agency's action, necessary communications and notifications will include the following:

- The BLM or USFS Authorized Officer or his/her designated representative will provide written notification of their determination to the CIC (during construction) or Proponent and Biological Monitor (during operation and maintenance).

- During construction, the CIC will provide written notification of the federal agency's determination to the Construction Contractor(s) and Biological Monitor.

Monitoring of Activities

If the federal agency grants an exception or modification of a mitigation measure to the Proponent, daily monitoring of permitted activities and resource conditions will be required in the affected area unless otherwise specified by the BLM or USFS Authorized Officer or his/her designated representative. On initiation of the authorized activities, necessary communications and notifications will include the following:

- Proponent will notify Biological Monitor of schedule of planned activities in affected area.

- Biological Monitor will prepare and submit weekly reports to the CIC (during construction) or BLM or USFS Authorized Officer or his/her designated representative (during operation and maintenance) detailing work performed and resource conditions in the affected area (refer to Appendix A6 – Environmental Compliance Management Plan for reporting and documentation requirements)

- Biological Monitor will notify CIC and appropriate federal agency immediately if resource conditions become incompatible with the permitted modification, if unforeseen impacts occur, or if authorized activities may result in unintended impacts to biological resources. If unintended impacts may occur, all operations will stop until the appropriate federal agency is notified and grants continued work. At this point, the federal agency may cancel or modify the grant for adaptive measures.

- Proponent will notify Biological Monitor and CIC or appropriate federal agency on completion of work in the affected area.

Affected Resources

Seasonal and spatial restrictions identified as mitigation measures in the POD to protect raptor nests, big game habitats, and wild horses and burros may be modified using this AWMP. Modifications must consider site-specific resource conditions, resource sensitivity, and reasonably foreseeable impacts of the proposed modification or exception on current and future resource conditions. This section of the AWMP identifies site-specific resource conditions that will inform the federal agency's decision of suitability of adaptive management and provides a framework for the Biological Monitor to assess and document those conditions.

Raptor Nests

Raptor nest adaptive management will be performed in accordance with BLM Instruction Memorandum *UT 2006-096: Best Management Practices for Raptors and their Associated Habitats* (refer to Exhibit B).

Biological Monitors will visit the previously identified nesting location for which adaptive management is requested to determine nest status and raptor use within the area. If adaptive management is requested due to lack of activity at a nesting site, the Biological Monitor must complete a minimum of three visits to the site separated by a minimum of three days each. To avoid inaccurately determining that nests are inactive because surveys occur prior to territory and nest selection, the three visits must not occur earlier that the incubation period for species that may inhabit nests in the area of interest. Raptor nesting phenology in the Project Area can exhibit annual variation, and timing of surveys should be coordinated with BLM and USFS. General nesting phenology for raptors identified during 2012 raptor nest surveys is presented in Table 1 of Attachment B – Preconstruction Raptor Nest Survey Protocol. Visits must be completed during periods when raptors are most active (morning and dusk) and lack of nesting activity must be confirmed at each visit. The use of both a high-powered telescope and binoculars is required in order to enable Biological Monitors to make observations far enough away from nests to minimize stress and avoid eliciting a sustained territorial behavior from raptors. Biological Monitors will complete the Site-specific Analysis Data Sheet included in Exhibit A and submit the data sheet to the CIC or appropriate federal agency and UDWR for review. BLM and USFS concurrence is required before raptor nests or territories can be deemed unoccupied.

Pedestrian raptor nest surveys described in Attachment B – Preconstruction Raptor Nest Survey Protocol may be used to meet the requirements for requesting adaptive management, provided the appropriate information is collected at the time of surveys.

Raptor Nest Monitoring

If modifications or exceptions to raptor nest seasonal and spatial mitigation measures are granted for active nests, the Biological Monitor will monitor the nest site daily during all authorized activities that may impact behavior or survival of raptors at the site. The use of both a high-powered telescope and binoculars is required in order to enable Biological Monitors to make observations far enough away from nests to minimize stress and avoid eliciting a sustained territorial behavior from raptors. Monitoring must begin in the early morning, no less than one hour prior to construction personnel arriving in the area. Biological Monitors must remain in the affected area to monitor raptor activity for the daily duration of construction activities. The Biological Monitors will maintain a daily log of nest site conditions, raptor behavior, and authorized activities and provide weekly summaries to the CIC (during construction) or appropriate federal agency (during operation and maintenance). If monitoring detects an impact on bird behavior, territory establishment, nest attendance, or nest site conditions, the Biological Monitor will immediately notify the CIC or appropriate federal agency and Proponent so the impacts may be avoided or eliminated.

Big Game Habitats

Adaptive management of seasonal restrictions associated with big game habitats will be evaluated based on seasonally variable climate conditions and site specific determinations of habitat use. Biological Monitors will conduct two site visits to document habitat conditions and use in the affected area for which adaptive management is requested. Site visits will occur within the seasonal restriction timeframe and temporally reflect crepuscular activity patterns of the big game species for which adaptive management is requested. Biological Monitors will coordinate with local experts including UDWR, perform ocular observations and pellet searches to determine big game use, evaluate annually variable habitat conditions within the affected area, and document conditions including the following:

- vegetative status

- current climactic trends
- non-Project related disturbance
- availability and current use of adjacent habitats
- current and reasonably foreseeable big game use

Biological Monitors will report on findings using the Request for Adaptive Management Form. Biological Monitors submit this report to the CIC or appropriate federal agency for review.

Big Game Monitoring

If modifications or exceptions to seasonal and spatial mitigation measures are granted for big game habitats, the Biological Monitor will monitor the affected area daily during crepuscular periods of big game activity and during authorized activities that may impact behavior or survival of big game at the site. The Biological Monitor will keep a daily log of habitat conditions within the affected area including all conditions and trends identified in the request for adaptive management. Weekly summaries of habitat conditions, big game behavior, and authorized activities will be submitted to the CIC or appropriate federal agency and UDWR, as appropriate. If monitoring detects an impact on big game behavior or habitat conditions change and are no longer compatible with adaptive management, the Biological Monitor will immediately notify the CIC or appropriate federal agency and Proponent so the impacts may be avoided or eliminated.

Wild Horses and Burros

Adaptive management of seasonal restrictions associated with wild horse and burro management areas will be evaluated based on seasonally variable climate conditions and site specific determinations of habitat use. Biological Monitors will conduct two site visits to document habitat conditions and use by wild horses and burros in the affected area for which adaptive management is requested. Site visits will occur within the seasonal restriction timeframe of the wild horse and burro management area. Biological Monitors will evaluate annually variable habitat conditions within the affected area and document conditions including the following:

- vegetative status
- current climactic trends
- non-project related disturbance
- availability of other habitats
- availability of water
- current and reasonably foreseeable wild horse and burro use

Biological Monitors will report on findings using the Request for Adaptive Management Form. Biological Monitors submit this report to the CIC or appropriate federal agency for review.

Wild Horse and Burro Monitoring

If modifications or exceptions to seasonal and spatial mitigation measures are granted for wild horse and burro management areas, the Biological Monitor will monitor the affected area daily during authorized activities that may impact the behavior or survival of wild horses and burros at the site. The Biological Monitor will keep a daily log of habitat conditions within the affected area including all conditions and trends identified in the request for adaptive management. Weekly summaries of habitat conditions, wild

horse and burro behavior, and authorized activities will be submitted to the CIC or appropriate federal agency, as appropriate. If monitoring detects an impact on wild horse and burro behavior or habitat conditions change and are no longer compatible with adaptive management, the Biological Monitor will immediately notify the CIC or appropriate federal agency and Proponent so the impacts may be avoided or eliminated. The Biological Monitor will also be responsible for monitoring the Construction Contractor's compliance with provisions in the POD regarding availability of water sources for wild horse and burro use.

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EXHIBIT A: REQUEST FOR ADAPTIVE MANAGEMENT FORM

This form will be used to document requests for adaptive management of biological resources for the Sigurd to Red Butte No. 2 345 kV Transmission Project as described in Attachment B: Adaptive Wildlife Management Plan of Appendix B6 of the project Plan of Development. All required data must be submitted to the BLM and USFS with this form for the request to be processed. Attach additional sheets as necessary.

Location of Request for Adaptive Management (to be completed by Proponent)

Land Ownership (check all that apply):

BLM ( ) USFS ( ) State ( ) Private ( )

Impacted Field Offices / Ranger Districts: _____

Project Location: (Attach maps as necessary)

From tower location: _____ To tower location: _____

Activities for which Adaptive Management is Requested (to be completed by Proponent)

Description of construction or maintenance activities:

_____
_____
_____
_____
_____

Expected timing and duration of activities (include length of time, daily duration, frequency, and timing variations)**:**

_____
_____
_____
_____
_____

Type and number of equipment and personnel required:

_____
_____
_____
_____
_____

Resource for which adaptive management is requested:

Raptor Nest ( )
Big Game Habitats ( )
Wild Horses and Burros ( )

Determination of Resource Conditions (to be completed by Biological Monitor)

Raptor Nests: Complete raptor site-specific Analysis Data Sheet included in Exhibit A. Include notes from all visits to nesting location.

Big Game Habitat and Wild Horses and Burros: Provide information required below. All sections are required. Include information from every site visit and data gathered by coordinating with local resource experts.

Habitat affected by request for adaptive management (include information regarding vegetative status, current climactic trends, presence of non-project related disturbance factors, amount of habitat affected, availability of other habitats, and availability of water)**:**

_____
_____
_____
_____
_____
_____

Current and reasonably foreseeable use of habitat affected by request for adaptive management (include information regarding ocular observations and pellet counts, climactic trends, anticipated seasonal movement, availability and use of other habitats, and response to other disturbance factors)**:**

_____
_____
_____
_____
_____
_____

Potential effects of granting request for adaptive management on condition and use of affected and adjacent habitats (include information on direct, indirect, and cumulative effects on habitat values, individuals, and groups of animals)**:**

_____
_____
_____
_____
_____
_____

Suitability for Adaptive Management (to be completed by CIC or appropriate federal agency)

Is request for adaptive management consistent with management objectives for the affected resource? (Include rationale and current and desired resource conditions)**:**

_____
_____
_____
_____
_____
_____

Are modifications to the request for adaptive management necessary to be consistent with management objectives for the affected resource? (If yes, provide explanation and description of required modifications)**:**

_____
_____
_____
_____
_____
_____

Summary of request, resource conditions, and recommendations for federal agency Authorized Officer (Include recommendations to approve, approve with modification or conditions, or deny request for adaptive management. Include rationale.)

_____
_____
_____
_____
_____
_____

EXHIBIT B

Best Management Practices for Raptors and Their Associated Habitats In Utah

August 2006

I. Introduction:

Raptors, or *Birds of Prey*, are found on public lands throughout Utah. Approximately 31 species of raptors utilize public lands for at least a portion of their life cycle. These include 20 diurnal raptors, including the eagles, hawks, falcons, osprey, turkey vulture and California condor; and 11 mostly nocturnal owl species. At least 16 of the diurnal raptors are known to nest, roost and forage on public lands; while 2 others are probable nesters within the southern part of the state. The California condor is known to utilize public lands for roosting and foraging, but is not currently known to nest within the state. The rough-legged hawk is a winter resident that uses public lands for foraging. All of the owl species nest, roost and forage on public lands in Utah.

Eight of Utah's raptors are considered to be Special Status Species by the BLM, and currently receive enhanced protection, in addition to the regulatory authority provided by the Migratory Bird Treaty Act (MBTA), which covers all raptor species. The bald eagle and Mexican spotted owl are listed as Federally threatened species and are afforded the protection, as well as the Section 7 consultation requirements, of the Endangered Species Act (ESA). The bald eagle is currently being proposed for delisting by the Fish and Wildlife Service. Both the bald eagle and golden eagle are protected by the provisions of the Eagle Protection Act. The California condor is a Federally endangered species, however, the birds found in southern Utah are part of an Experimental Non-essential Population reintroduced to northern Arizona under Section 10(j) of the Endangered Species Act. The BLM is required to treat the condor as a species proposed for listing for Section 7 purposes of the ESA. The northern goshawk is managed by a multi-agency Conservation Agreement. The ferruginous hawk, short-eared owl and burrowing owl are listed as Wildlife Species of Concern by the Utah Division of Wildlife Resources (UDWR, May 12, 2006), and are therefore recognized as BLM state-sensitive species under the Bureau's 6840 Manual. The BLM's 6840 Policy states that "*BLM shall…ensure that actions authorized, funded, or carried out…do not contribute to the need for the species to become listed*".

Future raptor management on BLM lands in Utah will be guided by the use of these Best Management Practices (BMPs), which are BLM-specific recommendations for implementation of the U.S. Fish and Wildlife Service, Utah Field Office's "*Guidelines for Raptor Protection From Human and Land Use Disturbances*" ("*Guidelines*"). The

"Guidelines" were originally developed by the Fish and Wildlife Service in 1999, and were updated during 2002 to reflect changes brought about by court and policy decisions and to incorporate Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds.* The *"Guidelines"* were provided to BLM and other land-managing agencies in an attempt to provide raptor management consistency, while ensuring project compatibility with the biological requirements of raptors, and encouraging an ecosystem approach to habitat management.

These Best Management Practices, or specific elements of the BMP's which pertain to a proposal, should be attached as Conditions of Approval to all BLM use authorizations which have the potential to adversely affect nesting raptors, or would cause occupied nest sites to become unsuitable for nesting in subsequent years.

Raptor management is a dynamic and evolving science, and consequently, as the science evolves, these BMP's will undergo subsequent revision. As more information becomes available through implementation of these raptor BMP's, and as our knowledge of raptor life cycle requirements increases, findings will be incorporated into future revisions of the BMP document. Additionally, BLM and the Department of Energy are initiating a 3-year Raptor Radii study which will test traditional spatial and seasonal nest buffers during actual oil and gas development activities for a select suite of species. Study results would be incorporated into new BMP revisions as well.

To adequately manage raptors and their habitats, and to reduce the likelihood of a raptor species being listed under the Endangered Species Act (ESA), BLM-authorized or proposed management activities and/or land disturbing actions would be subject to the criteria and processes specified within these BMPs. The implementation of raptor spatial and seasonal buffers under the BMPs would be consistent with Table 2 of the "*Guidelines"*, included here as Attachment 2. As specified in the "*Guidelines"*, modifications of spatial and seasonal buffers for BLM-authorized actions would be permitted, so long as protection of nesting raptors was ensured. State and/or Federally-listed, proposed, and candidate raptor species, as well as BLM state-sensitive raptor species, should be afforded the highest level of protection through this BMP process; however, all raptor species would continue to receive protection under the Migratory Bird Treaty Act. Modification of the buffers for threatened or endangered species would be considered pending results of Section 7 Consultation with USFWS.

As stated in the "*Guidelines"*, spatial and seasonal buffers should be considered as the best available recommendations for protecting nesting raptors under a wide range of activities state-wide. However, they are not necessarily site-specific to proposed projects. Land managers should evaluate the type and duration of the proposed activity, the position of topographic and vegetative features, the sensitivity of the affected species, the habituation of breeding pairs to existing activities in the proposed project area, and the local raptor nesting density, when determining site-specific buffers. The BLM would be encouraged to informally coordinate with UDWR and USFWS anytime a site-specific analysis shows that an action may have an adverse impact on nesting raptors. The coordination would determine if the impact could be avoided or must be mitigated, and if so, to determine appropriate and effective mitigation strategies.

Potential modifications of the spatial and seasonal buffers identified in the *"Guidelines"* may provide a viable management option. Modifications would ensure that nest protection would occur, while allowing various management options which may deviate from the suggested buffers within the *"Guidelines"*, which, if adequately monitored, could provide valuable information for incorporation into future management actions.

Seasonal raptor buffers from Attachment 2 should be reviewed by local raptor nesting authorities who are knowledgeable of raptor nesting chronologies within their local area. For those nesting raptors for which local nesting chronologies remain uncertain, the seasonal buffers provided in Attachment 2 should serve as the default. However, for those raptor species whose known nesting chronologies differ from the seasonal buffers provided in Attachment 2, the local seasonal buffers may be utilized as a modification of the "*Guidelines"*.

Criteria that would need to be met, prior to implementing modifications to the spatial and seasonal buffers in the "*Guidelines"*, would include the following:

1. Completion of a site-specific assessment by a wildlife biologist or other qualified individual. See example (Attachment 1)

2. Written documentation by the BLM Field Office Wildlife Biologist, identifying the proposed modification and affirming that implementation of the proposed modification(s) would not affect nest success or the suitability of the site for future nesting. Modification of the *"Guidelines"* would not be recommended if it is determined that adverse impacts to nesting raptors would occur or that the suitability of the site for future nesting would be compromised.

3. Development of a monitoring and mitigation strategy by a BLM biologist, or other raptor biologist. Impacts of authorized activities would be documented to determine if the modifications were implemented as described in the environmental documentation or Conditions of Approval, and were adequate to protect the nest site. Should adverse impacts be identified during monitoring of an activity, BLM would follow an appropriate course of action, which may include cessation or modification of activities that would avoid, minimize or mitigate the impact, or, with the approval of DWR and F&WS, BLM could allow the activity to continue while requiring monitoring to determine the full impact of the activity on the affected raptor nest. A monitoring report would be completed and forwarded to UDWR for incorporation into the Natural Heritage Program (NHP) raptor database.

In a further effort to provide additional support and expertise to local BLM Field biologists, a network of biologists from various agencies with specific expertise in raptor management has been identified and included as Attachment 3. The personnel identified have extensive backgrounds in raptor management issues and are available, upon request, to assist BLM Field biologists on a case by case basis. Field biologists are encouraged to use this network, via informal conference, with one or more of the individuals identified. This coordination should be clearly distinguished from the consultation process required under Section 7 of the ESA. Individuals on the expert panel should not be expected to

provide formal advise, but should serve as a sounding board for discussing potential affects of a proposal, as well as potential mitigation measures on specific projects which may be useful to BLM biologists.

II. Habitat Enhancement:

As recommended in the *"Guidelines"*, raptor habitat management and enhancement, both within and outside of buffers, would be an integral part of these BMPs, with the understanding that in order for raptors to maintain high densities and maximum diversity, it is necessary that the habitat upon which they and their prey species depend be managed to promote healthy and productive ecosystems. Habitat loss or fragmentation would be minimized and/or mitigated to the extent practical and may include such measures as; drilling multiple wellheads per pad, limiting access roads and avoiding loop roads to well pads, effective rehabilitation or restoration of plugged and abandoned well locations and access roads that are no longer required, rehabilitation or restoration of wildland fires to prevent domination by non-native invasive annual species, vegetation treatments and riparian restoration projects to achieve Rangeland Health Standards, etc.

In some cases, artificial nesting structures, located in areas where preferred nesting substrates are limited, but where prey base populations are adequate and human disturbances are limited, may enhance some raptor populations, or may serve as mitigation for impacts occurring in other areas.

III. Protection of Nest Sites and Buffer Zones:

As stated in the *"Guidelines"*, protection of both occupied and unoccupied nests is important since not all raptor pairs breed every year, nor do they always utilize the same nest within a nesting territory. Individual raptor nests left unused for a number of years are frequently reoccupied, if all the nesting attributes which originally attracted a nesting pair to a location are still present. Nest sites are selected by breeding pairs for the preferred habitat attributes provided by that location.

Raptor nest buffer zones are established for planning purposes because the nest serves as the focal point for a nesting pair of raptors. The buffer should serve as a threshold of potential adverse affect to nest initiation and productivity. Actions proposed within these buffer zones are considered potentially impacting and, therefore, trigger the need for consideration of site-specific recommendations.

Seasonal (temporal) buffer zones are conservation measures intended to schedule potentially impacting activities to periods outside of the nesting season for a particular raptor species. These seasonal limitations are particularly applicable to actions proposed within the spatial buffer zone of a nest for short duration activities such as, pipeline or powerline construction, seismic exploration activity, vegetative treatments, fence or reservoir construction, permitted recreational events, etc., where subsequent human activity would not be expected to occur.

Spatial buffer zones are those physical areas around raptor nest sites where seasonal conservation measures, or surface occupancy restrictions may be applied, depending on

the type and duration of activity, distance and visibility of the activity from the nest site, adaptability of the raptor species to disturbance, etc. Surface occupancy restrictions should be utilized for actions which would involve human activities within the buffer zone for a long duration (more than one nesting season) and which would cause an occupied nest site to become unsuitable for nesting in subsequent years.

Unoccupied nests:

All Activities, including All Mineral Leases: Surface-disturbing activities, occurring outside of the breeding season (seasonal buffer), but within the spatial buffer, would be allowed during a minimum three-year nest monitoring period, as long as the activity would not cause the nest site to become unsuitable for future nesting, as determined by a wildlife biologist. Facilities and other permanent structures would be allowed, if they meet the above criteria.

Some examples of typical surface disturbing actions, occurring outside of the seasonal buffer, which may not be expected to affect nest production or future nesting suitability, would include; pipelines, powerlines, seismographic exploration, communication sites, an oil or gas well with off-site facilities which does not require routine visitation, recreation events, fence or reservoir construction, vegetative treatments, and other actions with discreet starting and ending times, and for which subsequent human activity or heavy equipment operation within the spatial buffer would not be expected to occur, or could be scheduled outside of the seasonal buffer in subsequent years.

Surface disturbing activities that would be expected to potentially affect nest production or nest site suitability, include; oil and gas facilities requiring regular maintenance, sand and gravel operations, road systems, wind energy projects, mining operations, and other actions requiring continual, random human activity, or heavy equipment operation during subsequent nesting seasons.

A nest site which does not exhibit evidence of use, such as; greenery in the nest, fresh whitewash, obvious nest maintenance or the observed presence of adults or young at the nest, for a period of three consecutive years, (verified through monitoring), would be deemed abandoned and all seasonal and spatial restrictions would cease to apply to that nest. All subsequent authorizations for permanent activities within the spatial buffer of the nest could be permitted. If the nest becomes reoccupied after authorized activities are completed, conservation measures would be considered to reduce potential adverse affects and to comply with the Migratory Bird Treaty Act and the Eagle Protection Act.

The three-year non-use standard varies from the "*Guidelines*" suggested seven-year non-use standard before declaring nest abandonment. This variation is based upon a similar standard which has been applied for over 20 years in two administrative areas within Utah. Empirical evidence would suggest the three-year non-use standard has been effective in conserving raptor species. The three-year standard has been applied without legal challenge or violation of "Take" under the Migratory Bird Treaty Act or the Eagle Protection Act.

Because prey base populations are known to be cyclic, and because raptor nest initiation or nesting success can be affected by drought and other random natural events, care should be taken when applying the 3-year non-activity standard. The 3-year nest occupancy monitoring requirement should be viewed as a minimum time period during those years of optimal raptor nesting conditions. During sub-optimal raptor nesting years, when nesting habitat may be affected by drought, low prey base populations, fire, or other events, the monitoring standard should be increased to allow raptors the opportunity to reoccupy nesting sites when nesting conditions become more favorable.

Occupied Nests:

All Activities: Land use activities which would have an adverse impact on an occupied raptor nest, would not be allowed within the spatial or seasonal buffer.

IV. Consideration of Alternatives and Mitigation Measures:

Alternatives, including denial of the proposal, should be identified, considered and analyzed in a NEPA document anytime an action is proposed within the spatial buffer zone of a raptor nest. Selection of a viable alternative that avoids an impact to nesting raptors should be selected over attempting to mitigate those impacts. If unavoidable impacts are identified, mitigation measures should be applied as necessary to mitigate adverse impacts of resource uses and development on nesting raptors. Monitoring of the effectiveness of the mitigation measures should be mandatory and should be included as a Condition of Approval.

V. Specific Strategies to be Implemented Regarding Other Resource Uses:

The following are management strategies designed to reduce or eliminate potential conflicts between raptors and other resource uses. This is a list of examples and is not intended to be an all-inclusive list. In all cases, when an activity on BLM lands is proposed, and a NEPA document developed, the site-specific analysis process identified in Attachment 1 may be implemented to identify and either avoid or mitigate impacts to raptors from the proposal. These strategies apply to both BLM and applicant-generated proposals. The strategies are as follows:

A. Cultural Resources

Excavation and studies of cultural resources in caves and around cliff areas should be delayed until a qualified biologist surveys the area to be disturbed or impacted by the activity for the presence of raptors or nest sites. If nesting raptors are present, the project should be rescheduled to occur outside of the seasonal buffer recommended by the *"Guidelines"*.

B. Forestry and Harvest of Woodland Products

Timber harvest would be subject to NEPA analysis and would be conducted in a manner that would avoid impacts to raptor nests. This could also apply to areas identified for wood gathering and firewood sales.

C. Hazardous Fuel Reduction/Habitat Restoration Projects

Hazardous fuels reduction projects and shrubsteppe restoration projects should be reviewed for possible impacts to nesting raptors. Removal of trees containing either stick nests or nesting cavities, through prescribed fire, or mechanical or manual treatments, should be avoided.

It is important to note that certain raptor species are tied to specific habitat types, and that consideration must be made on a site-specific basis when vegetation manipulation projects are proposed, to determine which raptor species may benefit and which may be negatively affected by the vegetation composition post-treatment.

D. Livestock Grazing

Manage rangelands and riparian areas in a manner that promotes healthy, productive rangelands and functional riparian systems. Rangeland Health Assessments should be conducted on each grazing allotment, and rangeland guidelines should be implemented where Rangeland Health Standards are not being met, to promote healthy rangelands.

Locations of sheep camps and other temporary intrusions would be located in areas away from raptor nest sites during the nesting season. Placement of salt and mineral blocks would also be located away from nesting areas.

Season of use, kind of livestock, and target utilization levels of key species affect vegetative community attributes (percent cover, composition, etc.) and influence small mammal and avian species diversity and density. While not all raptor species would be affected in the same way, livestock management practices which maintain or enhance vegetative attributes, will preserve prey species density and diversity which will benefit the raptor resource.

E. OHV Use

Special Recreation Management Areas (SRMAs) that are developed for OHV use would not be located in areas that have important nesting, roosting, or foraging habitat for raptors.

Off highway vehicle use would be limited to designated roads, trails and managed open areas. Lands categorized as “Open” for OHV use should not be in areas important to raptors for nesting, roosting, and foraging

When proposals for OHV events are received, the area to be impacted, would be surveyed by a qualified wildlife biologist to determine if the area is utilized by raptors. Potential conflicts would be identified and either avoided or mitigated prior to the issuance of any permit.

F. Oil and Gas Development

The Code of Federal Regulations (CFR), 43 CFR 3101.1-2, allows for well site location and timing to be modified from that requested by the lessee to mitigate conflicts at the proposed site, and states that the location can be moved up to 200 meters and the timing of the actual drilling can be delayed for up to 60 days to mitigate environmental concerns. The regulation also allows BLM to move a location more than 200 meters, or delay operations more than 60 days to protect sensitive resources, with supporting rationale and where lesser restrictions are ineffective. The Site Specific Analysis (Attachment 1) would provide the supporting rationale. Provisions are also present within Sections 3 and 6 of the Standard Lease Form which require compliance with existing laws and would allow the BLM to impose additional restrictions at the permitting phase, if the restrictions will prevent violation of law, policy or regulation, or avoid undue and unnecessary degradation of lands or resources.

G. Realty

Lands proposed for disposal which includes raptor nesting, roosting, or important foraging areas would be analyzed and evaluated for the relative significance of these resources before a decision is made for disposal or retention.

A priority list of important raptor habitat areas, especially for Federally listed or state sensitive raptor species, on state and private lands should be developed and utilized as lands to be acquired by BLM when opportunities arise to exchange or otherwise acquire lands.

Lands and realty authorizations would include appropriate conservation measures to avoid and/or mitigate impacts to raptors.

H. Recreation

Development of biking trails near raptor nesting areas would be avoided.

Rock climbing activities would be authorized only in areas where there are no conflicts with cliff nesting raptors.

In high recreation use areas where raptor nest sites have been made unsuitable by existing disturbance or habitat alteration, mitigation should be considered to replace nest sites with artificial nest structures in nearby

suitable habitat, if it exists, and consider seasonal protection of nest sites through fencing or other restrictions.

Dispersed recreation would be monitored to identify where this use may be impacting nesting success of raptors.

I. Wild Horse Program

In areas where wild horse numbers are determined to be in excess of the carrying capacity of the range, removal of horses, as described in the various herd management area plans, would continue, to prevent further damage to rangelands.

VI. Inventory and Monitoring

A. Each Field Office should cooperatively manage a raptor database, with UDWR and USFWS, as part of the BLM Corporate database. Raptor data should be collected and compiled utilizing the Utah Raptor Data Collection Standards developed by the Utah State Office, so that personnel from other agencies can access the data. Appropriate protocols for survey and monitoring should be followed, when available. This database should be updated as new inventory and monitoring data becomes available. The data should also be forwarded to UDWR and the Natural Heritage Program, which has been identified as the central repository for raptor data storage for the State of Utah.

B. Use of Seasonal Employees and volunteers, as well as "Challenge Cost Share" projects, should be utilized to augment the inventory and monitoring of raptor nests within a planning area, with the data entered into the above-mentioned databases at the close of each nesting season. Project proponents, such as energy development interests, would be encouraged to participate and help support an annual raptor nest monitoring effort within their areas of interest.

C. Active nest sites should be monitored during all authorized activities that may have an impact on the behavior or survival of the raptors at the nest site. A qualified biologist would conduct the monitoring and document the impacts of the activity on the species. A final report of the impacts of the project should be placed in the EA file, with a copy submitted to the NHP. The report would be made available for review and should identify what activities may affect raptor-nesting success, and should be used to recommend appropriate buffer zones for various raptor species.

D. As data are gathered, and impact analyses are more accurately documented, "adaptive management" principles should be implemented. Authorization of future activities should take new information into account, better protecting raptors, while potentially allowing more development and fewer restrictions, if data indicates that current restrictions are beyond those necessary to protect nesting raptors, or conversely indicates that current guidance is inadequate for protection of nesting raptors.

ATTACHMENT 1

Site Specific Analysis Data Sheet

Observer(s)_____
Date_____

1. **Conduct a site visit to the area of the proposed action and complete the raptor nest site data sheet according to BLM data standards**.

2. Area of Interest Documentation (**Bold** items require completion, other information is optional)

State_____ Office _____ Management Unit _____

Project ID# _____

Location (Description)

Legal T____ , R ____ , Sec. _____ , 1/4, _____ 1/4, _____ or UTM Coordinates

Latitude_____ Longitude_____

Photos Taken Y( ) N( )

Description of photos:

_____
_____
_____
_____
_____
_____
_____

Raptor Species_____ Confirmed_____ Unconfirmed_____

Distance From Proposed Disturbance to: Nest _____
Perch _____
Roost _____

Line of Site Evaluation From: **Nest** _____
Perch_____
Roost_____

Extent of Disturbance: Permanent_____ Temporary____
Distance from Nest/Roost _____ Acreage_____

Length of Time_____ Timing Variations_____ Disturbance Frequency_____

_____
_____
_____

Other Disturbance Factors: Yes (If yes, explain what and include distances from nest to disturbances) No

_____
_____
_____
_____

Approximate Age of Nest: New_____ **Historical**: (Number of Years)_____

Evidence of Use (Describe):
_____
_____

Habitat Values Impacted:
_____
_____
_____

Proportion of Habitat Impacted (Relate in terms of habitat available):
_____
_____
_____

Estimated Noise Levels of Project (db):_____

Available Alternative(s) (e.g., location, season, technology):
_____
_____
_____

Associated Activities:

_____
_____
_____

Cumulative Effects of Proposal and Other Actions in Habitat Not Associated With the Proposal:

_____
_____
_____

Potential for site Rehabilitation: High_____Low_____

Notes/Comments:

_____
_____
_____
_____

Summary of Proposed Modifications:

Possible modifications to the spatial and seasonal buffers within the FWS *"Guidelines"* include the following:

_____
_____
_____

Rationale:

_____
_____
_____

Summary of Proposed Mitigation Measures:

Possible mitigation measures related to the proposal include the following:

_____
_____
_____

Rationale:

_____
_____
_____

Summary of Alternatives Considered:

Possible alternatives to the proposal include the following:

_____

_____

_____

Rationale: _____

_____

_____

Recommendation to FO Manager Based on Above Findings:

_____

_____

_____

_____

_____ _____

Field Office Wildlife Biologist Date

ATTACHMENT 2 - NESTING PERIODS AND RECOMMENDED BUFFERS FOR RAPTORS IN UTAH

Attachment 2 - Nesting periods and recommended buffers for raptors in Utah						
Species	**Spatial Buffer (miles)**	**Seasonal Buffer**	**Incubation, # Days**	**Brooding, # Days Post-Hatch**	**Fledging, # Days Post-Hatch**	**Post-fledge Dependency to Nest, # Days[1]**
Bald eagle	1.0	1/1-8/31	34-36	21-28	70-80	14-20
Golden eagle	0.5	1/1-8/31	43-45	30-40	66-75	14-20
N. Goshawk	0.5	3/1-8/15	36-38	20-22	34-41	20-22
N. Harrier	0.5	4/1-8/15	32-38	21-28	42	7
Cooper's hawk	0.5	3/15-8/31	32-36	14	27-34	10
Ferruginous hawk	0.5	3/1-8/1	32-33	21	38-48	7-10
Red-tailed hawk	0.5	3/15-8/15	30-35	35	45-46	14-18
Sharp-shinned hawk	0.5	3/15-8/31	32-35	15	24-27	12-16
Swainson's hawk	0.5	3/1-8/31	33-36	20	36-40	14
Turkey vulture	0.5	5/1-8/15	38-41	14	63-88	10-12
California condor	1.0	NN yet	56-58	5-8 weeks	5-6 months	2 months
Peregrine falcon	1.0	2/1-8/31	33-35	14-21	35-49	21
Prairie falcon	0.25	4/1-8/31	29-33	28	35-42	7-14
Merlin	0.5	4/1-8/31	28-32	7	30-35	7-19
American kestrel	NN[2]	4/1-8/15	26-32	8-10	27-30	12
Osprey	0.5	4/1-8/31	37-38	30-35	48-59	45-50
Boreal owl	0.25	2/1-7/31	25-32	20-24	28-36	12-14
Burrowing owl	0.25	3/1-8/31	27-30	20-22	40-45	21-28
Flammulated owl	0.25	4/1-9/30	21-22	12	22-25	7-14
Great horned owl	0.25	12/1-9/31	30-35	21-28	40-50	7-14
Long-eared owl	0.25	2/1-8/15	26-28	20-26	30-40	7-14
N. saw-whet owl	0.25	3/1-8/31	26-28	20-22	27-34	7-14
Short-eared owl	0.25	3/1-8/1	24-29	12-18	24-27	7-14
Mex. Spotted owl	0.5	3/1-8/31	28-32	14-21	34-36	10-12
N. Pygmy owl	0.25	4/1-8/1	27-31	10-14	28-30	7-14
W. Screech owl	0.25	3/1-8/15	21-30	10-14	30-32	7-14
Common Barn-owl	NN[2]	2/1-9/15	30-34	20-22	56-62	7-14

[1] Length of post-fledge dependency period to parents is longer than reported in this table. Reported dependency periods reflect the amount of time the young are still dependent on the nest site; i.e. they return to the nest for feeding. [2] Due to apparent high population densities and ability to adapt to human activity, a spatial buffer is not currently considered necessary for maintenance of American kestrel or Common barn-owl populations. Actions resulting in direct mortality of individual bird or take of known nest sites is unlawful

ATTACHMENT 3.

UTAH RAPTOR MANAGEMENT EXPERTS FROM VARIOUS AGENCIES

The following list of personnel from various agencies in Utah, are recognized experts in the field of raptor ecology or have extensive field experience in managing raptor resources with competing land uses. The list is provided to inform BLM field biologists and managers of this network of specialized expertise that may be able to assist, as time permits, with specific raptor management issues. Individuals in this Utah Raptor Network, also have well established contacts with an informal extended network of highly qualified raptor ecologists outside the state (i.e. USGS, State Wildlife Agencies, and Universities etc.) which could provide an additional regional perspective.

It should be pointed out that this list is not intended to replace or interfere with established lines of communication but rather supplement these lines of communication.

Utah BLM	**David Mills**	**david_mills@blm.gov**	**435-896-1571**
Utah BLM	**Steve Madsen**	**steve_c_madsen@blm.gov**	**801-539-4058**
Utah DWR	**Dr. Jim Parrish**	**jimparrish@utah.gov**	**801-538-4788**
Utah DWR (NERO)	**Brian Maxfield**	**brianmaxfield@utah.gov**	**435-790-5355**
USFWS	**Laura Romin**	**laura_romin@usfws.gov**	**801-975-3330**
USFWS	**Diana Whittington**	**diana_whittington@usfws.gov**	**801-975-3330**
USFS	**Chris Colt**	**ccolt@fs.fed.us**	**801-896-1062**
HawkWatch Intl	**Jeff Smith**	**jsmith@hawkwatch.org**	**801-484-6808**

ATTACHMENT 4
References Cited

Code of Federal Regulations; 43 CFR 3101.1-2, Leasing Regulations.

Endangered Species Act (ESA); 16 U.S.C. 1513-1543

Migratory Bird Treaty Act (MBTA); 16 U.S.C. 703-712

Romin, Laura A. and James A. Muck, 2002, "Utah Field Office Guidelines For Raptor Protection From Human And Land Use Disturbances." U.S. Department of Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.

Standards for Rangeland Health and Guidelines for Grazing Management; 1997. U.S. Department of Interior, Bureau of Land Management.

U.S. Department of the Interior, Bureau of Land Management; 6840 Manual.

Attachment D
Examples of Flight Diverters and Perch Deterrents

Bird Diverter—Conductor-Mounted

May be used
In raptor areas

EV 121

RCMS Code: BA

Type	Conductor Size	OD (inches)	SI#	Code
Bird Flight Diverter	#6, 4 CU, 8, 6 CWD	0.175–0.249	1010208	A
Bird Flight Diverter	#2, 4 AAAC/ACSR, 250 CU	0.250–0.349	1010209	B
Bird Flight Diverter	1/0 AAC/ACSR, 1/0, 2/0 CU, #2 AWAC	0.350–0.449	1010210	C
Bird Flight Diverter	4/0 AAC/ACSR, 1/0, 4/0, 250 CU	0.450–0.599	1010211	D
Firefly	#4 or larger	up to 2.76	7991245	E
Swan Flight Diverter (SFD 0445)	#6, 4 CU, 8, 6 CWD	175–0.249	7999149	F
Swan Flight Diverter (SFD 0635)	#2, 4 AAAC/ACSR, 250CU	0.250–0.349	7999150	G
Swan Flight Diverter (SFD 0890)	1/0 AAC/ACSR, 1/0, 2/0 CU, #2 AWAC	0.350–0.449	7999151	H
Swan Flight Diverter (SFD 1140)	4/0 AAC/ACSR, 1/0, 4/0, 250 CU	0.450–0.599	7999152	I

Scope

This standard provides information regarding the installation of conductor-mounted bird diverters (Fireflies, Bird Flight Diverters and Swan Flight Diverters) for the prevention of bird collisions and associated outages.

Standard References

EV 001 *Bird Protection—General Information*
EV 011 *Bird Protection—Non-Avian-Safe Designs*
EV 021 *Bird Protection—Avian-Safe Designs and Modifications*

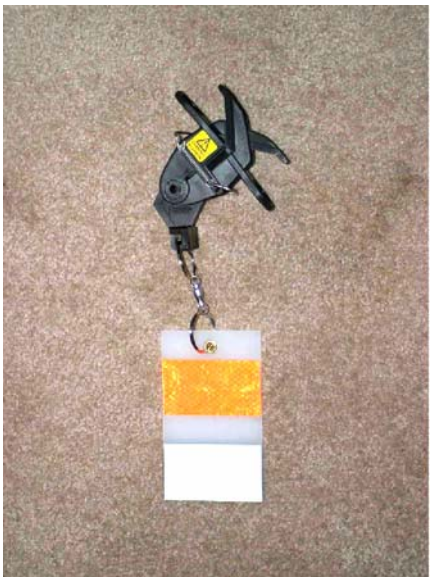

Figure 1—Firefly Bird Diverter (Code E)

A. Firefly

1. General

The Firefly is a swinging marker, with a 3.5” x 6” “flapper” constructed of impact-resistant and UV-stabilized acrylic plastic, and covered with a fluorescent reflective sheeting (Figure 1). A stainless steel ball-bearing swivel system, that is salt spray and weather resistant, attaches the flapper to a stainless steel spring-action mounting clamp. The Firefly reflects light during the day and glows in the dark at night (for up to 10-12 hours), making the line more visible to flying birds.
In addition, the movement of the Firefly may deter birds from perching nearby.
It can be installed with a hotstick, or mounted on a stirrup clamp and then attached to smaller conductors.

2. Installation Information

The Firefly’s clamp will securely grip all single and bundled #4 or larger conductors up to a diameter of 2.76 inches. If Fireflies are installed on smaller conductors, they should be attached using a stirrup clamp (see DE 366), as shown in Figure 2. Fireflies should be installed between 30-50 feet apart on alternating wires, starting

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and ending 50 feet out from poles (Figure 3). To install the Firefly, open the clamp and hold it by one of the circular openings with a hotstick (Figure 4). Align the opening of the Firefly with the conductor and push the other circular opening with a second hotstick to trigger the spring mechanism to close. The Firefly should be handled carefully when opened, as the spring-loaded clamp closes quickly. The clamp and swivel bracket should hang perpendicular to the line so that the Firefly can move freely.

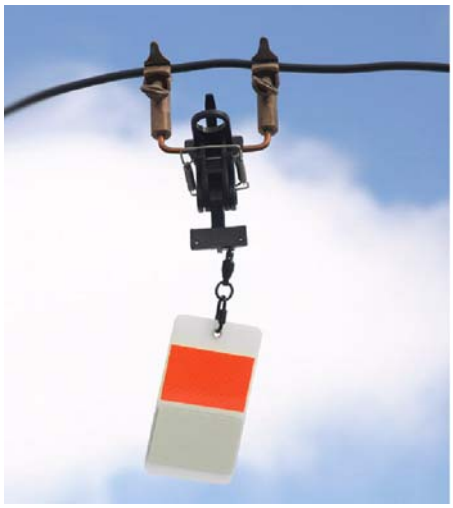

Figure 2 – Firefly Attached to Small Conductor with Stirrup Clamp

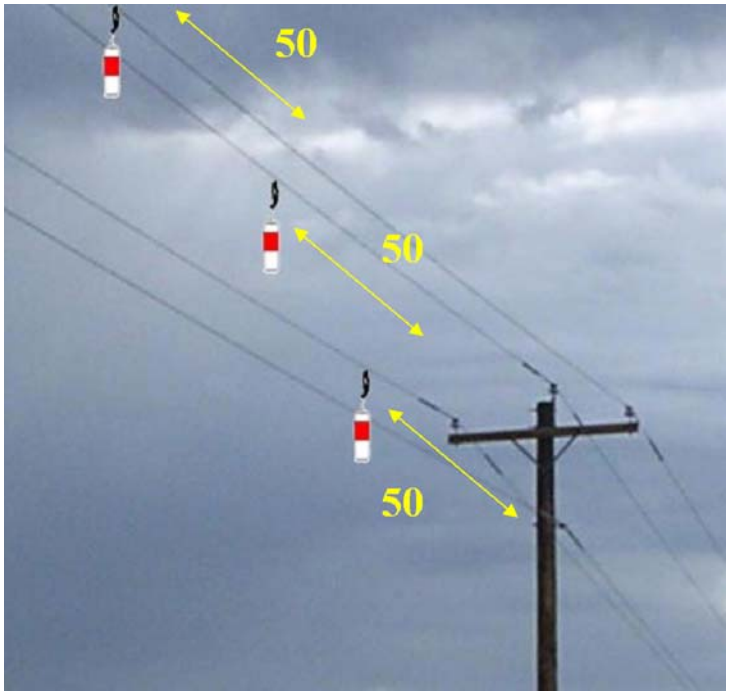

Figure 3 – Spacing of Fireflies on Lines

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Figure 4 – Installation of Firefly

B. Bird Flight Diverter

1. General

Bird and Swan Flight Diverters are constructed much like spiral vibration dampers; however, the diverters have large coils that enhance the visibility of the line for flying birds. They are made from high-impact, UV-stabilized PVC material. They come in several colors, including gray and yellow. Both the Bird and Swan Flight Diverters serve the same function: to reduce bird collisions by increasing the visibility of the line. The diverters differ in size and recommended spacing.
The Swan Flight Diverters (Figure 5) should primarily be used, since they are larger than the Bird Flight Diverters (Figure 6) and require fewer units per span. The Bird Flight Diverters can be used as an alternative to the Swan Flight Diverters, however, more units are required per span.

2. Installation Information

Bird and Swan Flight Diverters can be installed with a hot stick, however, depending on material characteristics, smaller sizes may be more difficult to install.
Swan Flight Diverters should be installed on alternating conductors or static wires at 50-foot intervals (see Figure 3). Bird Flight Diverters should be installed on alternating conductors or static wires at 15-foot intervals.

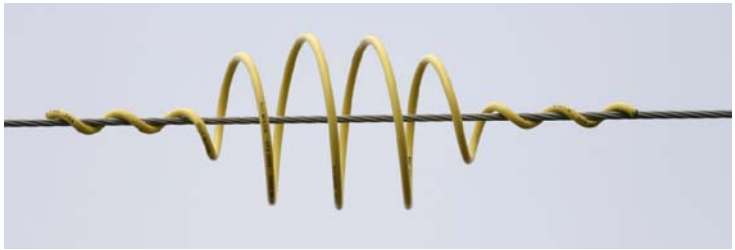

Figure 5 – Swan Flight Diverter (Codes F, G, H and I)

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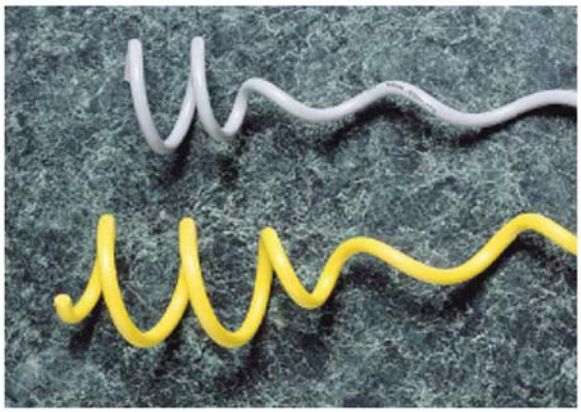

Figure 6 – Bird Flight Diverter (Codes A, B, C and D)

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DATA SHEET

DURAWELD

Innovative Plastic Solutions

MINI-XENA BIRD DISCOURAGER

Description

The **Mini-Xena Bird Discourager** discourages birds from perching on numerous types of power line structures. The **Mini-Xena Bird Discourager** moves birds away from unsafe and sensitive areas, effectively lowering the risks of avian electrocution, insulator and streamer flashovers, structure corrosion and bird strikes.

Benefits

- Transmission & Distribution operators reduce outages from line flashovers and electrocutions,
- Telecommunication operators reduce bird related maintenance on micro wave installations,
- Airport operators reduce strike risk and improve lighting and navigation equipment reliability.

Features

Made in the USA

Designed specifically for raptors and larger birds, the **Mini-Xena Bird Discourager**

- Discourages both perching and nesting,
- Is bird safe and environmentally friendly,
- Installs quickly, and safely reducing downtime,
- Has excellent self-washing characteristics,
- Can protect runs of any length.
- Stackable for ease of storing and shipping.
- Extemely versatile for a multitude of structures in both transmission & distribution systems.

Features (Continued)

- Will mount on most surfaces from flat to round and from narrow to wide.
- Male & female ends for alignment when installing multiple parts.

Application

The **Mini-Xena Bird Discourager** is shipped ready to mount on wooden, steel or fiber-glass arms in minutes. This product is molded using proprietary high-density polyethylene that is contaminant and weather-resistant, and is fixed to the structure using stainless steel straps.

MINI-XENA BIRD DISCOURAGER

Satisfied Customers

Xena Bird Discouragers (The larger version of the **Mini-Xena Bird Discourager**) have a proven track record of reducing the risks associated with raptors and large birds around power line structures. All utility companies investigate power outages in their efforts to deliver increased reliability and customer satisfaction.

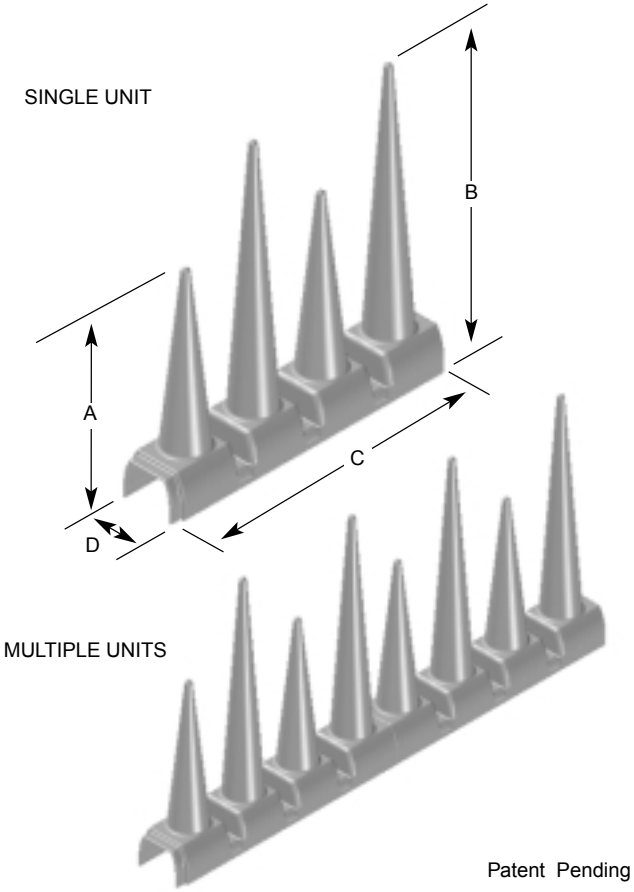
Searching for the unknown causes of some outages, a major Florida Utility found that bird streamers, or waste, was causing transmission power line flashovers.

In collaboration with conservation and industry partners, this innovative utility began a research program to find effective ways to stop raptors and large birds from perching above insulators on transmission & distribution line structures.

Avian researchers found that **Xena Bird Discouragers** were the most effective of all deterrents tested. In field tests, installing **Xena Bird Discouragers** on lines resulted in a very significant reduction in outages. The **Xena Bird Discouragers** are now becoming a standard in the industry to stop streamer flashovers on their H-Frame transmission structures and Spar Arm structures. Not all structures are the same, so we design and build derivative products for your particular requirements.

Combining your knowledge with our engineering expertise, we can quickly create a Xena product to fit your specific application.

Catalog Number	Dimension (Inches)			
	A	B	C	D
DW-3300	15	21	21	4.25



Patent Pending

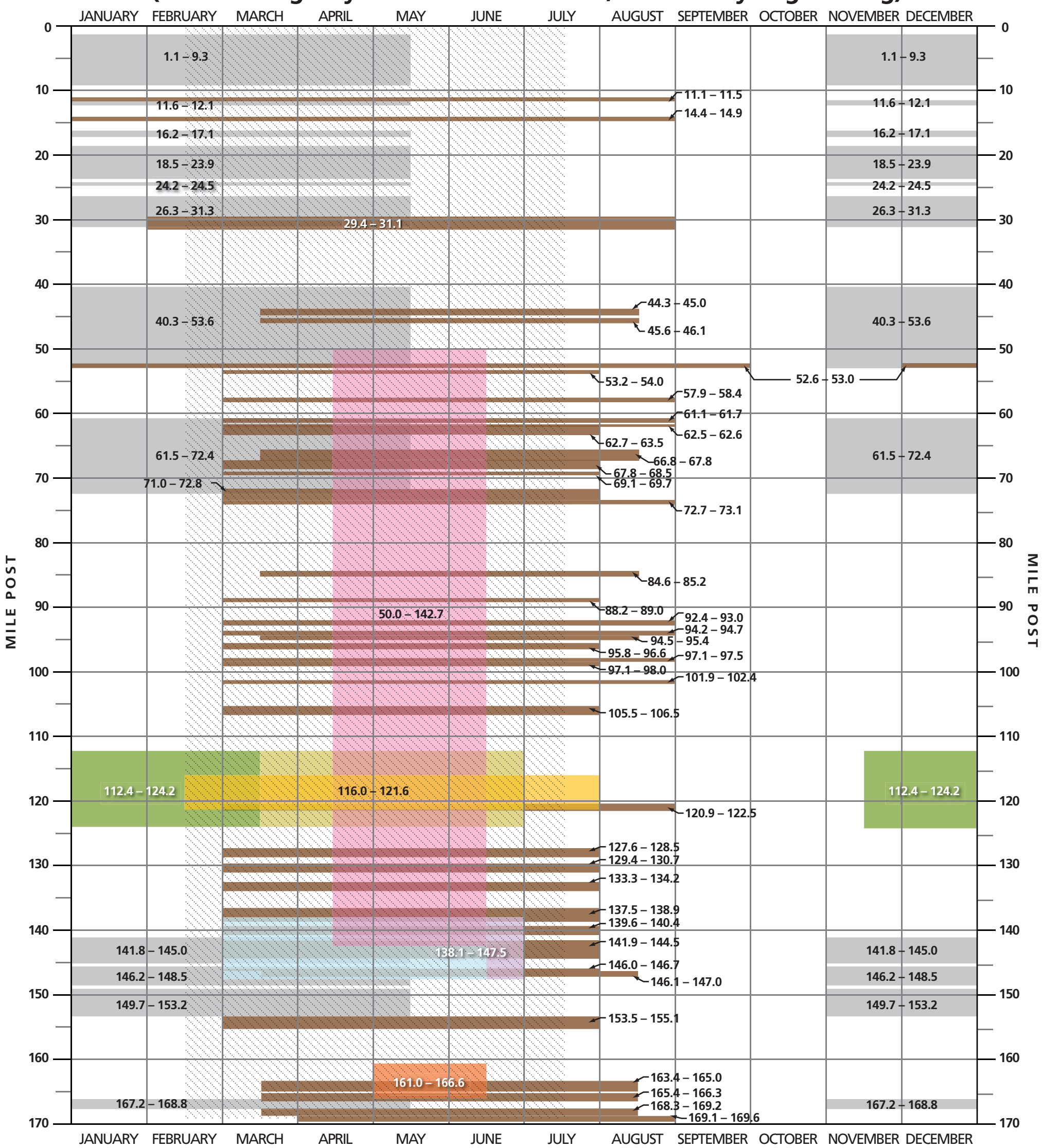
For More Information

To learn more about how our products and services could help your organization, please contact us.

Call: (561) 586-0180
Email: duraweld@dura-weld.com
Visit: www.dura-weld.com

Attachment E
Seasonal Restrictions

Sigurd to Red Butte No.2 – 345kV Transmission Project Seasonal Restrictions (Based on Agency Preferred Alternative, Preliminary Engineering)



Crucial Mule Deer Winter Range (November 1 – May 15) – No construction or maintenance activities within crucial mule deer winter ranges from November 1 to May 15 (UDWR 2010).

Crucial Mule Deer Summer Range (May 1 – June 15) – No construction or maintenance activities within crucial mule deer summer range from May 1 to June 15 (UDWR 2009a, 200b).

Crucial Pronghorn Yearlong Habitat (April 15 – June 15) – Coordinate with UDWR and BLM when construction or maintenance activities are planned within pronghorn crucial year-long habitat between April 15 and June 15

Wild Horse and Burro Herd Managment Areas (March 1 – June 15) – No construction or maintenance activities within wild horse herd management areas from March 1 to June 15.

Wild Horse and Burro Herd Managment Areas (June 15 – July 1) – When feasible, avoid construction and maintenance operations within wild horse herd management areas from June 15 to July 1.

Sage-grouse Lek Areas (February 15 – July 31) – No construction or maintenance activities within 4.0 miles of sage-grouse leks between February 15 and July 31 (UDWR 2009).

UDWR-mapped Sage-grouse Habitat (March 15 – June 15) – No construction or maintenance activities would occur within UDWR-mapped sage-grouse habitat, between March 15 and June 15, to avoid impacts on nesting sage-grouse.

Sage-grouse Crucial Winter Habitat (November 15 – March 15) – No construction or maintenance activities within UDWR-mapped crucial sage-grouse winter habitat between November 15 and March 15.

Nesting Raptors (Potential December 1 – September 30) – No construction or maintenance activities within designated spatial buffers around active raptor nests without written approval from the BLM or USFS Authorized Officer in accordance with the Adaptive Wildlife Management Plan. Detailed maps of spatial nest buffers and seasonal restrictions are included in POD Map Set 1 and Map Set 2. Nests active in 2012 are displayed; locations of active nests are likely to change annually.

Migratory Birds (February 15 – July 15) – Construction and maintenance activities will be performed outside of the primary nesting season. If construction and maintenance activities must to be performed during the nesting season (February 15 – July 15), surveys for migratory bird nests will be conducted in work areas prior to the initiation of any activity. Surveys must be completed by a biological monitor and take place within 72 hours of the initiation of any work. No disturbance will be permitted within 100 feet of active nests until the nest fails or the young successfully fledge, as determined by the biological monitor.

NOTE:
The information depicted on this chart only pertains to seasonal restrictions along the transmission line right-of-way. Seasonal restrictions that are beyond the right-of-way are not illustrated. Adherence to restrictions beyond the right-of-way will be required, including use of and improvement to access roads. Detailed maps of seasonal restrictions are included in POD Map Set 1 and Map Set 2.

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Attachment F
Utah Prairie Dog
Preconstruction Methodology

Utah Prairie Dog Pre-Construction Methodology

Utah prairie dog surveys were completed during the summer of 2010 by EPG biologists certified by the FWS in accordance with the 2010 FWS survey protocol. The purpose of the pre-construction Utah prairie dog surveys is to verify the determination of a May Affect, Not Likely to Adversely Affect finding for Utah prairie dog and ensure that survey results from 2010 have not changed. The methods for Utah prairie dog pre-construction surveys described in this document were consulted on with FWS and concurrence was received on November 9, 2012. Pre-construction surveys are not the same as Occupancy and Habitat Surveys as outlined in the 2010 FWS protocol. The following methodology is recommended for pre-construction surveys:

Pre-construction surveys would be completed in accordance with the following and would be tiered off of Low Intensity Surveys as established in the 2010 FWS protocol:

Pre-construction surveys would be completed within all suitable habitats within the right-of-way. Surveys were completed in 2010 in order to inform the authorized officer of the potential conflicts/issues and aid in the decision of choosing an Agency Preferred Alternative. Pre-construction surveys are intended to identify any Utah prairie dog habitat areas within the right-of-way at least 2 weeks prior to construction within suitable habitat. Previous surveys (Sigurd-Red Butte No 2 345 kV Transmission Project, UNEV Pipeline, and Cedar City Field Office's Utah prairie dog West Desert mapping) and professional knowledge of the local management biologists indicate that the likelihood of occupied Utah prairie dog habitat is low. Based on the existing knowledge, 2010 Utah prairie dog surveys and proximity to mapped Utah prairie dog habitat (greater than 1 mile), the likelihood that Utah prairie dogs have moved on to the right-of-way along the Agency Preferred Alternative (APA) is low.

- All suitable habitat within the 150' right-of-way (including the permanent and temporary construction areas) will be surveyed by foot and/or vehicle (on established roads only) to insure 100% visual coverage. Suitable habitat will be based on the 2010 assessments to delineate where pre-construction surveys would be required.
- Aerial methods are not allowed.
- Vehicle surveyors must stop every ¼ mile (400 m), or more frequently, and get out of the vehicle to walk and obtain clear views in order to scan surrounding areas with suitable optics for the presence of prairie dogs. The surveyor must also listen for Utah prairie dog vocalizations throughout the survey to locate prairie dogs. Scans should not attempt to clear more than 200m (using binoculars or scopes) in either direction. The surveyor should spend a minimum of 5 minutes at each observation point scanning and listening for UPDs.

Surveyor Qualifications:

- *Surveys may only be conducted by certified individuals. Certified surveyors (see glossary) are those who have completed a U.S. Fish and Wildlife Service approved Utah prairie dog survey training course. Certified surveyors must carry training certification cards when conducting surveys.*

Pre-Survey Coordination:

- *Prior to conducting surveys, certified surveyors must coordinate with the authorizing federal agency.*
- *Certified surveyors must survey all suitable habitats in the entire Action Area, including both public and privately owned lands (where private land access is obtained). Suitable habitat was identified during the 2010 surveys and would be used as the basis for pre-construction survey needs.*

Survey Season:

- ***Active Season** – Generally April 1 through August 31; dates may vary depending on site specific conditions and in coordination with the Cedar City Field Office and FWS. Active season surveys can only be conducted when the ground is sufficiently snow free.*

If no Utah prairie dogs or their sign are observed within the entire right-of-way in suitable habitat, the results of the pre-construction surveys will be considered valid for one (1) month. If any new biological information becomes available to the Cedar City Field Office (i.e. Sigurd-Red Butte No 2. preconstruction surveys, other project surveys within the same area, or Cedar City Field Office West Desert Utah prairie dog mapping efforts, etc.) during this time which indicates the potential presence of Utah prairie dogs in the right-of-way, or if any changes are made to the size, scope, and/or nature of the proposed project before or during implementation, survey expiration dates may change and additional surveys may be required during the course of the project.

If any Utah prairie dogs or their sign are observed anywhere within the right-of-way during the pre-construction surveys, then High Intensity Level Surveys (FWS 2010 survey protocol for methodology) will be required in those areas of Utah prairie dog activity. Consultation would be re-initiated immediately if Utah prairie dogs were documented during the pre-construction surveys within the right-of-way.

Data/Report Submission

Data will be provided on the data forms as identified in the 2010 FWS survey protocol. A simple report will be submitted to the BLM's Cedar City Field Office to document survey results for the project record and a data form will be completed. If pre-construction surveys indicate that Utah prairie dog occupancy has changed since 2010, the results will be communicated immediately (within 2 business days of the finding) to the BLM's Cedar City Field Office and requirements for data/report submissions will be the same as those outlined in the Scope of Work and Study Plan (EPG 2012).

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Appendix B7 – Erosion, Dust Control, and Air Quality Plan

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B7 – EROSION, DUST CONTROL, AND AIR QUALITY PLAN

B7.1 Introduction

This Erosion, Dust Control, and Air Quality Plan addresses regulatory compliance, environmental concerns, mitigation recommendations, and monitoring to ensure impacts associated with construction activities are minimized as they relate to soil conservation and air quality.

B7.2 Purpose

This plan provides measures to be used by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), Compliance Inspection Contractor (CIC), and the Construction Contractor(s) to ensure protection of the soils and air quality that will be affected by the Project. This plan is to be implemented during the construction, operation, and maintenance phases of the Project. These measures are intended to address (1) soil erosion and sedimentation and (2) minimize dust and emissions from construction-related activities.

This plan describes a number of mitigation measures that can be used to achieve these goals. Determination of the appropriate control measures to use in a particular area will depend on a variety of factors including weather conditions, selected construction techniques, site characteristics, extent of area to be disturbed, and other factors.

B7.3 Regulatory Compliance

Construction, operation, and maintenance activities for the Project are subject to various regulations designed to protect environmental resources and the public from erosion, dust, and other possible effects to air quality. The following permits and documents contain requirements for preventing accelerated erosion and minimizing dust and emissions. Refer to these documents, along with this plan, when assessing which mitigation measures are appropriate for a specific area. At a minimum, PacifiCorp, doing business as Rocky Mountain Power (Proponent), and the Construction Contractor(s) will need to adhere to or obtain the following permits.

B7.3.1 Federal

- BLM – Right-of-way grant: Federal Land Policy and Management Act of 1976 (Public Law 94-579); 43 United States Code (U.S.C) 1761-1771; 43 Code of Federal Regulations (CFR) 2800
- USFS – Special-use authorization: 36 CFR 251.50; 36 CFR 220
- Environmental Protection Agency – National Pollutant Discharge Elimination System permit: Clean Water Act (CWA) (33 U.S.C. 1342)
- U.S. Army Corps of Engineers – CWA, Section 401: CWA (33 U.S.C. 1344)

B7.3.2 State

- Utah Department of Environmental Quality
  - Division of Water Quality
    - UPDES – General Permits for Construction Activities (33 U.S.C. 1342)
    - CWA Section 401 Water Quality Certification (33 U.S.C. 1344)
    - CWA section 303(d) and 305 Water Quality Program and Implementation Plans
    - State Stream Alteration Permits
  - Division of Air Quality – Air Quality Construction Permit
  - Concrete Batch Plant Permit

B7.3.3 Local

Sevier, Millard, Beaver, Iron, and Washington counties do not have any separate air quality requirements for permitting. All counties identify, through conditional use permits, that any dust control and air quality requirements must follow State of Utah and Utah Department of Environmental Quality regulations and guidelines.

B7.4 Environmental Concerns

B7.4.1 Soil Conservation and Erosion

Soil conservation for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) includes minimizing impacts that will affect soils from the construction and operation of the proposed transmission line, such as minimizing wind and water erosion, soil compaction, surface disturbance, and construction activities in wet soils. Prior to ground disturbance, geotechnical studies have been conducted and a report for affected areas has been prepared to provide more specific detail/measures regarding soil conservation for the Project.

Erosion potential is the result of several factors, including slope, vegetation cover, climate, and the physical and chemical characteristics of the soil. Increased soil erosion may occur when vegetation is removed during construction, or in areas where the surface is disturbed by heavy equipment. Increased water erosion often occurs during high-intensity or long-duration rainstorms and may reduce the productivity of the soil, as well as affect water quality of streams by accelerating sediment loading. Wind is also an erosion factor throughout portions of the Project areas. Soil compaction such as rutting and puddling could also be a concern if there is repeated traffic use on sections of access roads.

Where disturbance is anticipated in areas of steep terrain with high potential for erosion, vegetation clearing and grading will be conducted in a manner to minimize these effects. Soil stabilization and reclamation practices will also be implemented to reduce erosion. In select locations, helicopter construction may be used to further reduce these impacts. In areas of soil compaction (e.g., temporary access roads), soil treatment and reclamation will be implemented as directed in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. In these areas, any buried facilities such as conduit, gourding, or counterpoise should be installed and the location clearly noted before any reclamation activities begin.

B7.4.2 Air Quality and Dust Control

Construction of the transmission line and related facilities will cause a temporary and minimal increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone will also be temporarily and minimally increased due to emissions from heavy construction equipment. Related facilities will cause a minimal increase in fugitive dust.

Air quality control measures are intended to minimize fugitive dust and air emissions and to maintain conditions free from air pollution where practicable. All requirements of those entities having jurisdiction over air quality matters will be adhered to, and any permits needed for construction activities will be obtained by the Construction Contractor(s). The Construction Contractor(s) will not proceed with any construction activities without taking reasonable precautions to prevent excessive particulate matter from becoming airborne and creating nuisance conditions.

Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance, and no open burning of construction trash or other open fires will be allowed. Also, idling of equipment will be limited to reduce exhaust emissions

Where necessary, water may be used as BLM-approved dust control methods during construction, including the grading of roads or the clearing of land and of the right-of-way, and will be applied on unpaved roads, material stockpiles, and other surfaces, which can create airborne dust (refer to discussion in Appendix A4.3 – Temporary Water Use During Construction). Where application of water is not possible, material stockpiles will be enclosed or covered. In addition, open-bodied trucks transporting materials likely to become airborne will be covered. Earth or other materials that may become airborne will promptly be removed from paved roads. Matting will be used in rock blasting operations to minimize and control dust (refer to Appendix B5 – Blasting Plan Framework).

B7.5 Mitigation Measures

The mitigation measures described in this section are applicable to Project construction, reclamation, operation, and maintenance. If new disturbances occur during the operation and maintenance phases of the Project, or if erosion control and air quality measures implemented during construction and reclamation are not effectively minimizing accelerated erosion and reducing dust, the mitigation measures described below will be reviewed and, where necessary, reapplied under the direction of the BLM or USFS Authorized Officer or his/her designated representative, CIC, and Construction Contractor(s).

Because of potential impacts from construction activities, several measures may be necessary to mitigate particular impacts. The following are design features of the Project for environmental protection, selective mitigation measures and other specific stipulations and methods that will be adhered to during construction on a Project-wide basis.

The erosion/dust/air protection measures (EDA) described below include Project-wide or standard measures (EDA-1 through EDA-7), site-specific or selective measures (EDA 8 through EDA 13), and other specific stipulations and methods (EDA 14 through EDA 40).

B7.5.1 Design Features of the Project for Environmental Protection

EDA 1 In construction areas where recontouring is not required, vegetation will be left in place wherever possible, and the original contour will be maintained to avoid excessive root damage and allow for resprouting in accordance with the reclamation plan. Tall vegetation (e.g., trees) not consistent with minimum clearance distances between trees and transmission lines must be maintained to for line safety and reliability (required by National Electric Reliability Council [NERC] Transmission Vegetation Management Program [NERC 2009; 2008; 2006]).

EDA 2 In temporary construction areas (e.g., marshalling yards, tower site work areas, and spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface reclamation will occur as required by the landowner or land-management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

With the exception of sensitive plant habitats, areas on BLM- or USFS-administered public lands disturbed as a part of the construction and/or maintenance of the proposed powerline will be reseeded with a seed mixture appropriate for those areas. The BLM or USFS will prescribe a seed mixture that fits each range site. Seeding methods will typically include drill seeding, where practicable; however, the BLM or USFS may recommend broadcast seeding as an alternative method in some cases. Drill seeding for all Project areas outside the jurisdiction of the BLM Cedar City Field Office will be performed during September 1 through December 15 to maximize the chance of success. Within the jurisdiction of the BLM Cedar City Field Office, drill seeding will be performed during October 15 through December 15. Where broadcast seeding is implemented, seed will be applied at 1.5 to 2 times the rate of drill seeding application, and the seed will be covered by a method such as harrowing or raking.

A Reclamation, Revegetation, and Monitoring Framework Plan identifying reclamation stipulations will be developed and incorporated in the Plan of Development (POD), which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.

EDA 3 In newly disturbed temporary work areas, any soil removed will be salvaged and distributed and contoured evenly over the surface of the disturbed area after construction completion. The soil surface will be left rough to help reduce potential wind erosion.

EDA 4 Grading will be minimized by driving overland within predesignated work areas whenever possible.

EDA-5 All construction vehicle movement outside the right-of-way normally will be restricted to predesignated access, Construction Contractor-acquired access, or public roads.

EDA 6 The spatial limits of construction activities will be predetermined (e.g., 250-foot by 250-foot area for structure work sites), with activity restricted to, and confined within those limits. No paint or permanent discoloring agents indicating survey or construction limits will be applied to rocks, vegetation, structures, fences, etc.

EDA 7 All requirements of those entities having jurisdiction over air quality matters will be adhered to. Any necessary dust control plans will be developed and permits for construction activities will be obtained. Open burning of construction trash will not be allowed. Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance.

B7.5.2 Selective Mitigation

In selective areas, and on a case-by-case basis, the following mitigation measures will be implemented by the Construction Contractor(s) (refer to Volume II – POD Map Sets 1, 2 and 3 of the POD):

EDA 8 Existing access roads/trails will not be widened or otherwise upgraded for construction and maintenance in areas determined by the land-management agency, where soils and vegetation are particularly sensitive to disturbance, except in areas where repairs or widening are needed to make existing roads/trails safely passable and safe.

EDA 9 There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction (or maintenance). Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. Every crossing must be identified and a crossing plan developed. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM and USFS Authorized Officer or his/her designated representative.

EDA 10 The alignment of any new access roads or overland routes in designated areas will follow the landform contours where practicable to minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, providing that such alignment does not impact other resource values.

EDA 11 At canyon crossings, towers will be placed at the maximum feasible distance from the crossing within limits of standard tower design and in conformance with engineering and PacifiCorp requirements to reduce potential erosion and to increase safety at these locations.

EDA 12 Helicopter placement of towers during construction and helicopter patrol and maintenance may be used where practicable to reduce surface impacts in environmental-constraint areas or steep terrain locations. For example, within Inventoried Roadless Areas, The Project will be constructed by helicopter-only construction methods in these areas and supported by overland travel. Helicopters will transport personnel, drilling equipment, towers, and other construction materials to and from the right-of-way and would be used for wire pulling and

tensioning. Appendix A4 – Special Construction Techniques includes guidance regarding the use of helicopters for construction during big game hunting seasons.

EDA 13 The Construction Contractor(s) will use overland access to the greatest extent possible in areas where no grading will be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. Drive-and-crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), hand clearing with small tools such as loppers, and chain saws, and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes would be staked to a minimum width of 14 feet wide and as specified in the POD. Rutting and other similar damage to overland access will be repaired as soon as ground conditions permit.

B7.5.3 Other Specific Stipulations and Methods

B7.5.3.1 Working in Wet Soils

Construction, operation, and maintenance activities will be restricted when the soil is too wet to adequately support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 4 inches deep, over a distance of 50 feet or more in wet or saturated soils). This standard will not apply in areas with fine-grained soils, which easily form depressions even in dry weather. Where the soil is deemed too wet, one or more of the following stipulations or methods will apply:

EDA 14 When feasible, reroute all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas and at the approval of the CIC.

EDA 15 If wet areas cannot be avoided, implement use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. The use of geotextile cushions (prefabricated equipment pads) and other materials also could be used to minimize damage to the substrate where determined necessary by resource specialists. If these measures cannot be successfully applied to wet or saturated soil areas, construction or routine maintenance activities will not be allowed in these areas until the CIC and/or BLM or USFS Authorized Officer or his/her designated representative determines it is acceptable to proceed.

EDA 16 Limit access of construction equipment to the minimum area feasible, remove and separate topsoil in wet or saturated areas, and stabilize subsurface soils with a combination of one or more of the following: perform grading to dewater problem areas, utilize weight dispersion mats, and maintain erosion control measures such as surface rilling and back-dragging. After construction is complete, regrade and recontour the area, replace topsoil, and reseed to achieve the required plant densities as required by the BLM or USFS.

EDA 17 If equipment creates excessive ruts in wet or saturated soils more than 4 inches in depth and these areas require supplemental dewatering, stabilization, erosion control, and reclamation measures to continue construction during wet conditions, increased impacts on soils and vegetation will be mitigated by reclamation and preservation of disturbed soils and vegetation communities offsite. The reclamation and/or preservation will take place offsite in the Project area at a ratio to be determined in consultation with the BLM or USFS and the Proponent. The final acreage for compensation will be determined by quantifying the post-construction disturbance area and condition. Even though it is not considered a significant impact, a compensation ratio of 1:1 offsite is proposed to mitigate for any increased permanent or temporary impacts on soils and vegetation related to continuing construction during wet conditions. This mitigation measure will be in addition to the on-site reclamation of the soil and vegetation disturbed by construction activities during wet conditions.

B7.5.3.2 Vegetation Removal Methods

EDA 18 Vegetation removal and soil disturbances (including temporary road improvements) will be minimized in areas where soil constraints occur. In areas of overland construction, where vegetation removal is required, mowing or cutting and/or back-dragging a cat blade will be the primary method used (also refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan).

B7.5.3.3 Construction on Expansive Soils

EDA 19 Prior to construction, soils will be evaluated to determine if they are expansive and if they may have potential effects on the proposed facilities. Where they represent a potential hazard, solutions recommended by the Project's geotechnical engineer, such as excavation and replacement of the expansive soils with compacted backfill, will be required. If imported backfill material is used, it must be from a BLM/USFS-approved source and certified as free of invasive weeds and propagules (i.e., seeds and root fragments).

B7.5.3.4 Reducing Short-Term Erosion and Sedimentation

The objectives of these measures are to reduce short-term erosion and sedimentation, as well as quickly reclaim topography and vegetation to preconstruction conditions in all areas required and approved by BLM. A qualified resource specialist or the CIC will monitor implementation during construction through the operation phase until successful revegetation is achieved. Monitoring of the erosion control measures will continue until reclamation efforts are considered complete and successful. Implementation of the following stipulations and methods will minimize the effects of grading, excavation, and other surface disturbances in Project areas.

EDA 20 Limit disturbance of soils and vegetation removal to the minimum area necessary for access and construction.

EDA 21 Inform all construction personnel, before they are allowed to work on the Project, of environmental concerns, pertinent laws and regulations, and elements of the erosion control plan.

EDA 22 Minimize grading when required; grading should be conducted away from watercourses (receiving waters) to reduce the risk of material entering the watercourse.

EDA 23 Slope and berm graded material, where possible, to reduce surface water flows across the graded area.

EDA 24 Replace excavated materials in disturbed areas and minimize the time between excavation and backfilling.

EDA 25 Direct the dewatering of excavations onto stable surfaces to avoid soil erosion.

EDA 26 Use detention basins, certified weed-free straw bales, certified weed-free straw wattles, or silt fences where appropriate.

EDA 27 Use drainage control structures, where necessary, to direct surface drainage away from disturbance areas and to minimize runoff and sediment deposition down slope from all disturbed areas. These structures include culverts, ditches, waterbars (berms and cross ditches), rolling dips, and sediment traps.

EDA 28 In areas of highly erodible soils, use nonstandard construction equipment and techniques that minimize surface disturbance, soil compaction, detrimental puddling, and loss of topsoil, such as vehicles with low ground pressure ties, or helicopters when feasible and practicable. Vegetation clearing should be minimized to the degree possible. Erodible slopes that do not require grading should be cleared using equipment that results in little-to-no soil disturbance to the degree practicable.

EDA 29 Re-establish native vegetation cover in highly erodible areas as quickly as possible following construction where determined necessary (refer to Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan).

B7.5.3.5 Drainage Control

EDA 30 A variety of drainage control structures will be used to direct surface runoff away from the road surface to prevent rill and rut development and to control runoff and sediment discharges. The road improvements will include culverts, water bars (at appropriate intervals related to slope and geologic material), ditches, and appropriate grades and inclination.

B7.5.3.6 Dust Control

BLM/USFS approved tackifiers will be the primary means of dust abatement during all phases of construction. The Proponent will obtain permits listed in Section 1.6 – Federal, State, and Local Permits of the POD prior to construction and comply with all conditions in each permit.

EDA 31 Dust suppression techniques will be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones (structures sites) within 0.5 mile of residential and commercial areas and along major highways and interstates. Speed limits of 15 miles per hour on the right-of-way also may be set and strictly enforced in these areas.

EDA 32 Construction water and water used for dust control will come from permitted sources identified by the Construction Contractor(s) and a map showing the locations of these sources will be provided to the CIC. If the quality of the water is found to be causing any environmental changes (i.e., dying vegetation, excessively hard crusting of soils), the Construction Contractor(s) will test the quality of the water and provide the results to the BLM for review.

EDA 33 All Project personnel will be educated on dust control procedures.

B7.5.3.7 Reducing Wind or Water Erosion

EDA 34 To prevent accelerated wind or water erosion on dirt roads, gravel mulches may be added if the mitigation measures described above are not adequate or if the area is not in a sensitive receptor zone. Gravel of approximately 0.75 to 1.5 inches in diameter should be used and cover a minimum of 90 percent of the soil surface. Slopes steeper than 3:1 may require additional sediment and erosion control structures.

B7.5.3.8 Topsoil Replacement

Topsoil salvage and replacement will follow the procedures in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

B7.5.3.9 Surface Roughening

EDA 35 Surface roughening aids establishment of vegetative cover, reduces runoff velocities, increases infiltration, and reduces erosion by providing sediment trapping. Graded areas with smooth surfaces increase the potential for accelerated erosion; therefore, surfaces should be left in a roughened condition whenever possible.

B7.5.3.10 Natural Rock Riprap and Erosion Control Matting

EDA 36 On steep slopes (greater than 30 percent) or in areas of concentrated flows (e.g., waterways) erosion control matting or riprap may be used to stabilize the surface and increase infiltration times.

B7.6 Monitoring

Monitoring of erosion control mitigation measures will continue until reclamation efforts are considered complete and successful, and accelerated erosion has been controlled. The following provides guidance for monitoring the mitigation measures.

B7.6.1 Construction and Reclamation Phase

B7.6.1.1 Erosion Control Structures

EDA 37 During construction, temporary erosion control structures will be inspected daily by the Construction Contractor(s) in areas of active construction or equipment operation, on a weekly basis in areas with no equipment operation, and in all affected areas within 24 hours of each 0.5 inch or greater rainfall event, soil or weather conditions permitting.

EDA 38 If structures clog, deteriorate, fail, are damaged, require maintenance, or are ineffective, the CIC and Construction Contractor(s) will ensure remedial actions are taken within 24 hours, soil or weather conditions permitting.

B7.6.1.2 Graveled Areas

EDA 39 Areas graveled for stabilization will be inspected to ensure depressions caused by vehicle traffic are filled and runoff is not being directed toward wetlands or other receiving waters.

B7.6.1.3 Surface Roughening

EDA 40 Roughened surfaces should be periodically inspected for rills and washes. Areas exhibiting accelerated erosion will be filled and reseeded as necessary or determined by the BLM or USFS Authorized Officer or his/her designated representative.

B7.7 Operation and Maintenance Phase

After construction and reclamation, monitoring the erosion control mitigation measures will continue on an annual basis during the operation and maintenance phase until affected soils have been stabilized. Monitoring should continue until there is no or minimal accelerated erosion and until reclamation efforts are considered complete and successful.

B7.8 References

North American Electric Reliability Cooperation (NERC). 2009. Transmission Vegetation Management Program NERC Standard FAC-003-2 Technical Reference. September 9.

_____. 2008. Transmission Vegetation Management Program: Standard Development Roadmap. October 22.

_____. 2006. Transmission Vegetation Management Program NERC Standard FAC-003-1. April 7.

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Appendix B8 – Hazardous Materials Management Plan Framework

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B8 – HAZARDOUS MATERIALS MANAGEMENT PLAN FRAMEWORK

B8.1 Introduction

The Hazardous Materials Management Plan Framework for the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) is intended to reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and wastes). This plan will identify Project-specific mitigation measures and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project. This document provides a template for the development of a detailed Hazardous Materials Management Plan to be developed by the Construction Contractor(s).

In conjunction with the Hazardous Materials Management Plan, a Spill Prevention, Containment, and Countermeasures (SPCC) Plan will be developed to identify specific legal requirements and practices to achieve identified goals. Refer to Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework for more information.

The term "hazardous materials," as presented in this plan framework, will refer to hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, and materials designated as hazardous for transportation as defined in 49 Code of Federal Regulations (CFR) 171.8.

The Hazardous Materials Management Plan will clearly identify which legal requirements apply to specific types of hazardous materials and will identify design features of the Proposed Action for environmental protection which, although not legally required, will be followed to reduce risks associated with hazardous materials. Nothing in this plan framework or in the Hazardous Materials Management Plan (once developed by the Construction Contractor(s)) shall be construed as an admission regarding the legal applicability of requirements or practices to any particular class of hazardous material.

B8.2 Purpose

The goal of this plan framework is to (1) minimize the potential for a spill of fuel or other hazardous material, (2) contain any spillage to the smallest possible area, (3) protect areas that are environmentally sensitive, and (4) provide a template for the development of a detailed Hazardous Materials Management Plan (by the Construction Contractor(s)). This plan framework includes the following components:

- Framework for developing the Hazardous Materials Management Plan
- Spill prevention procedures related to the transportation, storage, and disposal of hazardous materials
- Spill control, response, and cleanup methods
- An overview of the notification and documentation procedures to be followed in the event of a spill
- Operation and maintenance considerations

In addition, sample hazardous materials management forms (which may be used as examples by the Construction Contractor(s)) are provided at the end of this appendix.

In general, hazardous materials, hazardous wastes, and cleanup equipment will be stored in state-approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility. Persons responsible for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and should be familiar with all applicable laws, policies, procedures, and mitigation measures related to such handling or transportation.

It is the responsibility of the Construction Contractor(s) to maintain file records of proper training/certification for any individual(s) that may potentially handle hazardous materials for the Project. PacifiCorp, doing business as Rocky Mountain Power (Proponent), reserves the right to audit any subcontractors to ensure compliance.

B8.3 Regulatory Compliance

Major legislation pertaining to hazardous materials includes the Comprehensive Environmental Response, Compensation, and Liability Act, Resource Conservation and Recovery Act, Clean Air Act, and Clean Water Act.

Numerous other federal, state, and local regulations also govern the use, storage, transportation, production, and disposal of hazardous materials. Some of the key requirements of these laws are outlined in:

Occupational Safety and Health Administration (29 CFR 1900-1910)

- 28 CFR 1900-1910 Occupational Safety and Health Act
- 29 CFR 1904 Recording and Reporting Occupational Injuries and Illness
- 29 CFR 1910.1200 Hazard Communication
- 29 CFR 1926 Safety and Health Regulations for Construction

Clean Water Act (40 CFR 100-149)

- 40 CFR 110 Discharges of Oil
- 40 CFR 112 Oil Pollution Prevention
- 40 CFR 116 Designation of Hazardous Substances
- 40 CFR 117 Determination of Reportable Quantities for Hazardous Substances
- 40 CFR 122 The Utah Pollutant Discharge Elimination System Permit Program
- 40 CFR 125 Criteria and Standards for the Utah Pollutant Discharge Elimination System
- 40 CFR 129 Toxic Pollutant Effluent Standards
- 40 CFR 131 Water Quality Standards
- 40 CFR 141- 149 Safe Drinking Water Act

Clean Air Act (40 CFR 50-99)

- 40 CFR 50 National Ambient Air Quality Standards
- 40 CFR 61-63 National Emissions Standards for Hazardous Air Pollutants

Toxic Substances Control Act (TSCA) (40 CFR 700-799)

- 40 CFR 710 TSCA Chemical Inventory Regulations
- 40 CFR 761 Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (40 CFR 300-399)

- 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 302 Designation, Reportable Quantities, and Notification
- 40 CFR 355 Emergency Planning and Notification
- 40 CFR 370 Hazardous Chemical Reporting: Community Right-to-know
- 40 CFR 372 Toxic Chemical Release Reporting: Community Right-to-know

Solid and Hazardous Wastes (40 CFR 239-299)

- 40 CFR 201-211 Noise Abatement Programs
- 40 CFR 243 Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
- 40 CFR 260 Hazardous Waste Management System: General
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
- 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
- 40 CFR 273 Standards for Universal Waste Management
- 40 CFR 279 Standards for the Management of Used Oil

Hazardous Materials Transportation Act (49 CFR 100-199)

- 49 CFR 130 Oil Spill Prevention and Response Plans
- 49 CFR 171 General Information, Regulations, and Definitions
- 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- 49 CFR 177 Carriage by Public Highway

Utah Specific Regulations

- Utah Code (UC) Title 19 Chapter 2 – Air Conservation Act
- UC Title 19 Chapter 4 – Safe Drinking Water Act
- UC Title 19 Chapter 5 – Water Quality Act
- UC Title 19 Chapter 6 – Hazardous Substances
- UC Title 19 Chapter 10 – Environmental Institutional Control Act
- UC Title 54 Chapter 8c – High Voltage Overhead Lines
- UC Title 54 Chapter 18 – Siting of High Voltage Power Line Act

B8.4 Framework for Developing the Hazardous Materials Management Plan

The following sections provide specific methods for the Construction Contractor(s) to prepare the Hazardous Materials Management Plan and the SPCC Plan (refer to Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework for more information), if applicable, per 40 CFR 112. The Construction Contractor(s) shall provide all information requested in the forms at the end of this appendix to the Proponent. In addition, the Construction Contractor(s) shall complete any other required county, state, or federal forms.

B8.4.1 Certifications, Acknowledgments, and Designation of Coordinator/ Responsible Person

B8.4.1.1 Certifications

The Construction Contractor(s) shall certify all of the information provided in the Hazardous Materials Management Plan is accurate and complete to the best of their knowledge. The Construction Contractor(s) also will certify they are committed to implementing the plan as written. If an SPCC plan is required, per the requirements of 40 CFR 112, the Construction Contractor(s) additionally may be required to have the plan reviewed and certified by the Construction Contractor's registered professional engineer.

B8.4.1.2 Amendments

The Construction Contractor(s) shall agree to make all necessary and appropriate amendments to the Hazardous Materials Management Plan and submit any and all such amendments to the Proponent and the appropriate county (if required), state, or federal authorities within seven days of finding that an amendment is necessary.

Amendments to the Hazardous Materials Management Plan shall be necessary under any of the following circumstances:

- Applicable laws or regulations are revised.
- A 100 percent or more increase of a previously disclosed hazardous material.
- Any handling of a previously undisclosed hazardous material subject to inventory requirements.
- A change in formulation of a previously disclosed hazardous material (e.g., solid to liquid).
- A change of business address, name, or ownership.
- The list of emergency coordinators changes.
- The list of emergency equipment changes.

The Construction Contractor(s) may be required to amend any SPCC Plan, as required by the applicable regulations.

B8.4.1.3 Coordinator/Responsible Person

The Construction Contractor(s) shall identify an Emergency Coordinator/Responsible Person for hazardous materials management and emergency response (refer to Attachment A – Sample Hazardous Materials Management Plan Framework forms for the form entitled Certifications, Acknowledgments, and Designation of Emergency Coordinator). Two alternates shall also be identified. Business, residential, and mobile phone or pager numbers shall be provided for all three persons to allow for contact on a 24-hour basis. Primary and Alternate Emergency Response Coordinators shall be knowledgeable of the chemicals and processes involved in construction of the Project, and will have the authority to commit Construction Contractor(s) resources to implement the plan. They also shall have stop-work authority in case of noncompliance or danger to human health or the environment.

B8.4.2 Facilities Description and Inventory of Material

B8.4.2.1 Site Map

The Construction Contractor(s) will provide a site map/facility map in the Hazardous Materials Management Plan that contains storage and safety precautions for hazardous materials and hazardous wastes. All maps must be provided on standard 8.5-inch by 11-inch paper and shall, at a minimum, indicate the following:

- Orientation and scale
- Total land area in square feet
- Access and egress points
- Buildings and/or temporary trailers
- Parking areas
- Adjacent land uses (if business, indicate business name)
- Surrounding roads, storm drains, and waterways (including streams and wetlands)
- Locations of hazardous materials and hazardous waste storage areas
- Underground and aboveground tanks
- Containment or diversion structures (dikes, berms, retention ponds)
- Shutoff valves and/or circuit breakers
- Location of emergency response materials and equipment
- Location of material safety data sheets (MSDS), the Hazardous Materials Management Plan, and the SPCC Plan
- Location of emergency assembly area

B8.4.2.2 Inventory

The Construction Contractor(s) shall provide a complete inventory of all hazardous materials. The Construction Contractor(s) shall be responsible for consulting with the relevant agencies if they handle extremely hazardous substances. All inventory forms shall be provided to the Construction Contractor(s) by the Proponent as a part of the Hazardous Materials Management Plan.

B8.5 Spill Prevention Procedures

Construction, operation, and maintenance of the Project will require the use of certain potentially hazardous materials, such as fuels, oils, explosives, and herbicides. By definition, hazardous materials (substances and wastes) have the potential to pose a significant threat to human health and the environment based on their quantity, concentration, or chemical composition. When stored, used, transported, and disposed of properly, as described below, the risks associated with these materials can be reduced substantially.

B8.5.1 Overview of Hazardous Materials Proposed For Use

The following measures pertain to all vehicle refueling and servicing activities, as well as the storage, transportation, production, and disposal of hazardous materials/wastes. These measures are intended to prevent the discharge of fuels, oils, gasoline, and other harmful substances to waterways, groundwater aquifers, and/or other sensitive resource areas during Project construction and maintenance.

Hazardous materials used during Project construction may include petroleum products such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers; explosives; and other substances. Some of these materials will be used routinely at material yards as necessary on the right-of-way to operate and maintain equipment during construction, except within 100 meters (328 feet) of streams or wetlands as defined in Section B8.5.2 – Refueling and Servicing. Explosives will be used for blasting rock where needed to install transmission towers and associated access roads (refer to Appendix B5 – Blasting Plan Framework).

Smaller quantities of other materials such as pesticides and fertilizers, paints, and chemicals (e.g., sulfur hexafluoride) may be used during Project operation and maintenance. Pesticides and herbicides are hazardous materials and will be used according to labeling (also refer to Appendix B10 – Noxious Weed Management Plan). The Construction Contractor(s) will maintain an inventory of all hazardous materials used and MSDS for all materials. The Construction Contractor(s) shall maintain copies of the required MSDS for each hazardous chemical and shall ensure they are readily accessible during each work shift to all employees when they are in their work area(s). The MSDS will provide basic emergency response information for small and large releases of the hazardous materials. In the case that bulk hazardous materials are used, the Emergency Response Guidebook, produced by the U.S. Department of Transportation (USDOT), is an acceptable reference. The Construction Contractor(s) should have a well-developed Hazardous Material Program in place and work to use nonhazardous substances in routine construction and maintenance activities, to the extent possible.

B8.5.2 Refueling and Servicing

Construction vehicles (trucks, bulldozers, etc.), helicopters, and equipment (pumps, generators, etc.) generally will be fueled and serviced in designated areas at least 100 meters (328 feet) from streams (including intermittent and perennial) and wetlands (including dry or seasonal). Refueling locations generally should be flat to minimize the chance of a spilled substance reaching a stream. In most cases, smaller rubber-tired vehicles will be refueled and serviced at local gas stations or material yards. Tracked vehicles typically will be refueled and serviced on site. In some cases, pickup trucks or tankers will be used to refuel and service construction vehicles on the right-of-way. Every effort will be made to minimize the threat of a fuel spill during refueling and servicing. Fuel/service vehicles will carry a suitable absorbent material to collect approximately 20 gallons of spilled materials. In addition, all vehicles will be inspected for leaks prior to being brought onsite and regularly throughout the construction period.

Washing of construction vehicles, such as concrete trucks, will be allowed only in designated areas at least 100 meters (328 feet) from streams and wetlands (as defined above). Washing areas will be contained with berms/barriers to prevent migration of wastewater and/or sediments into streams and waterways. Waste concrete material will be removed and properly disposed of once it has hardened. Additionally, all preventive measures, identified in Appendix B10 – Noxious Weed Management Plan, will be followed, specifically relating to vehicle washing procedures.

B8.5.3 Transportation of Hazardous Materials

Procedures for loading and transporting fuels and other hazardous materials will meet the minimum requirements established by USDOT and the Utah Department of Transportation (UDOT) and other pertinent regulations. Prior to transporting hazardous materials, appropriate shipping papers shall be completed. Transportation of hazardous materials should be performed by a hazardous material transport firm in accordance with USDOT regulations. In addition, the Construction Contractor(s) will ensure all

handling or packaging of hazardous materials and all paperwork for transport of hazardous materials is performed by properly trained personnel in accordance with USDOT and UDOT regulations.

At all times, all hazardous materials used for the Project will be properly stored in approved USDOT containers and labeled, including during transportation. Smaller containers will be used onsite to transport needed amounts of hazardous materials to a specific location. Transfer of materials from large to small containers will be performed using appropriate equipment, including pumps, hoses, and safety equipment; hand pouring techniques will not be used. These smaller (service) containers also will be clearly labeled. Special provisions apply to the transportation of explosives (refer to Appendix B5 – Blasting Plan Framework).

B8.5.4 Storage of Hazardous Materials

Hazardous materials will be stored only in designated material yards. Precautions shall be taken to ensure that contamination of maintenance sites by fuels, motor oils, grease, etc., does not occur and such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum-based or other toxic materials shall be cleaned up and removed immediately.

Material yards will be located at least 100 meters (328 feet) from the edge of perennial and intermittent streams, wetlands (including dry or seasonal), and sensitive areas and will be able to contain the single largest quantity/unit stored at any one time, plus 10 percent. If material yards cannot be located at least 100 meters (328 feet) from streams and wetlands because of topographic conditions or space limitations, special precautions will be taken to prevent the spill or release of hazardous materials into the waterway. These precautions will include limiting the quantity and amount of time such materials are stored near waterways, fortifying barriers, providing additional containment between hazardous materials and the waterway, and using trained personnel to monitor activities at the yard. Cleanup materials, including absorbent spill pads and plastic bags, will also be stored in these areas. The Construction Contractor(s) will specify the appropriate spill kit containing these materials in the Hazardous Materials Management Plan. Hazardous materials will not be stored in areas subject to flooding or inundation. The Construction Contractor(s) shall coordinate with the Compliance Inspection Contractor (CIC) when storage areas cannot be located at least 100 meters (328 feet) from streams and wetlands.

B8.5.4.1 Physical Storage Requirements

Storage Containers

Containers holding hazardous waste or materials will be compatible with the wastes or materials stored. If the container is damaged or leaks, the waste must be transferred to a container in good condition. The Construction Contractor(s) shall inspect containers weekly at a minimum to verify the integrity of the containers and any containment systems. Containers used for transportation must comply with USDOT and UDOT requirements.

Incompatible Materials

Materials, including hazardous wastes, will not be placed in containers that previously held an incompatible waste or material.

Ignitable or Reactive Materials

Containers holding hazardous wastes or materials that are reactive or may ignite must be located at least 50 feet from the material yard's property line. "NO SMOKING" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive material.

Container Management

Containers holding hazardous wastes will be kept closed at all times, except when it is necessary to add or remove contents. Before the handling and/or transportation of containers carrying hazardous wastes, the containers should be inspected to ensure they are sealed such that no material spillage occurs.

Secondary Containment

Secondary containment will consist of bermed or diked areas that are lined and capable of holding 110 percent of the volume of the stored material and will be provided for liquid hazardous materials stored onsite.

Security

Hazardous wastes and materials will be stored in secure areas to prevent damage, vandalism, or theft. All storage containers will remain sealed when not in use and storage areas shall be secured (gated, locked, and/or guarded) at night and/or during nonconstruction periods.

Explosives

Storage of explosives is discussed in Appendix B5 – Blasting Plan Framework.

B8.5.4.2 Container Labeling Requirements

The Construction Contractor(s) shall comply with the following labeling requirements for any container (including tanks) used onsite to store accumulated hazardous wastes. Figure B8-1 shows an example of a hazardous waste label for onsite storage. The containers shall be labeled with the information below and as required in 40 CFR 262:

- The accumulation start date and/or the date the 90-day storage period began
- The words: "Hazardous Waste"
- The composition and physical state of the wastes
- Warning words indicating the particular hazards of the waste, such as flammable, corrosive, or reactive
- The name and address of the facility that generated the waste

HAZARDOUS WASTE
Contents: _____ Physical State (gas, liquid, solid): _____ Accumulation Start Date: _____ Hazards: _____ Name and Address of Generator: _____ _____ _____ Contact Person: _____ Telephone:_____
HANDLE WITH CARE! CONTAINS HAZARDOUS OR TOXIC WASTES

Figure B8-1. Sample Hazardous Waste Label for Onsite Storage

B8.5.5 Disposal of Hazardous Wastes

Hazardous wastes will be collected regularly and disposed of in accordance with all applicable laws and regulations. The Construction Contractor(s) shall determine details on the proper handling and disposal of hazardous waste and shall assign responsibility to specific individuals prior to construction of the Project.

Every effort will be made to minimize the production of hazardous waste during the Project including, but not limited to, minimizing the amount of hazardous materials needed for the Project; using alternative nonhazardous substances when available; recycling usable material such as oils, paints, and batteries to the maximum extent; and filtering and reusing solvents and thinners whenever possible.

Any generator of hazardous waste must apply for an Environmental Protection Agency (EPA) Identification Number. The identification number is needed to complete the Uniform Hazardous Waste Manifest to ship wastes offsite. A generator can accumulate hazardous wastes onsite for a period of up to 90 days without having to obtain a permit as a storage facility.

B8.5.6 Contaminated Containers

Containers that once held hazardous materials as products or held hazardous wastes must be considered as potential hazardous wastes due to the possible presence of residual hazardous material. Regulations specify certain requirements, listed below, for the container to be handled as a nonhazardous waste.

- The containers must be empty, which means as much of the contents have been removed as possible using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating) so none will pour out in any orientation.
- A container that held compressed gas is empty when the pressure in the container approaches atmospheric.
- If empty containers are less than five gallons, they may be disposed of as a nonhazardous solid waste or scrapped.
- If the empty containers are greater than five gallons, they must be handled in the following manner:
  - returned to the vendor for reuse,
  - sent to a drum recycler for reconditioning, or
  - used or recycled onsite.
- All these actions must occur within 1 year of the container being emptied.

B8.5.7 Waste Oil Filters

Used metal canister oil filters can be managed as nonhazardous wastes if:

- They are thoroughly drained of "free flowing" oil (oil exiting drop-by-drop is not considered "free flowing").
- The filters are accumulated, stored, and transferred in a closed, rainproof container.
- The filters are transferred for the purposes of recycling.
- The filters are not terne-plated (an alloy of tin and lead).

Terne-plated oil filters are a hazardous waste, exhibiting the hazardous characteristic of lead. Terne-plated oil filters not recycled must be managed as a hazardous waste.

B8.5.8 Used Lubricating Oil

Lubrication oil is considered a used oil, as listed below:

- Any oil that has been refined from crude oil and as a result of use has been contaminated with physical or chemical impurities.
- Any oil that has been refined from crude oil and, as a consequence of extended storage, spillage, or contamination with nonhazardous impurities such as dirt, rags, and water, is no longer useful to the original purchaser.
- Spent lubricating fluids that have been removed from a truck, heavy equipment, automobile, or bus.

Used oil may be a hazardous waste if:

- The concentrations of polychlorinated biphenyls exceed 50 parts per million.
- Total halogens exceed 1,000 parts per million.
- Mixed with a hazardous waste.

Used oil not being burned or recycled must be managed as a hazardous waste unless it is determined to be nonhazardous through laboratory analysis.

B8.6 Mitigation Measures

Design features of the Project for environmental protection for hazardous materials (HM), applied Project wide, will address many of the concerns associated with hazardous substances and have been developed in accordance with the Bureau of Land Management (BLM) standards. Following is a description of design features of the Proposed Action for environmental protection to address hazardous materials during the construction and operation of Project facilities.

B8.6.1 Design Features of the Project for Environmental Protection

HM 1 Where work will occur on hazardous and contaminated sites, the Proponent must seek approval from the EPA. Work on contaminated sites must avoid remedial

structures (e.g., capped areas, treatment, or monitoring wells, etc.) and workers must use adequate worker protection measures for working in contaminated areas.

HM 2 Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.

HM 3 Refueling and storing potentially hazardous materials will not occur within a 100-meter (328-foot) radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 100-meter (328-foot) radius of any riparian area or water body. Spill preventive and containment measures or practices will be incorporated as needed.

B8.7 Other Specific Stipulations and Methods

The following section outlines the physical and procedural steps to be taken in the event of a spill to be included in conjunction with any mitigation measures and other specific stipulations and methods identified in the SPCC Plan. In general, the Construction Contractor(s) will oversee all cleanup activities, including providing necessary materials and labor, and performing all reporting and documentation as required. All spills, regardless of quantity, will be reported to the CIC. The responsibilities of the CIC are defined in Appendix A6 – Environmental Compliance Management Plan of this Plan of Development (POD).

B8.7.1 Physical and Procedural Response Measures

HM 4 Physical response actions are intended to ensure all spills are immediately and thoroughly contained and cleaned up. However, the first priority in responding to any spill is personal and public safety. Construction personnel will be notified of evacuation procedures to be used in the event of a spill emergency, including evacuation routes. In general, the first person on the scene will:

- Attempt to identify the source, composition, and hazard of the spill.
- Notify appropriately trained personnel immediately.
- Isolate and stop the spill, if possible, and begin cleanup (if it is safe).
- Initiate evacuation of the area, if necessary.
- Initiate reporting actions.

HM 5 Persons should only attempt to cleanup or control a spill if they have received proper training and possess the appropriate protective clothing and cleanup materials. Untrained individuals should notify the appropriate response personnel. In addition to these general measures, persons responding to spills will consult the Emergency Preparedness Plan and the MSDSs or USDOT Emergency Response Guidebook (to be maintained by the Construction Contractor(s) onsite during all

construction activities), which outlines physical response guides for hazardous materials spills.

HM 6 In general, expert advice will be sought to properly cleanup major spills. For spills on land, berms will be constructed to contain the spilled material and prevent migration of hazardous materials toward waterways. Dry materials will not be cleaned up with water or buried. Contaminated soils will be collected using appropriate machinery, stored in suitable containers, and properly disposed of in appropriately designated and approved areas offsite. After contaminated soil is recovered, all machinery used will be decontaminated, and recovered soil will be treated as hazardous waste. Contaminated cleanup materials (absorbent pads, etc.) and vegetation will be disposed of in a similar manner. For spills, cleanup may be verified by sampling and laboratory analysis at the discretion of the Proponent.

HM 7 If spilled materials reach water, appropriate materials such as booms and skimmers will be used to contain and remove contaminants. Other actions will be taken, as necessary, to cleanup contaminated waters. If construction activity occurs within a wetland with standing water or a flowing stream prior to construction, absorbent booms will be placed on the water surface either around or downstream of the construction zone. For example, during construction of a stream crossing, an absorbent boom would be placed in a flowing stream just downstream of the construction site. In addition to this measure, cleanup materials, including absorbent spill pads and plastic bags, will be placed onsite at flowing streams and "wet" wetlands when construction is occurring within 100 meters (328 feet) of these areas (also refer to Appendix B2 – Stormwater Pollution Prevention Plan Framework).

B8.7.1.1 Onsite Equipment

The Construction Contractor(s) is responsible for designating locations and contents of spill kits to be used during Project construction. The following guidance is provided in developing the contents of a spill kit. The location and minimum inventory for each spill kit must be documented in the Hazardous Materials Management Plan.

HM 8 Emergency spill response kits will be maintained at all locations where hazardous materials are stored, in sufficient quantities based on the amount of materials stored onsite. Spill response equipment should be compatible with types of materials stored onsite. Spill response equipment should be inventoried regularly to ensure spill response equipment is adequate for the type and quantities of materials being used. The following equipment, are examples of spill response equipment for use in cleanup situations:

- Shovels
- Absorbent pads/materials
- Personal protective gear
- Medical first-aid supplies
- Bung wrench (nonsparking)
- Phone list with emergency contact numbers
- Storage containers
- Communications equipment

In addition, radios or other communication equipment will be maintained in construction vehicles and other easily accessible locations. Additional cleanup materials may be required, as specified in the SPCC Plan

B8.7.2 Employee Spill Prevention/Response Training and Education

HM 9 The Construction Contractor(s) and subcontractors shall provide spill prevention and response training to appropriate construction personnel (refer to Occupational Safety and Health Act requirements in UC, Title 34A, Chapter 6). Persons accountable for carrying out the procedures specified herein will be designated prior to construction and informed of their specific duties and responsibilities with respect to environmental compliance and hazardous materials. The training shall inform appropriate personnel of site-specific environmental compliance procedures. Training of personnel should be completed at least once a year. All training events should be documented, including the date and names of those personnel in attendance. These records shall be maintained with the SPCC Plan and/or Hazardous Materials Management Plan. At a minimum, this training shall include the following:

- An overview of regulatory requirements
- Methods for the safe handling/storage of hazardous materials
- Spill prevention procedures
- Emergency response procedures
- Use of personal protective equipment
- Use of spill cleanup equipment
- Procedures for coordinating with emergency response teams
- Procedures for notifying agencies
- Procedures for documenting spills
- Identification of sites/areas requiring special treatment, if any

B8.8 Notification and Documentation Procedures

HM 10 Notification and documentation procedures for spills that occur during Project construction, operation, or maintenance will conform to applicable federal, state, and local laws and regulations. Adherence to such procedures will be the top priority once initial safety and spill response actions have been taken. The following sections describe the notification and documentation procedures, and should be implemented in conjunction with the response procedures listed in the Hazardous Materials Management Plan.

B8.8.1 Required Notification

HM 11 Notification will begin as soon as possible after discovery of a spill. The individual who discovers the spill will contact the Contractor's supervisory personnel and the CIC. If the Construction Contractor determines the spill may seriously threaten human health or the environment, he/she will orally report the discharge as soon as

possible, but no later than 24 hours from the time they become aware of the circumstances, as directed below. A written report must be submitted to Utah Department of Environmental Quality (DEQ) within 15 days. Prior to initiating notification, the Construction Contractor(s) (or individual initiating notification) should obtain as much information as possible (refer to Table B8-1 for standard information requested by agencies).

TABLE B8-1 STANDARD SPILL INFORMATION REQUESTED BY AGENCIES
When notifying a regulatory agency, the following information should be provided:
current threats to human health and safety, include known injuries, if any spill location, including landmarks and nearest access route reporter's name and phone number time spill occurred type and estimated amount of hazardous materials involved potential threat to property and environmental resources, especially streams and waterways status of response actions

HM 12 The following mandatory notifications will be made by the Construction Contractor(s). These numbers should be documented in the SPCC plan, along with the contact information for the cleanup contractor. Select and notify the appropriate government agencies based on geographic location of the spill site.

- Utah DEQ (24 hours) at (801) 536-4123.
- If spill threatens human health, call 911, and the appropriate county response center.
- National Response Center (NRC) (800) 424-8802. The NRC should be notified of a reportable spill as required by 40 CFR 110, 40 CFR 117, and/or 49 CFR 171.

The Construction Contractor(s) will verify and update these emergency phone numbers before and during construction. The Construction Contractor(s) (or other person in charge) will notify the CIC of all spills or potential spills within construction areas.

HM 13 When a spill poses a direct and immediate threat to health and safety and/or property, the BLM and landowners potentially affected by a spill will be notified directly by the Construction Contractor(s). Immediate notification of BLM and landowners is required for all situations in which the spill poses a direct and immediate threat to health and safety and/or property. Failure to report a spill could result in substantial penalties and fines (up to $25,000 per day).

B8.8.1.1 Reporting Criteria – Utah

The Construction Contractor(s) and subcontractors are required to report all hazardous materials spills to the CIC. Utah DEQ must be notified by the Construction Contractor(s) as soon as possible, but no later than the end of the first working day of the release. Following are the Utah DEQ reporting requirements for hazardous waste/material/substance:

- **R315-9-1. Immediate Action.**

In the event of a spill of hazardous waste or material which, when spilled, becomes hazardous waste, the person responsible for the material at the time of the spill shall immediately:

(a) Take appropriate action to minimize the threat to human health and the environment.
(b) Notify the Utah DEQ, 24-hour Answering Service, 801-536-4123 if the following spill quantities are exceeded:
  (1) One kilogram of material listed in paragraph R315-2-10(e), which includes F999 and incorporates by reference 40 CFR 261.31, and which is an acute hazardous waste identified with a hazard code of (H), or in R315-2-11(e), which incorporates by reference 40 CFR 261.33(e). Notify for a spill of a lesser quantity if there is a potential threat to human health or the environment; or
  (2) One hundred kilograms of hazardous waste or material which, when spilled, becomes hazardous waste, other than that listed in R315-2-11(e), which incorporates by reference 40 CFR 261.33(e). Notify for a spill of a lesser quantity if there is a potential threat to human health or the environment.
(c) Provide the following information when reporting the spill:
  (1) Name, phone number, and address of person responsible for the spill.
  (2) Name, title, and phone number of individual reporting.
  (3) Time and date of spill.
  (4) Location of spill - as specific as possible including nearest town, city, highway or waterway.
  (5) Description contained on the manifest and the amount of material spilled.
  (6) Cause of spill.
  (7) Emergency action taken to minimize the threat to human health and the environment.
(d) An air, rail, highway, or water transporter who has discharged hazardous waste shall:
  (1) Give notice, if required by 49 CFR 171.15 to the NRC, 800-424-8802 or 202-426-2675; and
  (2) Report in writing as required by 49 CFR 171.16 to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590.
(e) A water, bulk shipment, transporter who has discharged hazardous waste must give the same notice as required by 33 CFR 153.203 for oil and hazardous substances.

- **R315-9-2. Emergency Control Variance.**

If a spill of hazardous waste requires immediate removal to protect human health or the environment, as determined by the Executive Secretary, a variance may be granted by the Utah DEQ Executive Secretary to the manifest and recordkeeping requirements of these rules until the spilled material and any residue or contaminated soil, water or other material resulting from the spill no longer presents an immediate hazard to human health or the environment, as determined by the Executive Secretary.

- **R315-9-3. Spill Cleanup.**

The person responsible for the material at the time of the spill shall clean up all the spilled material and any residue or contaminated media or other material resulting from the spill or take action as may be required by the Utah DEQ Executive Secretary so that the spilled material, residue, or contaminated media no longer presents a hazard to human health or the environment as defined in R315-101. The cleanup or other required actions shall be at the expense of the

person responsible for the spill. If the person responsible for the spill fails to take the required action, the Department may take action and bill the responsible person.

- **R315-9-4. Reporting.**

  Within 15 days after any spill of hazardous waste or material which, when spilled, becomes hazardous waste, and is reported under R315-9-1(b), the person responsible for the material at the time of the spill shall submit to the Utah DEQ Board or the Utah DEQ Executive Secretary a written report which contains the following information:

  (a) The person's name, address, and telephone number;
  (b) Date, time, location, and nature of the incident;
  (c) Name and quantity of material(s) involved;
  (d) The extent of injuries, if any;
  (e) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
  (f) The estimated quantity and disposition of recovered material that resulted from the incident.

The reportable quantities for hazardous substances are based on federal EPA guidelines established under 40 CFR 302. Any spill that affects a waterway within the State of Utah must be reported, regardless of quantity (Utah Code 19-5-114).

B8.8.2 Documentation

HM 14 The Construction Contractor(s) will maintain records for all spills. State and federal agencies that have been verbally notified of a spill will be informed in writing within 10 days for state agencies and 30 days for federal agencies.

HM 15 The Construction Contractor(s) shall record spill information in a daily log. The following is a list of items that should be included in the daily log (as appropriate, based on the spill incident):

- time and date of each log entry
- name of individual recording log entry
- list of all agencies notified, including name of individual notified, time, and date
- type and amount of material spill
- resources affected by spill
- list of response actions taken, including relative success
- copies of letters, permits, or other communications received from government agencies throughout the duration of the spill
- copies of all outgoing correspondence related to the spill
- photographs of the response effort (and surrounding baseline photographs if relevant)

Maintaining detailed and organized records during a spill incident is an important and prudent task. One Construction Contractor(s) representative should be designated to manage the records for an incident. If extensive spill response and cleanup operations are required, the Construction Contractor(s) may choose to assign an individual to assist in the documentation process. This person will track and manage all

expenditures (i.e., equipment, personnel/labor hours, and associated resources) and will help supplement the information provided in the daily log book.

B8.9 Operations and Maintenance

HM 16 During the Project's operation and maintenance phase, the Proponent will ensure its facilities, personnel, and contractors comply with federal, state, and local laws and regulations pertaining to the use, storage, transport, and disposal of hazardous materials and adhere to required emergency response and cleanup procedures in the event of a hazardous material spill. The Proponent and all operations and maintenance subcontractors shall develop hazardous materials management and response plans and properly train employees for handling, packaging, and shipping hazardous materials and responding to hazardous materials spills or emergency events.

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Attachment A
Sample Hazardous Materials Management Plan Framework Forms

CERTIFICATIONS, ACKNOWLEDGMENTS, AND DESIGNATION OF EMERGENCY COORDINATOR

The Construction Contractor(s) responsible for managing the material yards shall complete and submit the following information:

GENERAL INFORMATION

Business Name

Facility Street Address

( )

City County Zip Code Phone

Mailing Address (if different)

( )

City County Zip Code Phone

EMERGENCY COORDINATOR

	( )	( )	( )
Primary Emergency Coordinator	Business Phone	24-hour Phone	Pager/Cellular Phone
	( )	( )	( )
1st Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone
	( )	( )	( )
2nd Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone

Note: Certification is only necessary if an SPCC Plan is required (see Appendix B3).

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SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURES

The Construction Contractor(s) shall identify all sources of potential spills including tank overflow, rupture, or leakage. Spill Prevention, Containment, and Countermeasures information must be included for all containers with a capacity of 55 gallons or greater that contain oil including petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste.

(1) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(2) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(3) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(4) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

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EMERGENCY CHECKLIST

** DIAL 911 FOR EMERGENCY RESPONSE**

Emergency Coordinator:	_____	( ) _____ (day phone)	( ) _____ (night phone)
First Alternate:	_____	( ) _____ (day phone)	( ) _____ (night phone)
Second Alternate:	_____	( ) _____ (day phone)	( ) _____ (night phone)

_____ Contractor

_____ Telephone Number

_____ Address

EMERGENCY NUMBERS

Emergency Response (Ambulance, Fire, Police, Sheriff, Utah Highway Patrol)		call 911
Poison Control Center		(800) 456-7707
Nearest Hospitals (2)	_____	Phone:_____
	_____	Phone:_____
Cleanup Contractor	_____	Phone:_____
Other (specify)	_____	Phone:_____
Other (specify)	_____	Phone:_____

AGENCY NOTIFICATIONS (to be made by the Proponent's environmental manager or environmental field supervisor or emergency response coordinator)

Utah Department of Public Safety	(801) 965-4461
Utah Department of Environmental Quality:	(801) 536-4100
Division of Environmental Response and Remediation	
National Response Center	(800) 424-8802

Other (specify)	_____	Phone #:_____
Other (specify)	_____	Phone #_____

Note: The Construction Contractor(s) shall verify and update the emergency numbers on this page before and during Project construction.

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WEEKLY HAZARDOUS MATERIALS/WASTE INSPECTION LOG

For each item listed below, the Construction Contractor(s) shall indicate whether existing conditions are acceptable (A) or unacceptable (U). Resolution of all unacceptable conditions must be documented. The Construction Contractor(s) shall inspect all storage facilities on a regular basis, but not less than weekly. The Construction Contractor(s) shall keep records of all inspections on file.

I. STORAGE AREAS FOR FUELS, LUBRICANTS, AND CHEMCIALS

General

A/U

_____ Material yard and storage areas secured
_____ National Fire Protection Association 704 system symbol posted in storage area or at material yard entrance
_____ Storage areas properly prepared and signed
_____ No evidence of spilled or leaking materials
_____ Incompatible materials separated
_____ All containers labeled properly
_____ All containers securely closed
_____ All containers upright
_____ No evidence of container bulging, damage, rust, or corrosion
_____ Material Safety Data Sheets available
_____ Hazardous Materials Management and Spill Prevention Plan available

Secondary Containment Areas

A/U

_____ Containment berm intact and capable of holding 110 percent of material stored
_____ Lining intact
_____ No materials overhanging berms
_____ No materials stored on berms
_____ No flammable materials used for berms

Compressed Gases

A/U

_____ Cylinders labeled with contents
_____ Cylinders secured from falling
_____ Oxygen stored at least 25 feet away from fuel
_____ Cylinders in bulk storage are separated from incompatible materials by fire barriers or by appropriate distance

II. HAZARDOUS WASTE MANAGEMENT

Waste Container Storage

A/U

_____ No evidence of spilled or leaking wastes
_____ Adequate secondary containment for all wastes
_____ Separate containers for each waste stream – no piles
_____ Waste area not adjacent to combustibles or compressed gases
_____ All containers securely closed
_____ Bungs secured tightly
_____ Open-top drum hoops secured
_____ All containers upright
_____ No evidence of container bulging, corrosion
_____ No severe container damage or rust
_____ Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
_____ No smoking and general danger/warning signs posted

Waste Container Labeling

A/U

_____ Containers properly labeled
_____ Name, address, and EPA Identification number or Identification Number of generator listed
_____ Accumulation start date listed
_____ Storage start date listed
_____ Chemical and physical composition of waste listed
_____ Hazardous properties listed

Nonhazardous Waste Areas

A/U

_____ No litter in material yard
_____ No hazardous wastes with trash (e.g., contaminated soil, oily rags, or other oily materials)
_____ Empty oil and aerosol containers for disposal as nonhazardous waste are completely emptied

III. EMERGENCY RESPONSE EQUIPMENT

A/U

_____ Shovels
_____ Absorbent material
_____ Personal protective equipment (tyvek suit, gloves, goggles and booties, as appropriate)
_____ Fire-fighting equipment
_____ First aid supplies (e.g., medical supplies, squeeze bottle eye wash)
_____ Communication equipment
_____ Bung wrench (nonsparking)

IV. CORRECTIVE ACTIONS TAKEN (Required for all unacceptable conditions)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Date: _____ **Company (print):**_____

Inspected by (print):_____

Signature:_____

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Appendix B9 – Emergency Preparedness and Response Plan Framework

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B9 – EMERGENCY PREPAREDNESS AND RESPONSE PLAN FRAMEWORK

B9.1 Introduction

The Emergency Preparedness and Response Plan Framework is intended to provide an overview of methods to be implemented if the need for emergency management is imminent. This document discusses the existing support structure, chain of command, and emergency communications protocols to be used as a guide for an Emergency Preparedness and Response Plan to be completed by PacifiCorp, doing business as Rocky Mountain Power (Proponent), Construction Contractor(s) and approved by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS). More specific emergency procedures for blasting, fire, and hazardous materials are included in Appendix B5 – Blasting Plan Framework, Appendix B8 – Hazardous Materials Management Plan Framework, and Appendix B11 – Fire Protection Plan.

Emergency response procedures will be implemented for the following potential events, or similar events:

- Downed transmission lines, structures, or equipment failure
- Fires
- Sudden loss of power
- Natural disasters
- Serious personal injury

B9.2 Purpose

The purpose of an Emergency Preparedness and Response Plan is to provide clear procedures and information to enable the Proponent, the Construction Contractor(s), the Compliance Inspection Contractor, and the BLM or USFS Authorized Officer or his/her designated representative to prepare for and effectively respond to emergency situations. The primary objective of this plan is to prevent adverse impacts on human health and safety, property, and the environment that could potentially occur as a result of the construction, operation, and maintenance of the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project).

B9.3 Regulatory Compliance

Health and safety guidelines related to high-voltage transmission lines are provided by a number of sources including the National Electric Safety Code, American National Standards Institute, American Medical Association Council on Scientific Affairs, American Conference of Governmental Industrial Hygienists, various state regulations, other organizations, and the Proponent. The Occupational Safety and Health Administration also provide regulations for construction activities.

B9.4 Responsibilities

The Proponent and the Construction Contractor(s) are responsible for the effective response to any emergency situation or event related to the construction, operation, and maintenance of the Project. To

ensure a coordinated and effective response, a chain of command will be developed as part of the Emergency Preparedness and Response Plan and followed in the event of an emergency.

In the establishment of a chain of command, considerations such as the level of activation and the participation necessary to respond to specific situations are to be taken into account. The following are factors for the establishment of a chain of command:

- Type of event (natural, environmental, electrical supply/outage, external forces)
- Severity and geographic area (multiple or combination of events)
- Anticipated duration
- Multi-division/discipline response required
- External agency coordination

B9.5 Response Coordination

The amount of resources and coordination required for response to a specific hazard or emergency is determined by type, severity, location, and duration of the event. Most events require managing at the field operations level and will require increasing resource requirements to match the severity and duration of the event. This emergency management organization will be included as part of this Emergency Preparedness and Response Plan Framework and will provide increasing levels of resources and the coordination necessary to support immediate or escalating emergency events.

In the event of an emergency, crews will be dispatched quickly to repair or replace any damaged equipment. Repair of the transmission line will have priority under emergency conditions and all reasonable efforts will be made to protect plants, wildlife, and other resources. Reclamation procedures following completion of repair work will be similar to those prescribed during construction.

B9.6 Emergency Communications

Effective communication and exchange of information is essential in every emergency response. Misdirected, incorrect, or untimely information can be detrimental and even increase the threat to life or property. As an emergency event escalates, the rapid increase of information creates chaos and confusion. Simple communication diagrams can help to alleviate this situation.

B9.6.1 Emergency Contact List

In case of emergency, call 911 first. Additional potential emergency contacts are listed in Table B9-1 and should be called as appropriate, depending on the situation (e.g., fire, injury). Further guidance on emergency response, notification, and reporting protocols are included in Appendices B3 - Spill Prevention, Containment, and Countermeasures Plan Framework, B5 – Blasting Plan Framework, B8 – Hazardous Materials Management Plan Framework, and B11 – Fire Protection Plan.

TABLE B9-1 EMERGENCY CONTACT LIST In Case of Emergency - Call 911 Fire – Call 911 First		
Beaver City:	**Elsinore:**	**Enterprise:**
Joseph:	**Milford:**	**Minersville:**
Richfield:	**Beaver County:**	**Iron County:**
Millard County:	**Sevier County:**	**Washington County:**
Central Utah Interagency Fire Center: (435) 896-8404	**Utah BLM State Office:** (801) 539-4001	**Color Country Utah Interagency Fire Center:** (435) 586-7021 (435) 865-4601
County Sheriffs		
Beaver City:	**Elsinore:**	**Enterprise:**
Joseph:	**Milford:**	**Minersville:**
Richfield:	**Beaver County:**	**Iron County:**
Millard County:	**Sevier County:**	**Washington County:**
Utah Highway Patrol: (801) 965-4518		
Poison Control		
National/Utah Poison Control: (800) 222-1222 Provides connection to counties		
Hospitals And Clinics		
Beaver City:	**Elsinore:**	**Enterprise:**
Joseph:	**Milford:**	**Minersville:**
Richfield:	**Beaver County:**	**Iron County:**
Millard County:	**Sevier County:**	**Washington County:**
Hazardous Spill Response And Notification – Call 911 Directly after 911 notification, the following mandatory notifications will be made by the Compliance Inspection Contractor. Select and notify the appropriate government agency(ies) based on geographic location of the spill site. Also refer to Appendix B8 – Hazardous Materials Management Plan Framework.		
Beaver City:	**Elsinore:**	**Enterprise:**
Joseph:	**Milford:**	**Minersville:**
Richfield:	**Beaver County:**	**Iron County:**
State of Utah: Utah Division of Emergency Services & Homeland Security (801) 538-3400		

TABLE B9-1 EMERGENCY CONTACT LIST In Case of Emergency - Call 911 Fire – Call 911 First		
If after hours and the spill is located in Utah – call the Utah Department of Environmental Quality (24 hours) at (801) 536-4123 or 911		
Utah Division of Environmental Quality: (-800) 458-0145	**National Response Center:** (800) 424-8802	
Other Numbers		
BLM Authorized Officer or Designated Representative: To be determined		
USFS Authorized Officer or Designated Representative: To be determined		
The Construction Contractor(s) Manager: To be determined		
Proponent Project Manager: To be determined		

This Emergency Contact List shall be verified at the beginning of construction and updated throughout the Project by the Construction Contractor(s) to ensure accurate contact information.

B9.7 Hazard Identifications and Key Response Criteria

The right-of-way corridor for the Project can pose potential hazards or threats in association with construction activities. The most effective response to any situation is awareness of the hazard, its potential effects and consequences, and an understanding of the resources and actions necessary to respond. It would be unreasonable to list all the potential hazards and detail each response. Responses to different events may vary as the event evolves, but response methods and responsibilities to be determined in the Emergency Preparedness and Response Plan will be essential for any possible situation.

Effective Emergency Response training is based on plausible scenarios and then developing the understanding, elements, and actions necessary to respond. Scenarios to consider are: electrocution, fatality, massive equipment failure, structure failure, weather/environment, etc.

Appendix B10 – Noxious Weed Management Plan

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B10 – NOXIOUS WEED MANAGEMENT PLAN

B10.1 Introduction

B10.1.1 Background

The Bureau of Land Management (BLM) defines a noxious weed as "a plant that interferes with management objectives for a given area of land at a given point in time." The Utah Department of Agriculture and Food defines a noxious weed as "any plant the commissioner determines to be especially injurious to public health, crops, livestock, land, or other property" and a county noxious weed as "any plant which is not on the state noxious weed list, is especially troublesome in a particular county, and is declared by the county legislative body to be a noxious weed within its county (Utah Department of Agriculture and Food 2008). Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from re-establishing communities.

The format and content of this Noxious Weed Management Plan was based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 and Forest Service Noxious Weed Management Manual 2080. This plan includes a discussion on (1) the plan purpose and goals and objectives, (2) the noxious weed inventory, (3) management practices, (4) monitoring, and (5) the use of pesticides/herbicides.

B10.1.2 Plan Purpose

The Utah Department of Agriculture and Food has identified noxious weeds that occur within the state of Utah. Some of these noxious weeds have the potential to occur on the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) right-of-way. This Noxious Weed Management Plan provides methods to control the potential occurrence of noxious weeds during and following construction of the Project. It is the responsibility of PacifiCorp, doing business as Rocky Mountain Power (Proponent), and the Construction Contractor(s), working in coordination with the Compliance Inspection Contractor (CIC), and the Authorized Officer or his/her designated representative (e.g., BLM and U.S. Forest Service [USFS] Project Manager), to ensure noxious weeds are identified and controlled during construction, operation, and maintenance of Project facilities and all federal, state, county, and other local requirements are satisfied. The control of invasive species (not classified as noxious weeds) is addressed in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

B10.1.3 Goals and Objectives

The goal of this Noxious Weed Management Plan is to implement early detection, containment, and control of noxious weeds during Project construction. Information gathered by the Proponent during preconstruction surveys and provided by the BLM and USFS will be used to monitor and control the spread of noxious weeds during the construction and operation of the Project. The preventive and treatment measures are described in Section B10.4 – Noxious Weed Management. An evaluation of the effectiveness of the prescribed control measures (Section B10.4 – Noxious Weed Management) also will be implemented during the operational phase of the Project.

B10.2 Regulatory Framework

The following provides a brief overview of federal and state legislation and regulatory compliance applicable to biological resources in the Project area that have been considered in the development of this Plan.

B10.2.1 Utah Noxious Weed Act

Utah Noxious Weed Act (Rule R68-9) officially designates the list of weeds as noxious for the state of Utah, equipment capable of disseminating those weeds, and treatments considered to prevent dissemination of weed seeds or parts of noxious weed plants that could cause new growth by contaminated equipment, as per the authority vested in the Commissioner of Agriculture and Food under Section 4-17-3.

B10.2.2 U.S. Forest Service Manual 2080

Manual 2080 directs each Forest Supervisor to manage noxious weeds on national forest system lands to achieve goals and objectives identified in forest land and resource management plans. Per the manual, USFS will determine the risk of spreading noxious weeds associated with proposed ground disturbing activities and must identify and implement control measures for moderate to high risk activities in the Project decision document. USFS Manual 2080 also authorizes contract and permit clauses to prevent the introduction or spread of noxious weeds by contractors or permittees.

B10.2.3 Bureau of Land Management Manual 9015

Manual 9015 directs the BLM to manage noxious weeds and undesirable plants on BLM lands by preventing establishment and spread of new infestations, reducing existing population levels, and managing and controlling existing stands. Required management for ground-disturbing actions includes determining the risk of spreading noxious weeds associated with the Project and ensuring contracts contain provisions which hold contractors responsible for the prevention and control of noxious weeds caused by their operations if the activity is determined to be moderate to high risk.

B10.2.4 Federal Noxious Weed Act of 1974 (as amended 1990)

The Federal Noxious Weed Act directs each federal agency to develop and coordinate an undesirable plants management program for control of undesirable plants on federal lands under the agency's jurisdiction.

B10.3 Noxious Weed Inventory

The noxious weed inventory performed for the Project included (1) identifying weed species designated noxious by the State of Utah and counties crossed by the Project that have the potential to occur within the Project area and (2) the gathering of information to identify specific noxious weed populations in the Project area, including previously mapped populations and preconstruction surveys along the Project right-of-way.

A total of 10,215 acres were surveyed and mapped in 2012. Eight species of noxious weeds were documented in the Project area. 347 noxious weed infestations totaling 156 acres were identified within the Project area. Noxious weeds were found on USFS, BLM, State of Utah, and private lands throughout the Project area. Access roads and structures located where noxious weed infestations have been previously identified. Map Set 3 can be used to locate the roads and structures identified are listed in Attachment A – Noxious Weed Occurrences. The specific locations of previously recorded weed occurrences have been provided to the BLM and are available from the BLM upon request. Because weeds can spread rapidly from one year to the next, all access roads and structure locations identified in Attachment A –Noxious Weed Occurrences should be assumed to have weeds within and around them. Therefore, these locations and the areas immediately adjacent to them should be thoroughly and continually monitored for the presence of weeds.

B10.3.1 State Listed Noxious Weeds

The State of Utah and the U.S. Department of Agriculture maintain an official list of weed species designated noxious for the State. The State of Utah has officially designated 27 weed species as noxious (Table B10-1) and counties crossed by the Project have designated 6 additional noxious weeds. The following is an explanation of the categories established for noxious weeds by the Utah Department of Agriculture and Food. While state management priorities are outlined below, all noxious weeds in the Project area will be treated as outlined in this plan.

Class A

- Early Detection Rapid Response
- Declared noxious weeds with relatively small populations in the state identified as highest priority for eradication.

Class B

- Control
- Declared noxious weeds with moderate-sized populations through the state believed to be controllable in most areas.

Class C

- Containment
- Weeds found extensively throughout the state and thought to be beyond control; state efforts focus on containment of smaller populations.

TABLE B10-1
NOXIOUS WEED SPECIES OF POTENTIAL CONCERN

Common Name	Scientific Name	State Category
State of Utah		
Black henbane	*Hyoscyamus niger*	A
Diffuse knapweed	*Centaurea diffusa*	A
Johnson grass	*Sorghum halepense and* var *almum*	A
Leafy spurge	*Euphorbia esula*	A
Medusahead	*Taeniatherum caput-medusae*	A

TABLE B10-1 NOXIOUS WEED SPECIES OF POTENTIAL CONCERN		
Common Name	**Scientific Name**	**State Category**
Oxeye daisy	*Chrysanthemum leucanthemum*	A
Purple loosestrife	*Lythrum salicaria, L.virgatum and* cultivars	A
St. Johnswort	*Hypericum perforatum*	A
Spotted knapweed	*Centaurea masculosa*	A
Squarrose knapweed	*Centaurea squarrosa*	A
Sulfur cinquefoil	*Potentilla recta*	A
Yellow starthistle	*Centaurea solstiltialis*	A
Yellow toadflax	*Linaria vulgaris*	A
Bermudagrass	*Cynodon dactylon*	B
Dalmation toadflax	*Linaria dalmatica*	B
Dyer's woad	*Isatis tinctoria*	B
Hoary cress	*Cardaria draba*	B
Musk thistle	*Carduus nutans*	B
Perennial pepperweed	*Lepidium latifolium*	B
Poison hemlock	*Conium maculatum*	B
Russian knapweed	*Acroptilon repens*	B
Scotch thistle	*Onopordum acanthium*	B
Canada thistle	*Cirsium arvense*	C
Field bindweed	*Convolvulus arvensis*	C
Houndstongue	*Cynoglossum officinale*	C
Quackgrass	*Agropyron repens*	C
Saltcedar (tamarisk)	*Tamarix spp*	C
County Designation		
Bull thistle	*Cirsium vulgare*	Beaver, Iron
Puncture vine	*Tribulus terrestris*	Iron
Salt lover	*Halogeton glomerata*	Washington
Silver-leaf nightshade	*Solanum elaeagnifoliumcylindrical*	Washington
Russian olive	*Elaeagnus angustifolia*	Sevier
Whorled poison milkweed	*Asclepias verticillata*	Washington, Iron
SOURCE: Utah Department of Agriculture and Food 2008		

B10.4 Noxious Weed Management

Regulatory agencies managing lands along the proposed Project alignment, and specifically the BLM, have varying requirements for weed management. A preconstruction survey for noxious weeds was conducted from May to June 2011 and May to June 2012 using the protocol established by the BLM Integrated Weed Management Manual 9015.

The management of noxious weeds will be considered throughout all stages of the Project including:

- Educating all construction personnel regarding the identified problem areas and the importance of preventive measures and treatment methods.
- Specific preventive measures to prevent the spread of noxious weeds during construction and operation and maintenance activities.
- Preconstruction and post-construction treatment methods to be applied to areas where noxious weeds are present.

The following is a description of the measures that may be required for noxious weed management as directed by the BLM or State Quarantine Officer. Applicable measures will be agreed on prior to the onset of any ground disturbing activities, and this Noxious Weed Management Plan will be modified accordingly.

B10.4.1 Identification of Problem Areas and Education

Prior to the initiation of construction activities, all construction personnel will be instructed on the importance of controlling noxious weeds. As part of start-up activities, the Construction Contractor(s) will provide information and training to all personnel regarding noxious weed management. The importance of preventing the spread of noxious weeds in areas not infested and controlling the proliferation of weeds already present will be emphasized. Prior to construction, areas of concern previously identified during the weed survey will be flagged by the Construction Contractor(s) and reviewed by the CIC. This flagging will alert construction personnel to the presence of noxious weeds and prevent area access until noxious weed management control measures, as described below, have been implemented. Attachment A –Noxious Weed Occurrences identifies portions of the project area that weed infestations have been recorded.

B10.4.1.1 Weed Management Personnel Requirements

Weed management actions shall be carried out by a weed management specialist with the following qualifications:

- Training and experience in native plant taxonomy/identification
- Training and experience in field ecology and plant community mapping
- Possession of a Commercial Applicator's License for pesticides from the Utah State Department of Agriculture (if chemical control is used)
- Training in weed management or Integrated Pest Management with an emphasis in weeds
- Experience in coordination with agency and private landowners
- Attendance at a BLM-approved noxious weed training course

B10.4.2 Other Specific Stipulations and Methods

B10.4.2.1 Preventive Measures

The following preventive measures will be implemented to prevent the spread of noxious weeds during construction activities, reclamation and rehabilitation efforts, and maintenance operations associated with the Project. Detailed information regarding reclamation, along with the control of invasive plant species is provided in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

These preventive measures are to be applied on a case-by-case basis, where applicable and necessary, at the discretion of the BLM, USFS, CIC, and the Construction Contractor's environmental monitors (weed specialists).

Attachment A –Noxious Weed Occurrences identifies portions of the project area that weed infestations have been recorded. Prior to all ground-disturbing activities, a qualified weed specialist will survey the proposed disturbance area. The weed specialist working in conjunction with the BLM, USFS, and CIC will identify areas where the following noxious weed measures (NW) will be implemented.

NW 1 Where feasible, construction will begin in weed-free areas before operating in weed-infested areas. The feasibility of this measure will be determined after survey data is completed to identify weed-free and weed-infested areas.

NW 2 All movement of construction vehicles outside of the right-of-way will be restricted to pre-designated access, contractor-acquired access, or public roads. All construction sites and access roads, including overland access routes, will be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All personnel shall be informed their activities must be confined within the marked or flagged areas.

NW 3 Prior to arrival at the work site, all Construction Contractor(s) vehicles and equipment will be cleaned using high-pressure equipment. Only compressed water will be used at wash stations. The use of compressed air will not be permitted. The cleaning activities will concentrate on tracks, feet, or tires and the undercarriage with special emphasis on axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out. The location of vehicle cleaning stations have been identified by the Construction Contractor(s) and revised by the CIC and the BLM and USFS Authorized Officers or his/her designated representative for approval. The BLM and USFS have identified specific locations for wash stations. These locations are delineated on Volume II – POD Map Sets 2 and 3. Additional wash stations will be required as identified by the BLM, USFS, and CIC. Wash stations shall be no more than one acre in size and preferably located in areas that have previously been disturbed. The Construction Contractor(s) shall provide a detailed design identifying all of the components of the wash stations, including rock surface and geomembrane layer to provide a barrier between noxious weeds and seeds and the soil for approval by the BLM or USFS Authorized Officer or his/her designated representative. The Construction Contractor(s) shall also provide a description of how residue from the wash station will be disposed of for approval by the BLM or USFS Authorized Officer or his/her designated representative. If two or more noncompliance incidents occur, the agencies will require the wash stations to be manned by Construction Contractor(s) at their expense during construction and operation and maintenance activities.

NW4 When moving from weed contaminated areas to other areas along the transmission line right-of-way, all construction vehicles and equipment will be cleaned using compressed water in designated wash stations before proceeding to new locations. The use of compressed air to clean equipment will not be permitted. All washing of construction vehicles and equipment must be performed in approved wash stations.

NW 5 Construction personnel will inspect, remove, and appropriately dispose of weed seed and plant parts found on their clothing and equipment.

NW 6 The Construction Contractor(s) will ensure vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes before the vehicles and equipment access the Project. The CIC will inspect vehicles to ensure compliance.

NW 7 Whenever possible, temporary disturbance should be avoided in areas with known noxious weed populations to reduce the risk of spread.

NW 8 In areas where temporary disturbance is necessary and where noxious weeds are identified, pre-disturbance treatment of noxious weeds will be implemented. Movement of stockpiled vegetation and salvaged topsoil will be limited to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes, and marked as containing noxious seed materials to avoid mixing with weed-free soil.

NW 9 During reclamation, the Construction Contractor(s) will return topsoil and vegetative material containing noxious weeds to their original locations. As directed by the BLM or USFS, the Construction Contractor(s) may be required to provide additional treatments (i.e., pre-emergent herbicides) to prevent return of noxious weeds. The Construction Contractor(s) will remove seeds, roots, and rhizomes from the equipment with compressed water before transport offsite.

NW 10 The Construction Contractor(s) will ensure straw or hay bales used for sediment barrier installations or mulch distribution are obtained from state-cleared sources that are certified free of primary noxious weeds.

NW 11 Immediately following construction, the Construction Contractor(s) will implement the reclamation of disturbed land as outlined in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan as required. Continuing revegetation efforts will ensure adequate vegetative cover, reducing the potential for the invasion of noxious weeds.

B10.4.2.2 Control Measures

The Construction Contractor(s) will implement noxious weed control measures in accordance with existing regulations and BLM and USFS requirements. Control measures will be based on species-specific and site-specific conditions (e.g., proximity to water or riparian areas, agricultural areas, and season) and will be coordinated with the BLM or USFS Authorized Officer or his/her designated representative, the CIC, and the Construction Contractor's weed management specialist. If existing populations are currently under treatment by the BLM and USFS or other individuals, the Construction Contractor is encouraged to engage in cooperative management efforts to treat the noxious weeds associated with the Project area. In the event new noxious weed populations are identified on the Project in the future, the protocols and methods outlined in this Plan will be followed. The weed management specialist contracted by the Construction Contractor(s) shall provide a detailed control methodology for each noxious weed species documented. The BLM and USFS noxious weed coordinator will review and approve this Noxious Weed Management Plan prior to implementation. Control measures may include one or more of the following methods prior to implementation of reclamation actions.

Mechanical

Mechanical methods rely on cutting roots with a shovel or other hand tools or equipment that can be used to mow or disc weed populations. This type of methodology is useful for smaller, isolated populations in areas of sensitive habitats or if larger populations occur in agricultural lands where tillage can be implemented. Some rhizomatous plants can spread by discing or tillage and implementation will be species specific. If such a method is used in areas to be reclaimed, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds.

NW 12 Discing or other mechanical treatments that would disturb the soil surface within native habitats will be avoided in favor of herbicide application, which is an effective means of reducing the size of noxious weed populations, as well as preventing the establishment of new colonies.

Cultural

Cultural control methods rely on preventative education of the public and construction, operation, and maintenance personnel. Cultural control of noxious weeds can also include the minimization of vehicular travel through areas of known populations. Noxious weed populations identified during surveys or by BLM/USFS/county weed control officials will be cordoned off to avoid spreading seed or plant materials.

NW 13 Implement preventive measures, such as quarantine and closure, to reduce and contain existing populations. Flagging will alert personnel and prevent access into areas where noxious weeds occur. Construction disturbance will be minimized in these areas until control measures have been implemented (with the exception of reclamation treatments, as applicable).

NW 14 Reclamation treatments, such as seeding, will be based on site-specific conditions and the appropriate seed mix approved for those conditions. Seeding will help to reduce the spread of noxious weeds by revegetating exposed soils. If areas are not seeded until the following spring, because of weather or scheduling constraints, all undesirable vegetation will be eradicated before seeding.

Biological

Biological control involves using living organisms (insects, diseases, livestock) to control noxious weeds to achieve management objectives. Many noxious weed species have been introduced recently into North America and have few natural enemies to control their population. The biological control agent is typically adapted to a specific species and selected for their ability to attack critical areas of the plant that contribute to its persistence. The use of biological control methods is not expected for this Project.

Chemical

Chemical control can effectively remove noxious weeds through use of selective herbicides. Pesticide treatment can be temporarily effective for large populations of noxious weeds where other means of control may not be feasible. Before construction, only pesticides approved by the BLM or USFS will be applied to the identified noxious weed populations on BLM- or USFS-administered land to reduce their spread. Pesticide applications will be controlled, as described in Section B10.6 – Pesticide Application, Handling, Spills, and Cleanup, to minimize the impacts on the surrounding vegetation. In areas of dense noxious weed populations, a broader application will be used and a follow-up seeding program will be implemented.

B10.4.2.3 Reclamation Actions

As specified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan, areas where weed control measures have been implemented and require post-construction reclamation actions (e.g., seeding), the following specific stipulations and methods are applicable:

NW 15 If areas are not immediately seeded after construction, due to weather or scheduling constraints, all noxious weeds will be eradicated before seeding, preferably in the spring.

NW 16 If discing or tilling is an appropriate and feasible treatment method, it will only be permitted in bladed areas.

NW 17 Seed selection will be based on site-specific conditions, and the appropriate seed mix will be identified for those conditions based on the presence and treatment of noxious weeds in the Project area. The CIC or weed specialist may recommend modified seeding application rates and timing of implementation to achieve site-specific weed management objectives.

NW 18 Additional weed and/or erosion control measures recommended during monitoring will follow the preventive and control measures outline in this Plan. Continued cooperation with the current BLM or USFS noxious weed coordinator and local Weed Management Areas is also encouraged.

B10.4.3 Agency Specific Requirements

The Utah State Department of Agriculture and Food regulates noxious weeds under Title 04, Chapter 17, Utah Noxious Weed Act, which mandates that every property owner will control noxious weeds on their land and property. Pest management, including noxious weed control, must be for prevention, eradication, rehabilitation, control, or containment efforts as required by the state quarantine officer. Through the implementation of this Noxious Weed Management Plan and in conjunction with the BLM and USFS (as described below), the Project will be in compliance with the Utah Noxious Weed Act. The following is a discussion regarding BLM and USFS stipulations, and personnel and equipment requirements.

B10.4.3.1 Bureau of Land Management and U.S. Forest Service

The *Final Programmatic Environmental Impact Statement on Vegetation Treatment on BLM Land in Seventeen Western States* lists herbicides acceptable (refer to Attachment B – Agency-approved Herbicides) for use on BLM-administered lands (BLM 2007). Herbicides listed in Table 1 in Attachment B – Agency-approved Herbicides may be used in the Project area after coordination with the CIC; however, not all of these herbicides are approved for use on land administered by the BLM Cedar City Field Office. Table 2 in Attachment B: Agency-approved Herbicides indicates the applicable restrictions on land administered by the BLM Cedar City Field Office. Table 3 in Attachment B – Agency-approved Herbicides includes the herbicide recommendations for Fishlake National Forest. Table 4 in Attachment B – Agency-approved Herbicides is a list of herbicides approved for use on Dixie National Forest. The herbicides approved for use on the Project will be reviewed and approved by the BLM and USFS prior to beginning construction. Guidelines for use of chemical control of vegetation on BLM- and USFS-administered lands are presented in the Chemical Pest Control Manual. These guidelines require submittal of a Pesticide Use Proposal, which will be prepared by the Construction Contractor(s) and submitted to

the BLM and USFS for review and approval prior to initiation of construction activities. Once approved, any use of other pesticides will require Pesticide Application Records that detail the use and application. The Pesticide Application Records will then be submitted to the BLM and USFS in a timely manner.

The occurrence of noxious weeds within the Project will be reported to the BLM district (field) office and/or USFS, within whose jurisdiction the weeds occur. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with the BLM and USFS by the Construction Contractor(s), based on the procedures outlined in this Noxious Weed Plan. The Proponent may be able to take advantage of any existing cooperative agreements between the BLM and/or USFS and the counties by providing the funds required for county personnel to implement the necessary weed control procedures. If not, the Proponent will be responsible for providing the necessary personnel or hiring a contractor to implement the weed control procedures with the qualifications as described in Section B10.4.1.1 – Weed Management Personnel Requirements. All Project-related weed control activities will be conducted in accordance with local BLM and USFS management requirements. The following stipulations are applicable:

NW 19 Herbicide use is not authorized in areas that contain the following biologically sensitive habitats:

- Occupied Utah prairie dog habitat
- Occupied pygmy rabbit habitat

NW 20 The use of herbicides for vegetation management and noxious weed control shall be limited to hand application methods (e.g., backpack spraying), that target individual plants, within 500 feet of sensitive plant occurrences unless otherwise approved by the BLM or USFS Authorized Officer or his/her designated representative. Weed management within 500 feet of sensitive plant occurrences shall occur under the supervision of a qualified botanist in order to ensure general herbicide is not used within or near sensitive plant occurrences.

NW 21 If previously unknown Utah prairie dog or pygmy rabbit colonies are located during weed control operations, operations will cease and BLM will be notified immediately.

NW 22 Equipment and vehicles planned for use within Utah prairie dog habitat will be cleaned with compressed air or water before entering occupied habitat to minimize the spread of noxious weeds and other undesirable vegetation.

NW 23 Herbicides and application rates used on BLM- and USFS-administered lands must be consistent with local management. Tables 2, 3 and 4 in Attachment B – Agency-approved Herbicides includes the chemicals and application rates that may be used on land administered by the BLM Cedar City Field Office, Fishlake National Forest and Dixie National Forest.

B10.5 Monitoring

A weed management specialist, contracted by the Proponent, will monitor the Project and any other areas of disturbance associated with the Project. Monitoring will be conducted biannually during the spring and fall and will coincide with seasons when the species identified during preconstruction inventories may be identified in the field. This monitoring may coincide with the reclamation monitoring identified and

outlined in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. Growing seasons will vary from year-to-year; therefore, the length of monitoring will vary as well.

B10.5.1 Reclamation Monitoring

During Reclamation Monitoring, the Proponent, or representative contractor for the Proponent, will initiate monitoring of previously identified affected/disturbed areas during the first spring following construction and proceed with monitoring during subsequent intervals. Monitoring will occur in all areas where the Project has a high risk of introducing or spreading noxious weeds, including weed wash stations and areas of ground disturbance or vegetation clearing.

Noxious weed monitoring will occur biannually for five years following completion of each segment of the Project. In addition, noxious weed conditions will be included in the evaluations of revegetation success as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. The Proponent will document its observations following the above-noted field inspections and make these monitoring reports available to the BLM, USFS, and counties, as required.

Sensitive plant occurrences affected by Project activities will be monitored annually for the first five years following Project implementation. Individual counts of sensitive plants will be undertaken in affected areas to determine whether the sensitive plants are recolonizing the site. An annual report with photos from permanent photo plots, individual plant counts within the affected areas, and noxious weed presence and treatment data would be provided to the Fishlake National Forest botanist.

Areas where the spread of noxious weeds are noted, particularly in previously unaffected locations, will be further evaluated to determine if these areas require remedial action and additional treatment. The Proponent will identify such areas to the agencies by state, county, and milepost (or nearest transmission structure number) and will record any additional noxious weed control treatments. A report summarizing right-of-way stability, revegetation progress, percent of cover, and weed populations will be provided to the BLM and USFS as described in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

B10.5.2 Ongoing Monitoring and Control

The Proponent will be responsible for ongoing weed monitoring and control inside of the right-of-way for the life of the BLM right-of-way grant and USFS special-use authorization. The Proponent will consult with the BLM, USFS, and counties should they have a concern pertaining to noxious weeds within their jurisdiction. The BLM or USFS also may contact the Proponent to report on the presence of noxious weeds. The Proponent will be required to monitor and control noxious weeds at a level that does not exceed the density or extent of their conditions identified during preconstruction surveys (refer to Section B10.3 – Noxious Weed Inventory) for the full term of the right-of-way grant/special-use authorization and will eradicate any new population that is demonstrated to be the result of Project construction (i.e., not introduced to the right-of-way because of new populations surrounding the right-of-way), operation, or maintenance of the Project.

The Proponent will not be responsible for the eradication of pre-existing noxious weed populations or new or recurring noxious weed populations caused by the spread of noxious weeds from adjacent lands. Also, the Proponent will not be responsible for noxious weeds introduced into the Project area by activities other than Project construction, operation, and maintenance (e.g., recreational use, grazing,

other construction projects, etc.); natural occurrences (e.g., fire); noxious weeds outside the Project right-of-way; or noxious weeds along existing access roads not improved by the Project.

Operations personnel will be trained in the identification of predominant noxious weed populations, and the Proponent will control the weeds on a case-by-case basis in consultation with the BLM and USFS, as appropriate. If determined necessary, a report on actions taken will be provided in the form of Monitoring Reports to the BLM and USFS on a predetermined schedule.

B10.6 Pesticide Application, Handling, Spills, and Cleanup

B10.6.1 Pesticide Application and Handling

The list of pesticides to be used will be reviewed and approved by the BLM, and pesticide application will be based on information gathered from the Weed Districts, BLM, and USFS. The Project-approved pesticides are listed in Attachment B – Agency-approved Herbicides. Before application, all required permits from the local authorities will be obtained (the Weed Districts, USFS, and BLM). Permits may contain additional terms and conditions that go beyond the scope of this management plan.

NW 24 A certified pesticide applicator, approved in the state of Utah, will perform the application using pesticides selected and approved by BLM or USFS in accordance with applicable laws, regulations, and permit stipulations. All pesticide applications must follow U.S. Environmental Protection Agency label instructions. Application of pesticides will be suspended when any of the following conditions exist:

- Wind velocity exceeds 6 miles per hour during application of liquids.
- Wind velocity exceeds 15 miles per hour during application of granular pesticides
- Snow or ice covers the foliage of noxious weeds.
- Precipitation is occurring or is imminent.

NW 25 Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used in open areas readily accessible by vehicle. Hand application methods (e.g., backpack spraying), that target individual plants, will be used to treat small or scattered weed populations in rough terrain and areas within 500 feet of sensitive plant occurrences. Calibration checks of equipment will be conducted at the beginning and periodically during spraying to ensure proper application rates are achieved.

NW 26 Pesticides will be transported to the Project site daily with the following provisions:

- Only the quantity needed for that day's work will be transported.
- Concentrate will be transported only in approved containers in a manner that will prevent tipping or spilling, and in a location isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- Mixing will be done offsite, over a drip catching device and at a distance greater than 300 feet from open or flowing water, wetlands, or other sensitive resources. No pesticides will be applied at these areas unless authorized by appropriate regulatory agencies.
- All pesticide equipment and containers will be inspected for leaks daily.
- Disposal of spent containers will be in accordance with the pesticide label.

NW 27 Herbicides may not be applied over surface water. Only herbicides registered for use near water will be used within 100 feet of surface water or in areas with a high leaching potential.

B10.6.2 Pesticide Spills and Cleanup

All reasonable precautions will be taken to avoid pesticide spills.

NW 28 In the event of a spill, cleanup will be immediate. The Construction Contractor(s) will keep spill kits in their vehicles and in pesticide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are:

- Protective clothing and gloves
- Absorptive clay, “kitty litter,” or other commercial absorbents
- Plastic bags and a bucket
- Shovel
- Fiber brush and screw-in handle
- Dust pan
- Caution tape
- Highway flares (use on established roads only)
- Detergent

NW 29 The response to a pesticides spill will vary with the size and location of the spill, but general procedures include:

- CIC and BLM or USFS notification
- Traffic control
- Dressing the cleanup team in protective clothing
- Stopping any leaks
- Containing spilled material
- Cleaning up and removing spilled pesticide and contaminated absorptive material and soil
- Transporting spilled pesticide and contaminated material to an authorized disposal site

B10.6.3 Worker Safety and Spill Reporting

NW 30 Pesticide contractors will be state certified to apply pesticides and obtain and have readily available copies of the appropriate material safety data sheets for the pesticides used. All pesticide spills will be reported in accordance with applicable laws and requirements.

Additional information regarding the handling of hazardous materials may be found in Appendix B8 – Hazardous Materials Management Plan Framework.

B10.7 Literature Cited

Bureau of Land Management (BLM). 2007. Final Programmatic Environmental Impact Statement on Vegetation Treatments Using Herbicides in Seventeen Western States. FES 07-21. USDI BLM.

_____. 1996. Environmental Assessment, Noxious Weed Control Plan for the Cedar City Field Office EA UT-044-96-15. Cedar City Field Office, Cedar City, Utah.

Utah Department of Agriculture and Food. 2008. Utah Noxious Weed List. Available at http://ag.utah.gov/divisions/plant/noxious/documents/noxUtah.pdf. Accessed on May 10, 2010.

Attachment A – Noxious Weed Occurrences

ATTACHMENT A – NOXIOUS WEED OCCURRENCES

TABLE 1 NOXIOUS WEED OCCURRENCES BY ACCESS ROAD			
Access Road Label	**Weeds Present**	**Jurisdiction**	**County**
024-3	Saltcedar	Private	Sevier
025-9	Hoary cress	Private	Sevier
030-150	Hoary cress	Multiple	Sevier
030-151	Hoary cress	Private	Sevier
030-152	Hoary cress	U.S. Forest Service	Sevier
030-171	Hoary cress	U.S. Forest Service	Sevier
030-174	Hoary cress	U.S. Forest Service	Sevier
030-179	Hoary cress, field bindweed	Multiple	Sevier
030-221	Scotch thistle	U.S. Forest Service	Sevier
030-225	Scotch thistle	U.S. Forest Service	Sevier
030-247	Hoary cress	U.S. Forest Service	Sevier
030-249	Hoary cress	Multiple	Sevier
030-250	Hoary cress	U.S. Forest Service	Sevier
030-262	Hoary cress	U.S. Forest Service	Sevier
030-85	Hoary cress, field bindweed	Private	Sevier
030-85	Hoary cress	Private	Sevier
030-89	Hoary cress	Private	Sevier
030-97	Hoary cress	Private	Sevier
033-28	Field bindweed	Bureau of Land Management	Sevier
033-51	Hoary cress	State Trust Lands	Sevier
033-54	Hoary cress	State Trust Lands	Sevier
033-66	Hoary cress	Private	Sevier
033-67	Hoary cress	Private	Sevier
033-69	Field bindweed	Utah Department of Transportation	Sevier
045-296	Hoary cress	U.S. Forest Service	Sevier
063-355	Hoary cress	Multiple	Sevier
063-364	Hoary cress	U.S. Forest Service	Sevier
063-365	Hoary cress	U.S. Forest Service	Sevier
064-307	Hoary cress, field bindweed	U.S. Forest Service	Sevier
064-308	Hoary cress	U.S. Forest Service	Sevier
064-322b	Hoary cress	Multiple	Sevier
064-324	Hoary cress	U.S. Forest Service	Sevier
064-328	Hoary cress	U.S. Forest Service	Sevier
064-353	Hoary cress, Scotch thistle	Multiple	Sevier
064-354	Hoary cress, field bindweed, musk thistle	Multiple	Sevier
066-368	Hoary cress	U.S. Forest Service	Sevier
066-369	Hoary cress, field bindweed	U.S. Forest Service	Sevier
066-372	Hoary cress	U.S. Forest Service	Sevier
066-396	Hoary cress	U.S. Forest Service	Sevier
066-407	Hoary cress	U.S. Forest Service	Sevier
066-408	Field bindweed	U.S. Forest Service	Sevier
066-409	Field bindweed	Multiple	Sevier
066-429a	Leafy spurge, field bindweed, houndstounge	U.S. Forest Service	Sevier

TABLE 1 NOXIOUS WEED OCCURRENCES BY ACCESS ROAD			
Access Road Label	**Weeds Present**	**Jurisdiction**	**County**
066-430	Hoary cress, Scotch thistle	U.S. Forest Service	Sevier
066-433	Scotch thistle	U.S. Forest Service	Sevier
066-436	Scotch thistle	U.S. Forest Service	Sevier
066-437	Hoary cress, Scotch thistle	U.S. Forest Service	Sevier
066-441	Houndstounge	U.S. Forest Service	Sevier
066-448	Hoary cress, houndstounge,	Private	Sevier
066-449	Hoary cress, Scotch thistle, houndstounge	Multiple	Sevier
066-455	Houndstounge	U.S. Forest Service	Sevier
066-464	Houndstounge	U.S. Forest Service	Millard
066-476	Hoary cress, field bindweed	U.S. Forest Service	Millard
066-477	Hoary cress, Scotch thistle	U.S. Forest Service	Millard
066-479	Hoary cress, field bindweed	U.S. Forest Service	Millard
066-483	Hoary cress	U.S. Forest Service	Millard
066-486	Hoary cress	U.S. Forest Service	Millard
066-487	Hoary cress, Scotch thistle	U.S. Forest Service	Millard
066-489	Hoary cress	U.S. Forest Service	Millard
066-490	Houndstounge	U.S. Forest Service	Millard
066-494	Hoary cress	U.S. Forest Service	Millard
066-496	Hoary cress	U.S. Forest Service	Millard
066-498	Scotch thistle	U.S. Forest Service	Millard
068-503	Hoary cress, field bindweed, Scotch thistle	U.S. Forest Service	Millard
068-511	Hoary cress	Multiple	Millard
068-512	Hoary cress	Multiple	Beaver
068-514	Hoary cress, Scotch thistle	U.S. Forest Service	Beaver
068-519	Hoary cress	Bureau of Land Management	Beaver
160-1344	Saltcedar	Bureau of Land Management	Beaver
160-1369	Saltcedar	Private	Beaver
165-1742	Scotch thistle	Private	Iron
220-1772	Leafy spurge	Private	Iron
220-1775	Saltcedar	Private	Iron
220-1863	Scotch thistle	Bureau of Land Management	Iron
221-1932	Scotch thistle	Multiple	Iron
221-1941	Scotch thistle	Bureau of Land Management	Iron
270-1980	Scotch thistle	U.S. Forest Service	Washington
270-2085	Field bindweed	U.S. Forest Service	Washington
275-2154	Field bindweed	U.S. Forest Service	Washington
305-527	Hoary cress	Multiple	Beaver
305-528	Field bindweed	Multiple	Beaver
305-531	Hoary cress	Bureau of Land Management	Beaver
305-535	Hoary cress	Bureau of Land Management	Beaver
305-536	Scotch thistle	Bureau of Land Management	Beaver
305-537	Scotch thistle	Bureau of Land Management	Beaver
305-539	Scotch thistle	Multiple	Beaver
305-540	Hoary cress, Scotch thistle	Multiple	Millard
305-540	Scotch thistle	Multiple	Millard
305-541	Scotch thistle	Multiple	Beaver
305-555	Scotch thistle	Bureau of Land Management	Millard
305-556	Scotch thistle	Bureau of Land Management	Millard

TABLE 1 NOXIOUS WEED OCCURRENCES BY ACCESS ROAD			
Access Road Label	**Weeds Present**	**Jurisdiction**	**County**
305-559	Hoary cress, Scotch thistle	Multiple	Millard
305-569	Scotch thistle	Bureau of Land Management	Millard
305-571	Scotch thistle	Bureau of Land Management	Millard
305-573	Scotch thistle	Bureau of Land Management	Millard
320-575	Scotch thistle	Bureau of Land Management	Millard
320-577	Scotch thistle	Bureau of Land Management	Millard
320-579	Scotch thistle	Bureau of Land Management	Millard
320-581	Scotch thistle	Bureau of Land Management	Millard
320-583	Scotch thistle	Bureau of Land Management	Millard
320-589	Scotch thistle	Bureau of Land Management	Millard
320-590	Hoary cress, field bindweed, Scotch thistle	Bureau of Land Management	Millard
320-590a	Scotch thistle	Bureau of Land Management	Millard
320-591	Field bindweed, Scotch thistle	Bureau of Land Management	Millard
320-592	Scotch thistle	Bureau of Land Management	Millard
320-601	Scotch thistle	Bureau of Land Management	Millard
320-604	Scotch thistle	Bureau of Land Management	Millard
320-608	Scotch thistle	Bureau of Land Management	Millard
320-618	Scotch thistle	Bureau of Land Management	Millard
320-623	Scotch thistle	Bureau of Land Management	Millard
320-624	Scotch thistle	Bureau of Land Management	Millard
320-627	Scotch thistle	Bureau of Land Management	Millard
320-628	Scotch thistle	Bureau of Land Management	Millard
320-631	Scotch Thistle	Bureau of Land Management	Millard
320-633	Scotch Thistle	Bureau of Land Management	Millard
320-637	Scotch thistle	Bureau of Land Management	Millard
345-749	Scotch thistle	Bureau of Land Management	Millard
350-681a	Field bindweed	Private	Millard
381-1052	Field bindweed	Multiple	Beaver
386-946	Saltcedar	Private	Beaver
386-949	Saltcedar	Private	Beaver
441-1963	Scotch thistle	State Trust Lands	Iron
442-2019	Field bindweed, Scott thistle	U.S. Forest Service	Washington
442-2031	Scotch thistle	U.S. Forest Service	Washington
442-2034	Scotch thistle	U.S. Forest Service	Washington

Table 2 Noxious Weed Occurrences by Structure			
Structure Number	**Weeds Present**	**Jurisdiction**	**County**
2	Hoary cress, saltcedar	Private	Sevier
4	Hoary cress	Private	Sevier
11	Field bindweed	Bureau of Land Management	Sevier
12	Hoary cress	Bureau of Land Management	Sevier
18	Hoary cress	Bureau of Land Management	Sevier
19	Hoary cress	Bureau of Land Management	Sevier
20	Hoary cress	State Trust Lands	Sevier
21	Hoary cress	State Trust Lands	Sevier
22	Field bindweed	State Trust Lands	Sevier

Table 2 Noxious Weed Occurrences by Structure			
Structure Number	**Weeds Present**	**Jurisdiction**	**County**
26	Hoary cress	Private	Sevier
36	Hoary cress	Private	Sevier
39	Field bindweed	State Trust Lands	Sevier
55	Hoary cress	Multiple	Sevier
56	Hoary cress, saltcedar	Multiple	Sevier
58	Hoary cress	U.S. Forest Service	Sevier
63	Hoary cress	U.S. Forest Service	Sevier
64	Hoary cress	U.S. Forest Service	Sevier
65	Hoary cress	U.S. Forest Service	Sevier
66	Hoary cress	Multiple	Sevier
68	Hoary cress	Private	Sevier
87	Scotch thistle	Multiple	Sevier
95	Hoary cress	U.S. Forest Service	Sevier
96	Hoary cress	U.S. Forest Service	Sevier
103	Hoary cress	U.S. Forest Service	Sevier
104	Hoary cress	Multiple	Sevier
112	Hoary cress	U.S. Forest Service	Sevier
117	Hoary cress	U.S. Forest Service	Sevier
121	Hoary cress, field bindweed, saltcedar	Multiple	Sevier
123	Hoary cress	Private	Sevier
125	Hoary cress	Multiple	Sevier
127	Hoary cress	Multiple	Sevier
128	Hoary cress	U.S. Forest Service	Sevier
145	Hoary cress	U.S. Forest Service	Sevier
146	Hoary cress	U.S. Forest Service	Sevier
146	Hoary cress, field bindweed	Multiple	Sevier
147	Hoary cress	U.S. Forest Service	Sevier
157	Hoary cress	U.S. Forest Service	Sevier
172	Houndstounge, Leafy spurge	U.S. Forest Service	Sevier
173	Scotch thistle	U.S. Forest Service	Sevier
180	Houndstounge	U.S. Forest Service	Sevier
184	Scotch thistle, Houndstounge	U.S. Forest Service	Millard
185	Houndstounge	Multiple	Millard
191	Hoary cress, field bindweed	Multiple	Millard
195	Hoary cress	U.S. Forest Service	Millard
197	Hoary cress, Scotch thistle	U.S. Forest Service	Millard
199	Hoary cress	U.S. Forest Service	Millard
200	Hoary cress	U.S. Forest Service	Millard
202	Scotch thistle	U.S. Forest Service	Millard
203	Hoary cress, field bindweed, Scott thistle	Multiple	Millard
208	Hoary cress, Scotch thistle	U.S. Forest Service	Beaver
209	Hoary cress	U.S. Forest Service	Beaver
211	Hoary cress	Bureau of Land Management	Beaver
212	Hoary cress	Bureau of Land Management	Beaver
216	Hoary cress, Scotch thistle	Multiple	Beaver
217	Scotch thistle	Bureau of Land Management	Beaver
224	Hoary cress, Scotch thistle	Multiple	Millard
228	Scotch thistle	Bureau of Land Management	Millard

Table 2 Noxious Weed Occurrences by Structure			
Structure Number	**Weeds Present**	**Jurisdiction**	**County**
230	Scotch thistle	Multiple	Millard
231	Scotch thistle	Bureau of Land Management	Millard
232	Scotch thistle	Bureau of Land Management	Millard
233	Scotch thistle	Bureau of Land Management	Millard
234	Scotch thistle	Bureau of Land Management	Millard
235	Scotch thistle	Bureau of Land Management	Millard
236	Scotch thistle	Bureau of Land Management	Millard
237	Scotch thistle	Bureau of Land Management	Millard
238	Hoary cress, Scotch thistle	Multiple	Millard
241	Scotch thistle	Bureau of Land Management	Millard
244	Scotch thistle	Bureau of Land Management	Millard
248	Scotch thistle	Bureau of Land Management	Millard
250	Scotch thistle	Bureau of Land Management	Millard
251	Scotch thistle	Bureau of Land Management	Millard
252	Scotch Thistle	Bureau of Land Management	Millard
253	Scotch Thistle	Bureau of Land Management	Millard
255	Scotch thistle	Bureau of Land Management	Millard
256	Scotch thistle	Bureau of Land Management	Millard
275	Field bindweed	Private	Millard
282	Scotch thistle	Bureau of Land Management	Millard
376	Saltcedar	Private	Beaver
377	Saltcedar	Private	Beaver
412	Field bindweed	Private	Beaver
499	Saltcedar	Bureau of Land Management	Beaver
639	Scotch thistle	Private	Iron
693	Scotch thistle, saltcedar	Private	Iron
E_40	Field bindweed	U.S. Forest Service	Washington
H-3_7	Scotch thistle	U.S. Forest Service	Washington

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Attachment B
BLM-approved Herbicides

ATTACHMENT B – AGENCY-APPROVED HERBICIDES

The *Final Programmatic Environmental Impact Statement on Vegetation Treatment Using Herbicides on BLM Land in Seventeen Western States* lists herbicides acceptable for use on BLM-administered lands (BLM 2007). Table 1 shows the chemicals approved for use in the State of Utah.

TABLE 1 HERBICDES APPROVED FOR USE ON PUBLIC LANDS IN UTAH	
2,4-D	Glyphosate
2,4-DP	Hexazinone
Asulam	Imazapyr
Atrazine	Mefluidide
Bromacil	Metasulfuron methyl
Chlorsulfuron	Picloram
Clpyralid	Simazine
Dicamba	Sulfoneturon methyl
Diuron	Tebuthiuron
Fosamine	Triclopyr
Source: BLM 2007	

The *Noxious Weed Control Plan* included in an environmental assessment prepared for the Cedar City Field Office (BLM 1996) indicates the herbicides and application rates to be used on land administered by the BLM Cedar City Field Office. Table 2 gives the approved chemicals and application rates.

TABLE 2 HERBICDES APPROVED FOR USE ON PUBLIC LANDS ADMINISTERED BY THE BLM CEDAR CITY FIELD OFFICE		
	Specifications	
Chemical	**Intended Rates**	**Maximum Rates**
Dicamba + 2,4-D	1.5 to 2 pints per acre product at rosette or bolting stage; higher rates of up to 5.2 pints per acre may be necessary for spot treatments of actively growing thistle. (0.19 pound acid equivalent per acre Dicamba + 0.54 pound acid equivalent per acre 2,4-D to .65 pound acid equivalent per acre Dicamba + 1.9 pounds acid equivalent per acre 2,4-D); no more than 5.2 pints would be applied in any treated acre.	5.2 pints per acre per year (0.65 pounds acid equivalent per acre per year Dicamba + 1.9 pounds acid equivalent per acre per year 2,4-D) and no more than 4 pints per acre (0.5 pound acid equivalent per acre Dicamba + 1.4 pounds acid equivalent per acre 2,4-D) in any single treatment.
Picloram	2 pints per acre for primary target species (scotch thistle, bull thistle, black henbane), but up to 4 pints may be utilized for other noxious weeds, such as toadflax or Russian knapweed if found.	4 pints per acre per year
Metsulfuron Methyl	1.67 ounces per acre per year of product, which is equivalent to 0.104 pound per acre per year (0.063 pound active ingredient per acre per year	**Rights of way/industrial sites** 2.0 ounces per acre per year (1.2 ounces or 0.075 pounds active ingredient per acre per year **Rangeland sites** 1.67 ounces per acre per year (1.0 ounces or 0.063 pounds active ingredient per acre per year
SOURCE: BLM 1996		

Tables 3 and 4 are lists of herbicides that are approved for use on Fishlake and Dixie National Forests. Application rates and the recommended applications time is listed for specific noxious weeds.

TABLE 3
FISHLAKE NATIONAL FOREST HERBICIDE TREATMENT RECOMMENDATIONS

Noxious Weed	Herbicide	Application Rate	Application Time
Canada thistle	Amitrole (Amitrol-T)	Spot: .5 lb ai/12 gal water Broadcast: 4 lb ai/ac	Before bud stage, 6" height
	Clopyrid (Curtail)	1/2-2/3 gal/ac Curtail; 2/3-1 pt/ac Stinger	Active growing rosettes to bloom
	Chlorsulfuron (Telar 75)	.75-1.5 oz ai or 1-2 oz prod/ac	Bloom or early seed development
	Dicamba (banvel)	2-4 lb ae/acre Spot: 2-4 lb ae/100 gal water	Anytime during growing season
	Picloram (Tordon 22K)	.5-1 lb ae or 1-2 qt prod/acre Spot: 2-3 qt prod/100 gal water	Before or at bud stage
	Metsulfuron (Escort/ Ally)	.6 oz ai/ac or 1 oz prod/acre	Active growth to bloom stage
	Glyphosate (Roundup)	Wiper applic: 10-33% solution	Active growth past bud growth
Dalmation toadflax **Yellow toadflax**	Dicamba (banvel)	4-6 lb ae or 4-6 qts prod/ac	Early spring prior to bloom stage
	Picloram (Tordon 22K	1-1.5 lb ae or 2-3 qts prod/ac	Spring before full bloom
Spotted knapweed **Squarrose knapweed**	Picloram (Tordon 22K)	.25-.5 ae or 1-2 qt prod/ac	From rosette to mid-bolt stage
	2,4-D (4 or 6 EC)	2 lb ae/ac or 2 qt (4EC) or 2.7 pt (6EC)/ac	Spring: Flower stem elongation
	Dicamba (banvel) + 2,4-D	.5 lb ai/ac or 1 pt Banvel/ac + 1 lb ai/ac 2,4-D	Active growing rosettes, pre-bolt
	Clopyralid + 2,4-D amine	2-3 qt/ac Curtail; 2/3 pt/ac Stinger	Before flower stem elongation
Hoary Cress (whitetop)	2,4-D (4 or 6EC)	2-3 lb ae or 2-3 qt (4EC) or 2.7-4 pt (6EC)/ac	Early in growth stage: Little control is attained after the bud stage
	Chlorsulfuron (Telar 75)	.75 oz ai/ac or 1 oz prod/ac	Bud to early bloom stage
	Metsulfuron (Escort/Ally)	.3-.5 oz ai or .5-.75 oz prod/ac	Bud to early bloom stage
	Amitrole (Amitrol-T)	Spot: 3 lb ai/50 gal water	Before the first bloom opens
Scotch thistle **Musk thistle**	Clopyralid + 2,4-D amine	1-2 qt/ac Curtail	Before flower stem development
	Picloram (Tordon 22K	.25-.5 ae or 1-2 qt prod/ac	Spring: Prior to seed stalks
	Chlorsulfuron (Telar 75)	.75-2.2 oz ai/ac; 1-3 oz prod/ac	Young, actively growing plants
Russian knapweed	Glyphosate	3 lb ae/ac or 1 gal prod/ac	Late bud-early flower
	Tordon 22K (2EC)	0.5-1 lb ae/ac or 1-2 qt prod/ac	Early flower-killing frost
	Clopyralid + 2,4-D amine	2.5-5 qt/ac mixture (Curtail)	Before flower stem elongation
	Telar (75DF)	.5-1.5 oz ai/ac; .7-2 oz prod/ac	Post bloom stage
Leafy spurge	Amitrole	8 lb ai/ac	Bud to bloom stage
	Dicamba	2-6 lb ae/ac; 2-6 qts product/ac	Spring or early summer
	Picloram	.5-2 lb ae/ac; 1-4 qt product/ac	Growing season up to first frost
	2,4-D	1 lb ae/ac; 1 qt 4EC product/ac	Bud to early bloom stage
Dyers woad	2,4-D	1.5-2 lb ae/ac; 1.5-2 qt 4EC/ac	Rosette stage; after fall growth
	Dicamba + 2,4-D (4#/gal)	.5 pt banvel + 1 pt 2,4-D/ac	Bud or bloom stage; fall germin.
	Metsulfuron	.3-.5 oz ai/ac; .5-.75 oz prod/ac	Post emergence-young plants
	Chlorsulfuron	.75 oz ai/ac; 1 oz prod/ac	Pre- or early-post emergence
Black henbane	2,4-D and Dicamba	.75 lbs ai/ac 2,4-D and .25 lbs ai/ac Dicamba	Actively growing plants
	Picloram (Tordon 22K)	1-2 pts/ac	Actively growing plants

TABLE 4 DIXIE NATIONAL FOREST HERBICIDE TREATMENT RECOMMENDATIONS			
Noxious Weed	**Herbicide**	**Application Rate**	**Application Time**
Canada thistle	Amitrole (Amitrol-T)	Spot: .5 lb ai/12 gal water Broadcast: 4 lb ai/ac	Before bud stage, 6" height
	Clopyrid (Curtail)	1/2-2/3 gal/ac Curtail; 2/3-1 pt/ac Stinger	Active growing rosettes to bloom
	Chlorsulfuron (Telar 75)	.75-1.5 oz ai or 1-2 oz prod/ac	Bloom or early seed development
	Dicamba (banvel)	2-4 lb ae/acre Spot: 2-4 lb ae/100 gal water	Anytime during growing season
	Picloram (Tordon 22K	.5-1 lb ae or 1-2 qt prod/acre Spot: 2-3 qt prod/100 gal water	Before or at bud stage
	Metsulfuron (Escort/ Ally)	.6 oz ai/ac or 1 oz prod/acre	Active growth to bloom stage
	Glyphosate (Roundup)	Wiper applic: 10-33% solution	Active growth past bud growth
Dalmation toadflax **Yellow toadflax**	Dicamba (banvel)	4-6 lb ae or 4-6 qts prod/ac	Early spring prior to bloom stage
	Picloram (Tordon 22K	1-1.5 lb ae or 2-3 qts prod/ac	Spring before full bloom
Spotted knapweed	Picloram (Tordon 22K)	.25-.5 ae or 1-2 qt prod/ac	From rosette to mid-bolt stage
	2,4-D (4 or 6 EC)	2 lb ae/ac or 2 qt (4EC) or 2.7 pt (6EC)/ac	Spring: Flower stem elongation
	Dicamba (banvel) + 2,4-D	.5 lb ai/ac or 1 pt Banvel/ac + 1 lb ai/ac 2,4-D	Active growing rosettes, pre-bolt
	Clopyralid + 2,4-D amine	2-3 qt/ac Curtail; 2/3 pt/ac Stinger	Before flower stem elongation
Hoary Cress (whitetop)	2,4-D (4 or 6EC)	2-3 lb ae or 2-3 qt (4EC) or 2.7-4 pt (6EC)/ac	Early in growth stage: Little control is attained after the bud stage
	Chlorsulfuron (Telar 75)	.75 oz ai/ac or 1 oz prod/ac	Bud to early bloom stage
	Metsulfuron (Escort/Ally)	.3-.5 oz ai or .5-.75 oz prod/ac	Bud to early bloom stage
	Amitrole (Amitrol-T)	Spot: 3 lb ai/50 gal water	Before the first bloom opens
Scotch thistle **Musk thistle**	Clopyralid + 2,4-D amine	1-2 qt/ac Curtail	Before flower stem development
	Picloram (Tordon 22K	.25-.5 ae or 1-2 qt prod/ac	Spring: Prior to seed stalks
	Chlorsulfuron (Telar 75)	.75-2.2 oz ai/ac; 1-3 oz prod/ac	Young, actively growing plants
Russian knapweed	Glyphosate	3 lb ae/ac or 1 gal prod/ac	Late bud-early flower
	Tordon 22K (2EC)	0.5-1 lb ae/ac or 1-2 qt prod/ac	Early flower-killing frost
	Clopyralid + 2,4-D amine	2.5-5 qt/ac mixture (Curtail)	Before flower stem elongation
	Telar (75DF)	.5-1.5 oz ai/ac; .7-2 oz prod/ac	Post bloom stage

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Appendix B11 – Fire Protection Plan

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B11.0 – FIRE PROTECTION PLAN

B11.1 Introduction

This plan details measures that will be implemented to (1) reduce the risk of starting a fire and (2) suppress a fire in the event one does occur within the construction area during Project construction. The precautions and procedures identified in this plan are also applicable for operation and maintenance activities; however, responsibilities are predominantly assumed by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) Fire Management Officers (FMO) and the operation and maintenance crews of PacifiCorp, doing business as Rocky Mountain Power (Proponent).

B11.1.1 Purpose

The risk of fire danger during construction of a transmission line is related largely to the use of vehicles and other motorized equipment operating off roadways, the handling and use of explosive materials and flammable liquids, and welding.

The purpose of this plan is to outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and post-fire rehabilitation strategies related to the Sigurd to Red Butte No. 2 -345-kilovolt (kV) Transmission Project (Project). The goal is to minimize the risk of Project-related fires and, in case of fire, provide for immediate suppression within the construction area. Other plans containing information related to fire protection include: Appendix B5 – Blasting Plan Framework, Appendix B8 – Hazardous Materials Management Plan Framework, and Appendix B9 – Emergency Preparedness and Response Plan Framework.

B11.1.2 Regulatory Compliance

The Project will be subject to state, county, and federally enforced laws, ordinances, rules, and regulations that pertain to fire prevention and suppression activities. Key regulatory agencies include the BLM, USFS, and local fire protection agencies in Utah.

B11.2 Responsibilities

B11.2.1 Bureau of Land Management and U.S. Forest Service

The BLM FMO and USFS FMO will oversee all fire control activities within their prospective administrative units. The FMOs will discuss fire protection stipulations at the notice-to-proceed meeting, which will be attended by the BLM and USFS Authorized Officers or his/her designated representative; the Compliance Inspection Contractor (CIC); the Construction Contractor(s); and their Environmental Inspectors and the Proponent.

B11.2.2 Construction Contractor(s)

It will be the responsibility of the Construction Contractor(s) to notify the BLM and/or USFS when a Project-related fire occurs within or adjacent to the construction area. The Construction Contractor(s) will be responsible for any fire started, in or out of the Project area, by its employees or operations during construction. The Construction Contractor(s) will be responsible for fire suppression and rehabilitation. The Construction Contractor(s) will take safe and immediate action to prevent and suppress fires on and adjacent to the Project area that are a result of contractor activities. The Construction Contractor(s) will use its workers and equipment on the Project for preventing the spread of fires started by contractor activities unless the fire exceeds immediate control, at which time all Construction Contractor employees will exit the area to predetermined locations safe from wildfire.

All federal, state, and county laws, ordinances, rules, and regulations, which pertain to prevention, pre-suppression, and suppression of fires, will be strictly adhered to by the Construction Contractor(s). All personnel will be advised of their responsibilities under the applicable fire laws and regulations.

Costs involved with Construction Contractor(s)-caused fires will be charged to the Construction Contractor(s). There will be no extension of time for construction based on delays caused by Construction Contractor(s)-related fires. Specific construction related activities and safety measures will be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression in the event a fire occurs as specified in this Fire Protection Plan.

B11.2.2.1 Construction Crew

The construction crew will be responsible for the following:

- If a fire starts in the Project area, the construction crew will initiate fire suppression activities on the Project until relieved by appropriate fire authorities or when the fire exceeds immediate control.

- The construction crew will immediately notify the Construction Contractor's Fire Marshall (see below) when a construction fire occurs in the area. The Construction Contractor's Fire Marshall will notify the appropriate agency personnel.

- Available Project crews will be immediately alerted when a Construction Contractor(s)-caused fire occurs in the Project area. Project tools, equipment, and trained workers will be sent immediately to control the fire.

B11.2.2.2 Construction Contractor(s) Designated Fire Marshall

The Construction Contractor(s) will designate a Fire Marshall responsible for the following:

- Conducting regular inspections of tools, equipment, and first aid kits for completeness.
- Conducting regular inspections of storage areas and practices for handling flammable fuels to confirm compliance with applicable laws and regulations.
- Posting smoking and fire rules at centrally visible locations.
- Coordinating initial response to Construction Contractor(s)-caused fires within the Project areas.
- Accompanying the CIC on fire inspections of the Project areas.

- Ensuring all construction workers and subcontractors are aware of the contents of this Fire Prevention Plan.
- Remaining on duty when construction activity is in progress and any additional periods where fire safety is an issue.
- Reporting all wildfires immediately to the CIC and the Proponent in accordance with the notification procedures described in the notification section below.
- If a fire starts in the Project area, fire suppression will be initiated and implemented until relieved by the appropriate fire agencies or when the fire exceeds immediate control. The Construction Contractor's personnel and equipment, including water trucks, will be dispatched within 15 minutes from the time a fire is reported to initially suppress the fire.
- Monitoring current fire potential and issuing fire safety warnings to construction personnel.
- Advising all construction personnel about activities that must be limited or restricted during periods of elevated fire danger.

B11.2.3 Compliance Inspection Contractor

The CIC and the Fire Marshall will accompany the BLM and USFS FMOs on fire inspections and take corrective action when notified fire protection requirements are not in compliance. The fire inspection schedule will be determined by the availability of BLM and USFS FMOs. The CIC will notify the Construction Contractor(s) to stop or reduce construction activities that pose a significant fire hazard until appropriate safeguards are taken.

B11.2.4 Notification

The Construction Contractor's Fire Marshall will notify the CIC and Proponent, who will immediately notify the BLM Authorized Officer or his/her designated representative and the BLM and/or USFS FMOs, of any fire started in the Project area during construction. During operation and maintenance activities, the Proponent's maintenance or contract crews will be responsible for the immediate notification of any fire started in the Project area. The Construction Contractor(s) and the Proponent will have notification numbers readily available for all employees in case of fire, and will update the following emergency contact numbers (Table B11-1) for any changes prior to construction or maintenance within the Project area.

TABLE B11-1
FIRE NOTIFICATION NUMBERS

Contact Person	Phone Number
Bureau of Land Management	To be determined
Bureau of Land Management Authorized Officer or Designated Representative	To be determined
U.S. Forest Service Authorized Officer or Designated Representative	To be determined
Proponent Construction Manager	To be determined
Central Utah Interagency Fire Center or Richfield Interagency Fire Center – for fires in Richfield and Fillmore BLM Field Offices, Fishlake National Forest, Millard, Sevier, or Beaver counties	(435) 896-8404 (or 911)
Color Country Interagency Fire Center or Cedar City Interagency Fire Center – for fires in Cedar City BLM Field Office, Dixie National Forest	(435) 865-4601, (435) 586-7021 (or 911)
911 – Emergency	911

B11.3 Mitigation Measures

The design features of the Project for environmental protection for fire protection (FP) below will be adhered to during construction on a Project area-wide basis.

B11.3.1 Design Features of the Project for Environmental Protection

FP 1 A Fire Protection Plan will be developed and incorporated into the Plan of Development, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.

B11.3.2 Other Specific Stipulations and Methods

The following fire prevention measures will be implemented at all times by the Construction Contractor(s) during construction, operation, and maintenance of the Project:

FP 2 Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrester. Qualified spark arresters will be in a maintained and nonmodified condition and meet U.S. Department of Agriculture Forest Service Standard 5100-1a, or the Society of Automotive Engineers Recommended Practices J335 or J350. Refer to 43 Code of Federal Regulations §8343.1.

FP 3 Carry shovels, water, and fire extinguishers on all equipment and vehicles. Equipment will carry extinguishers rated ABC-10 pound minimum and vehicles will carry ABC-2.5 pound minimum. If a fire spreads beyond the suppression capability of workers with these tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.

FP 4 Initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If fire ignitions cannot be prevented or contained immediately, or it may be foreseeable to exceed the immediate capability of workers, the operation must be modified or discontinued. No risk of ignition or re-ignition will exist on leaving the operation area.

FP 5 Notify the Color Country Utah Interagency Fire Center (435) 865-4601 or (435) 586-7021 (or 911) immediately of the location and status of any escaped fire.

FP 6 Prior to any operation involving potential sources of fire ignition from vehicles, equipment, or other means, review weather forecasts and potential fire danger. Prevention measures to be taken each workday will be included in the specific job briefing. Consideration for additional mitigation or discontinuing the operation must be given in periods of extreme wind and dryness.

FP 7 Operate all vehicles on designated roads or park in areas where vegetation is less than 8 inches tall. Vehicles, including the undercarriages, will be cleared of vegetation accumulations and checked periodically to ensure no buildup of flammable vegetation.

FP 8 Operate welding, grinding, or cutting activities in areas cleared of vegetation within range of the sparks for that particular action. A spark shield adequate for the sparks may be used to prevent sparks from carrying. A spotter equipped with a round-nose shovel and two ABC-rated 5-pound fire extinguishers and a 5-gallon backpack waterpump is required to watch for ignitions during, and one hour after, the activity. Water may be used to wet down surrounding vegetation but does not take the place of an adequately cleared area and spark shield.

FP 9 No smoking will be allowed while operating equipment or while walking or working in areas with vegetation.

FP 10 Smoke only in cleared areas.

FP 11 In areas where smoking is allowed, completely extinguish all burning tobacco and matches and discard them in ash trays, not on the ground.

FP 12 Do not allow any fires or barbecues on the transmission line right-of-way, at material yards, substations, access roads, or other construction areas.

FP 13 Instruct all field personnel about emergency response for fire events.

FP 14 Clear away all flammable material to a minimum of 10 feet, including snags (fallen or standing dead trees) from areas of operation where a spark, fire, or flame could be generated.

FP 15 If a fire does start by accident, take immediate steps to extinguish it (if it is safe to do so) using available fire suppression equipment and techniques taught at field crew emergency response training provided by the Construction Contractor(s) or the Proponent.

FP 16 No open burning of construction trash or other open fires will be allowed.

B11.4 Activity-Related Precautions

B11.4.1 Introduction

B11.4.1.1 Fire Danger Ratings

Fire Danger Ratings will be used to direct the daily activities and in field crew safety briefings. Fire Danger Ratings take into account current and antecedent weather, fuel types, and both live and dead fuel moisture, and will be used by the land-management agency in determining mitigation or curtailment of operations.

Fire Danger Ratings and their descriptions are available on the Wildland Fire Assessment website at: http://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32.

B11.4.1.2 Red Flag Warnings

In addition, when the National Weather Service has issued a Red Flag Warning for low humidity and high winds, the Fire Precaution Levels in Table B11-2 will be adhered to. The Red Flag Warnings are posted on http://www.wrh.noaa.gov/firewx/main.php.

TABLE B11-2
FIRE PRECAUTION LEVELS

Fire Danger Rating	No Red Flag	Red Flag
Low	Normal fire precautions.	Consider additional measures and resources.
Moderate	Normal fire precautions.	Consider additional measures and resources.
High	One engine[1] is required for blasting.	One engine* is required for blasting, welding, cutting, and grinding AND operations will shut down from noon until 8 p.m.
Very High	One engine[1] is required for blasting, welding, cutting, and grinding.	Two engines[1] required for blasting, welding, cutting, and grinding AND operations will shut down from 10 a.m. until 8 p.m. Powersaws will be shut down from 10 a.m. until 8 p.m.
Extreme	Two engines[1] required for blasting, welding, cutting, and grinding AND operations will shut down from 10 a.m. until 8 p.m. Powersaws will be shut down from 10 a.m. until 8 p.m.	Unless authorized by the land jurisdictional agency, ALL OPERATIONS SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.

NOTE: [1]Minimum Fire Suppression Vehicle Requirements: Refer to FP 28 in Section B11.5.

B11.4.1.3 Fire Precaution Levels

The Fire Marshal shall check the forecasted and current weather, Fire Danger Ratings, and any Red Flag Warnings each day of operation. If there are questions as to the level of fire danger and operations, the Fire Marshal or CIC shall contact the BLM/USFS Authorized Official prior to conducting work. Regardless of the fire danger or warnings, the Fire Marshal and CIC must determine when additional measures should be taken or operations should be shut down due to periods of extreme dryness and wind.

Fire Precaution Levels associated with the Fire Danger Ratings and Red Flag Warnings are shown in Table B11-2.

B11.4.2 Burning (Not Allowed)

FP 17 No burning activities, campfires, or barbecues will be allowed on the transmission line right-of-way, at material yards, at substations, on access roads, or in any other Project construction areas.

B11.4.3 Blasting

FP 18 No blasting will be performed without the notification of the CIC and the Fire Marshal. Blasting operations will follow the measures described in the Blasting Plan Framework (refer to Appendix B5 – Blasting Plan Framework). The Blasting Contractor's vehicle will be equipped with adequate fire suppression equipment (refer to Section B11.5 – Minimum Fire Prevention and Suppression Equipment Required).

B11.4.4 Welding, Cutting, Grinding, or Drilling

FP 19 Any spark-producing equipment or tools, including welding, cutting, drilling steel or grinding, will require wetting or removing flammable vegetation to an area large enough to contain all sparks (minimum of 10 feet around activity). The Construction Contractor's Construction Manager must approve any welding, grinding, or cutting of powerline structures or their component parts. A spark shield is required. At least one person will be designated as a "spotter" to watch for ignitions while equipped with suppression tools including fire extinguishers, a shovel, and a backpack water pump. The "spotter" will not be the same person who is engaged in welding, cutting, grinding or drilling. The "spotter" will remain on the scene for at least one hour after the work has been completed to ensure no fire risk exists. In addition, these activities will stop one hour before all fire suppression personnel leave a construction area to reduce the possibility of smoldering to ignite a fire. Vehicles assigned to this work will be equipped with fire suppression equipment (refer to Section B11.5 – Minimum Fire Prevention and Suppression Equipment Required).

B11.4.5 Spark Arrestors

FP 20 All equipment assigned to the Project will be inspected and approved by the Construction Contractor(s). Internal combustion engines (stationary or mobile) will be equipped with spark arrestors that meet agency standards, and for which the following standards will apply:

- Light trucks and cars with factory-installed (type) mufflers (in good condition) may be used on roads where the roadway is cleared of all vegetation.
- On roads where vegetation exists, spark arrestors will be used.
- Spark arrestors will be in good working order.
- Vehicles equipped with catalytic converters may represent potential fire hazards and will be parked on areas where vegetation is less than 8 inches tall.
- If required, flues used in extra work areas will be equipped with spark arrestors in good working order and meets agency standards.

B11.4.6 Smoking

FP 21 Smoking signs and fire rules regarding the Project will be posted on the Project bulletin board at the Construction Contractor's field office, at all show-up

locations, and on all portable toilet doors during the fire season (to be determined by the BLM or USFS Authorized Officer or his/her designated representative). The Construction Contractor is responsible for and will require supervisory personnel to enforce all posted rules, will prohibit smoking except in designated areas approved by the BLM or USFS, and will prohibit smoking during any season while operating equipment, walking, or working in areas of vegetation.

B11.4.7 Warning Devices

FP 22 The use of torches, fuses, highway flares, or other warning devices with open flames will be prohibited. The Construction Contractor(s) will use only electric or battery-operated warning devices within the Project area.

B11.4.8 Parking and Vehicle Storage Areas

FP 23 Equipment parking areas and small stationary engine sites will be cleared of all flammable materials as determined necessary by the BLM or USFS Authorized Officer or his/her designated representative. Gas and oil storage areas will be cleared of all flammable material to a distance of 100 feet with "NO SMOKING" signs posted throughout the area. All used and discarded oil filters and oily rags or other waste will be disposed of in an approved landfill. Glass jugs or bottles will not be used as containers for gasoline or other flammable materials.

B11.4.9 Signage

FP 24 "NO SMOKING" signs and fire rules will be posted at material yards and key construction sites during the fire season, as determined by the BLM or USFS.

B11.4.10 Power Saws

FP 25 All gasoline powered saws will be provided with approved spark arrestors/mufflers. Gasoline-powered chain saws will be maintained in good condition throughout their assignment to the Project. In addition, chain saws will comply with the following requirements:

- Arrestors/mufflers will contain a 0.23-inch mesh, stainless steel screen.
- During the period of use, the operator will have one long-handled, round point, size 0 shovel that will be maintained in good working order; the operator will also carry an approved belt carrying-type fire extinguisher.
- Refueling will be done in an area that has been cleared of flammable materials; power saws will be moved at least 10 feet from the place of refueling before starting. All gas will be carried in approved metal safety containers only.

B11.4.11 Equipment Refueling

FP 26 Fuel trucks will have, at minimum, a 35-pound fire extinguisher charged with necessary chemicals to control electrical and gas fires. Helicopter fuel trucks will be grounded to the helicopter during refueling.

B11.4.12 Access

FP 27 The Construction Contractor(s) will provide continuous access to roads for emergency vehicles during construction. The access roads could have the potential to be used as fire breaks to help in fire suppression.

B11.5 Minimum Fire Prevention and Suppression Equipment Required

The following fire prevention and suppression equipment will be readily available and maintained in good working order at all times during Project construction.

FP 28 All motorized vehicles and equipment in each active construction area (spread) will carry the following:

- One long handled round point, size 0 shovel
- One ax or Pulaski fire tool
- One 5-pound ABC Dry Chemical Fire Extinguisher
- One 5-gallon water backpack (or other approved container) full of water or other extinguishing solution
- Hardhat, work gloves, and eye protection

FP 29 In addition to the fire suppression equipment required in motorized vehicles, construction work sites shall comply with the following:

- Power saws, if required for construction, will be equipped with an approved spark arrestor and accompanied by one 5-pound ABC dry chemical fire extinguisher and a long handled, round point, size 0 shovel when used away from a vehicle (refer to Section B11.4.10 – Power Saws).
- Fuel service trucks shall contain one 35-pound capacity fire extinguisher charged with the necessary chemicals to control electrical and fuel fires.
- Wood cutting, welding, or other construction work sites that have a higher risk of starting fires shall have at least two long-handled, round point, size 0 shovels and two 5-pound ABC dry chemical fire extinguishers available onsite.
- Every construction work site shall have at least one radio and/or cellular/satellite telephone to contact fire suppression agencies or the Project management.
- Every at-risk work site shall include backpumps filled with water (two at each wood cutting site, one at each welding site, and two at each tower installation or construction site, or any other at-risk activity site).

FP 30 During periods of heightened fire danger, the following equipment shall be available in the construction area or stationed near high-risk construction work sites to aid in response to a fire situation:

- One fire suppression vehicle equipped with a water tank with a minimum 500-gallon capacity, 250 feet of 0.75-inch heavy-duty rubber hose, and a pump with a discharge capacity of at least 20 gallons per minute. The pump shall have fuel capacity to operate for at least 2 hours.
- The fire suppression vehicle shall be outfitted with one tool cache for fire use only, containing at a minimum two long-handled round-point, size 0 shovels, two axes or Pulaski fire tools, and one chainsaw of 3.5 or more horsepower with a cutting bar of at least 20 inches in length.

B11.6 In Case Of Fire – Initial Response and Emergency Contacts

If a fire does start in the Project area and if the fire is manageable, safely attempt to control it with a fire extinguisher or other available equipment (e.g., using a shovel to throw dirt on the fire or remove small patches of vegetation). As part of the environmental compliance training program, the Construction Contractor(s) will receive training on initial fire suppression techniques, reporting requirements, how to determine if a fire is manageable and what control measures should be implemented by onsite field crews, and at what point field crews should evacuate. The training also will address how to respond to wildfires in the area and maintain knowledge of, and plans for, evacuation routes.

If the fire is unmanageable, field crews will evacuate and first call 911, then the district dispatch for the area (refer to emergency contacts listed on Table B11-1). All fires must be reported to the jurisdictional fire agency regardless of size and actions taken.

B11.7 Post-Fire Rehabilitation Strategies

If the cause of a fire is determined to be the result of the Project, the Construction Contractor(s) will implement rehabilitation measures as required by the BLM and USFS, and the following post-fire rehabilitation measures will be implemented by the Construction Contractor(s):

FP 31 After a fire has been extinguished, the burn areas will be reclaimed in accordance with BLM and USFS requirements. Small burn areas will be revegetated to the native vegetation using appropriate seed mixtures as identified in Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan. Larger burn areas may require specific reclamation plans. Coordination with the BLM and USFS is necessary to determine requirements for each particular area, depending on the size and location of a fire, and the location of sensitive resources. For fires exceeding 500 acres on USFS-administered lands, the USFS will assemble a Burned-Area Emergency Response Team to make a rapid assessment of the burned area. The Burned-Area Emergency Response Team will make recommendations for land, channel, road, and trail rehabilitation treatments. In addition, monitoring requirements will be identified.

FP 32 To prevent the spread of noxious weeds and invasive species during post-fire rehabilitation, the measures as outlined in the Appendix B10 – Noxious Weed Management Plan, will be implemented by the Construction Contractor(s).

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Appendix B12 – Stream, Wetland, Well, and Spring Protection Plan

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B12 – STREAM, WETLAND, WELL, AND SPRING PROTECTION PLAN

B12.1 Introduction

The purpose of this Stream, Wetland, Well, and Spring Protection Plan is to provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities. This plan incorporates mitigation measures contained in the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project). Directives for the protection of streams, wetlands, wells, and springs are contained in Appendix B2 – Stormwater Pollution Prevention Plan Framework; Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework; Appendix B5 – Blasting Plan Framework; Appendix B7 – Erosion, Dust Control, and Air Quality Plan; Appendix B8 – Hazardous Materials Management Plan Framework; and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

The goals of this plan are to:

- Control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks.
- Protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.

B12.2 Regulatory Overview

The construction, operation, and maintenance phases of the Project are subject to various regulations designed to protect environmental resources and the public. Regulations relevant to water resources are outlined below.

B12.2.1 Federal

General water quality is protected under the federal Clean Water Act and a permit may be required if a project will result in the alteration of or discharges into jurisdictional watercourses (waters of the United States) and wetlands. The U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency regulate the placement of fill into waters of the United States under Section 404 of the Clean Water Act. Waters of the United States include lakes, rivers, streams and their tributaries, and wetlands.

The Project will result in the alteration of or discharge into jurisdictional waters of the United States. To qualify under Section 404 Nationwide Permit (NWP) 12 for Utility Line Activities, the Project will need to meet the criteria for and fall within the thresholds of this NWP. As part of meeting the conditions of NWP 12, wetland delineations will need to be prepared and a Preliminary Jurisdictional Determination obtained from the USACE for the Project. The Preliminary Jurisdictional Determination will establish where waters of the United States may be located that may be affected by the Project.

A NWP 12 is typically issued after a 30 to 45 day review of the Preliminary Jurisdictional and Wetland Delineation Report, unless the USACE requests a field review, which will extend the review period. From the date of issuance, the NWP 12 is valid for 12 months.

B12.2.2 State

Utah Department of Environmental Quality (DEQ) is responsible for the administration of state authority to protect water quality. If a Section 404 NWP is required for the Project, a Section 401 Water Quality Certification will be required from the Utah DEQ. The Utah DEQ will also require a Utah Pollutant Discharge Elimination System Stormwater General Permit for Construction Activities. Other permits that may be required include a Utah Pollutant Discharge Elimination System General Permit for Construction Dewatering and Hydrostatic Testing if the Construction Contractor(s) discharges in waters of the State and a State Stream Alteration Permit for work in waterways, depending on the Construction Contractor(s)'s approach to constructing over or around streams.

A Utah State Stream Alteration Permit must be obtained prior to doing work within the bed and banks of any USACE jurisdictional waterway, as well as within any perennial or intermittent stream named on a standard U.S. Geological Survey 7.5-minute quadrangle map, which are considered jurisdictional by the state of Utah. A USACE Joint Application Form must be completed and submitted to the Utah State Stream Alteration Engineer's office, along with the appropriate fee to initiate the permit application process. Following a 20-day application review period, which will be posted on the Division of Water Quality's website and circulated to federal, state, and local agencies for review, the permit will be issued when approved by the authorizing agencies. Many times the permit will have special conditions attached as a stipulation to the general permit to ensure the project results in the least amount of negative impact to the stream(s). The Utah State Stream Alteration Permit is valid for a period of one year following agency approval. If work covered by the permit extends past the permit term limit, an extension can be filed with the Division of Water Quality Engineer.

B12.3 Overview of Streams, Wetlands, Wells, and Springs

B12.3.1 Streams and Drainages

A review of the National Wetland Inventory and field surveys will be conducted to identify perennial, intermittent, and ephemeral streams and drainages in the Project area. It is anticipated several perennial or intermittent streams will be identified along the Project alignment. In addition, ephemeral streams, drainages, and irrigation ditches are likely to be crossed by the Project right-of-way, access roads, substations, and temporary work areas. Potentially jurisdictional waters of the United States crossed by the Project will be delineated during preconstruction stream and wetland surveys and provided to the USACE to obtain a Preliminary Jurisdictional Determination. The locations of streams and drainages will be shown in the Plan of Development (POD) Volume II – Map Sets 1 and 2.

B12.3.2 Wetlands

Wetlands are a unique, important, and limited resource in the Great Basin eco-region. Wetland habitats are essential breeding, rearing, and feeding grounds for many species of fish and wildlife. Wetlands also perform flood protection and pollution control functions. The wetlands within the Great Basin represent regionally significant habitat for a variety of migratory water birds and other wildlife.

An initial wetland assessment will be conducted during the development of the Environmental Impact Statement. The initial wetland assessment is anticipated to indicate potentially jurisdictional wetlands occurring within the Project area.

Wetland delineations that follow the USACE Wetland Delineation Manual (1987) and Arid West Regional Supplement (2008) will be conducted prior to construction. The USACE Wetland Delineation Manual provides technical guidelines and methods for a three-parameter approach to determine the location and boundaries of potentially jurisdictional wetlands. This approach requires an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. Surveyors will gather wetland determination information on data forms in the field and map wetland boundaries using geographical positioning system technology. Wetlands that meet all three parameters will be presented to the USACE for a Preliminary Jurisdictional Determination. The locations of wetlands will be shown in Volume II – POD Map Sets 1 and 2.

B12.3.3 Wells and Springs

Water wells and springs are considered sensitive resources that will need to be identified and protected. Wells and springs within 600 feet of the Project alignment will be identified and shown in Volume II – POD Map Sets 1, 2, and 3. Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor(s).

B12.4 Mitigation Measures

PacifiCorp, doing business as Rocky Mountain Power (Proponent), and the Construction Contractor(s) will adhere to the mitigation measures and other specific stipulations and methods discussed in the following section to minimize Project impacts on jurisdictional waters of the United States, including wetlands, wells, and springs where they occur along the Project right-of-way, access roads, substations, and temporary work areas. Other specific stipulations and methods presented in Appendix B7 – Erosion, Dust Control, and Air Quality Plan and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan are designed to minimize the potential impacts on other nonjurisdictional drainages and dry swales found along the Project route. This plan, along with the Volume II – POD Map Sets 1, 2, and 3, is intended to provide guidance to the Construction Contractor(s) as to where and when these other specific stipulations and methods will be applied.

The Construction Contractor(s) will work cooperatively with the Compliance Inspection Contractor (CIC) and, as appropriate, USACE staff throughout construction to determine the most appropriate site-specific measures to be implemented based on a number of factors, including site characteristics, construction techniques to be used, anticipated weather conditions, mandatory permit requirements, and other variables.

B12.4.1 Design Features of the Project for Environmental Protection

Design Features of the Project for Environmental Protection, applied Project wide, will address many of the concerns associated with hazardous substances and have been developed in accordance with the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) standards. Following is a description of Design Features of the Project for Environmental Protection to address hazardous materials during the construction and operation of Project facilities that may affect streams, wetlands, wells, and springs (SWWS).

SWWS 1 In temporary construction areas (e.g., marshalling yards, tower site work areas, and spur roads from existing access roads) where ground disturbance is significant or

where recontouring is required, surface reclamation will occur as required by the landowner or land-management agency. The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

With the exception of sensitive plant habitats, areas on BLM- or USFS - administered lands disturbed as a part of the construction and/or maintenance of the proposed powerline will be reseeded with a seed mixture appropriate for those areas. The BLM or USFS will prescribe a seed mixture that fits each range site. Seeding methods will typically include drill seeding, where practicable; however, the BLM or USFS may recommend broadcast seeding as an alternative method in some cases. Drill seeding for all Project areas outside the jurisdiction of the BLM Cedar City Field Office will be performed during September 1 through December 15 to maximize the chance of success. Within the jurisdiction of the BLM Cedar City Field Office, drill seeding will be performed during October 15 through December 15. Where broadcast seeding is implemented, seed will be applied at 1.5 to 2 times the rate of drill seeding application, and the seed will be covered by a method such as harrowing or raking.

A Reclamation, Revegetation, and Monitoring Framework Plan identifying reclamation stipulations will be developed and incorporated in the POD, which will be approved by the BLM and USFS prior to the issuance of a right-of-way grant and special-use authorization, respectively.

SWWS 2 Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.

SWWS 3 Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be repaired or replaced if they are damaged or destroyed by construction activities to their pre-disturbed condition. If livestock are displaced during Project construction, temporary water facilities will be provided until the water facilities have been repaired or replaced, as required by the landowner or land-management agency.

SWWS 4 Refueling and storing potentially hazardous materials will not occur within a 100-meter (328-foot) radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 100-meter (328-foot) radius of any riparian area or water body. Spill prevention and containment measures or practices will be used in the case of accidental spills of fuel or potentially hazardous materials.

B12.4.2 Selective Mitigation

The selective mitigation measure to be applied on a site-specific basis to minimize potential adverse effects to wetlands during construction, operation, and maintenance of the Project is included below. The Construction Contractor(s) will determine where the measure can be specifically implemented (refer to Volume II – POD Map Sets 1, 2, and 3 for general mitigation measure applicability). If the mitigation measure identified below cannot be applied in a specific area, the Construction Contractor(s) will work with the CIC and USACE staff to determine a suitable alternative.

SWWS 5 Within the limits of standard tower design and in conformance with engineering and PacifiCorp requirements, structures will be located to allow conductors to clearly span identified sensitive features. Structures will be placed so as to avoid sensitive features, including, but not limited to, wetlands, riparian areas, water courses, hazardous substance remediation, sensitive plants, and cultural sites. Avoidance measures may include selective tower placement, spanning sensitive features, or realigning access routes.

B12.4.3 Other Specific Stipulations and Methods for Streams and Wetlands

These measures will be followed as standard practices to protect and minimize impacts on streams and wetlands in the Project area:

SWWS 6 Limit construction equipment operating in streams and wetlands needed to clear temporary access, erect towers, pull conductor, and ground disturbing activities.

SWWS 7 Limit clearing of vegetation at the edges of a stream or wetland to the minimal area necessary for required conductor clearance and vehicle passage. Maintain at least 80 percent of potential ground cover within 100 meters (328 feet) from the edges of all perennial streams, lakes, and other water bodies, or to the outer margin of the riparian ecosystem where wider than 100 meters (328 feet).

SWWS 8 Salvage and respread topsoil in areas where grading and excavation will occur, except in areas with standing water or saturated soils.

SWWS 9 Install and maintain sediment barriers as necessary until they are replaced by permanent erosion control devices, or reclamation of adjacent areas is complete.

SWWS 10 Prohibit the use of imported soil, tree stumps, riprap, or brush to stabilize the construction corridor within wetlands.

SWWS 11 Reclaim stream channels/bottoms and wetlands to their approximate preconstruction configuration/contours, unless the original stream bank contours are excessively steep and/or unstable and a more stable final contour can be specified or where permanent stream crossings must be created to maintain access throughout the life of the Project.

SWWS 12 Develop an access plan and travel plan for areas with sensitive resources.

SWWS 13 Stabilize stream banks, wetlands, and adjacent upland areas by establishing permanent erosion control measures and vegetation cover after the completion of construction (refer to Appendix B7 – Erosion, Dust Control, and Air Quality Plan and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan).

SWWS 14 Use permanent waterbars, if needed, on slopes above streams or wetland boundaries, on travel routes, and along the right-of-way to minimize sediment flow from adjacent uplands into the stream or wetland.

SWWS 15 Remove all prefabricated equipment pads, swamp mats, and geotextile fabric used for stream and wetland crossings on completion of construction.

SWWS 16 Herbicides may not be applied over surface water. Only herbicides registered for use near water will be used within 100 meters (328 feet) of surface water or in areas with a high leaching potential.

B12.4.4 Stream Crossing Methods

Streams that Project vehicles and equipment will cross or potentially impact will be identified in Volume II – POD Map Sets 1 and 2and 3. In Section 1 – Introduction, Table 1-2 outlines all federal, state, and local permits required for the Project, including the crossings of streams and wetlands. Permits, as identified in Section 1 – Introduction, Table 1-2, must be used in conjunction with the other specific stipulations and methods described in the following sections. If a stream or wetland cannot be avoided during construction, the CIC and Construction Contractor(s) will work together to identify the appropriate crossing strategy for vehicular access. The various types of crossing methods are discussed in detail below.

When implemented, these crossing methods will help protect water quality by minimizing stream channel disturbance, erosion, and sedimentation due to Project activities. If the chosen crossing method is not adequately preventing and/or minimizing sedimentation and erosion, the CIC may require additional sediment controls when circumstances warrant. Streams crossed by the Project will be monitored by the CIC throughout construction for signs of bed and/or bank degradation. If disturbance resulting from installation of erosion control devices across shallow swales outweighs the benefits of having the devices in place, then the CIC, in consultation with the Construction Contractor(s), will have the option of not prescribing any temporary stream crossing or erosion control method.

B12.4.4.1 Vehicular Stream Crossings

The crossings of streams will be limited to vehicular crossings along spur roads or access roads as described below.

- **Avoidance.** Equipment and vehicles will cross streams at existing bridges or established crossings whenever possible to avoid a new stream crossing location.

- **Graded Crossing.** Generally, streams wider than 10 feet that are scoured and have vertical banks greater than 2 feet high or selected smaller crossings may require grading to accommodate vehicle passage (e.g., drainages at the bottoms of steep canyons). Graded crossings will be accomplished by excavating a ramp through both banks of a stream to allow vehicles to cross.

Vehicle access ramps will be graded so soil is pushed away from the stream rather than toward it. Topsoil will be salvaged and kept separate from grade spoils. It will be placed a minimum of 20 feet from stream banks. As needed, straw bale barriers or silt fences will be used around the stockpiles and along the stream banks for erosion control. Neither grading nor blading will be used to facilitate a stream crossing carrying a discernible flow of water. Refer to Appendix B14–Reclamation, Revegetation, and Monitoring Framework Plan for post-construction reclamation of graded crossings.

- **Rock Armor Crossing.** Rock armor may be used in dry and wet streams using standard PacifiCorp crossing methods, which will be subject to approval by state and federal agencies if jurisdiction is ascertained by either a federal and/or state agency. Rock armor may be used in flowing streams or where there is the potential for intense, sudden rainfall or other seasonal conditions that could potentially occur, as long as the high flow conveyance is maintained during construction and allows for vehicle crossing without impacting water quality. When utilizing rock armor, clean rock will be installed 4 to 8 inches deep as required to construct a stable travel route. Culverts will be installed according to the specifications in Appendix C1: TA 504 – Roads – Culvert Installation and would follow fish passage guidelines as described by Evans and Johnston 1980. Rock armor will be removed following construction in all locations except where approved by the appropriate agency or landowner request that it is left in place. Any remaining rock armor will be arranged to leave preconstruction hydrology intact, including maintenance of a low flow channel.

- **Prefabricated Equipment Pad Crossing.** Prefabricated equipment pads will be used on saturated ground or in low-flow streams with shallow banks. Prefabricated equipment pads disperse the weight of vehicles and equipment, thereby protecting the streambed from erosion. Prefabricated equipment pads are not appropriate for use in high flow streams or in fast or deep water. If prefabricated equipment pads are used in a stream with a discernible flow, attempts will be made to span the water. If spanning is not feasible, the area will be periodically monitored for signs of erosion.

- **Temporary Bridge Crossing.** Temporary bridges may be used, as appropriate, for a select number of drainages, as well as for flowing streams where the crossing cannot be postponed. Temporary bridges will be constructed per Proponent standards. In most cases, some preparation of the tops of banks will be necessary to properly seat the bridge. Bridge approaches will be constructed of clean granular material, prefabricated equipment pads, or other suitable material to avoid cutting the banks wherever feasible. If grading of banks occurs, topsoil will be removed and appropriately segregated and stockpiled. The bridge will be placed completely across the stream and will span the high water channel and as much wetland vegetation as practical. Prefabricated equipment pads will be placed over any saturated portion of the wetland that is not spanned by the bridge.

Flow of sediment into the stream will be prevented by installing waterbars on the travel route at or near the top of the bank (or other slope break) to redirect road runoff away from the stream. If necessary, downslope protection will be increased by extending silt fence from the down-gradient end of the waterbar.

Table B12-1 provides vehicular stream crossing methods and construction details. For the purpose of this plan, streams have been divided into two categories: streams with dry crossing conditions and streams with wet crossing conditions.

TABLE B12-1 VEHICULAR STREAM CORSSING METHODS AND CONSTRUCTION DETAILS		
Type of Watercourse	**Suggested Vehicular Crossing Method**	**Construction Detail**
Stream – Dry Crossing Condition	Use existing bridges or established crossing where possible. If no existing crossing is present, establish a graded crossing or install rock armor in the channel. Graded crossings will not be used in streams with a discernible amount of flow.	Appendix C1: TA 501 – Roads – Construction Appendix C1: TA 503 – Roads – Water Bars and Dips
Stream – Wet Crossing Condition	Use existing bridges or established crossing where possible. If crossing is unavoidable, use rock armor, temporary bridge, culverts, or prefabricated equipment pads. Span the entirety of the stream bed and banks where possible. Prefabricated equipment pads are not recommended for streams with high flow. If bank or bed degradation occurs due to Project activities, the CIC contractor may require installation of rock armor, silt fence, straw bale dike, or erosion control matting.	Appendix C1: TA 501 – Roads – Construction Appendix C1: TA 503 – Roads – Water Bars and Dips
NOTE: This table is intended to provide general guidance and suggestions. The Construction Contractor(s) and CIC will work together to determine the appropriate measures for site-specific treatments and alternative approaches if needed. It is intended to provide flexibility and workable options for the Construction Contractor(s) to meet the goals of this plan and comply with permit requirements.		

In cases where it is impractical and highly disruptive to the environment to construct temporary crossings, such as over very large watercourses or deep canyons, vehicles will not attempt to cross the watercourse. The conductor will be strung across these resources by hand or other method and construction equipment will be routed around.

B12.4.4.2 Wetland Crossing Methods

Wetlands the Project may potentially impact will be identified in Volume II – POD Map Sets 1, 2, and 3. Several areas containing wetlands are located along the Project route; however, if vehicular access is required through wetlands, the crossing methods discussed below will be implemented to avoid, minimize, and mitigate Project-related erosion, sedimentation, and other impacts.

These crossing methods have been developed based on numerous factors, including slope, hydrological regime, presence or absence of bank, and erodibility of substrate, soil surface disturbance, and disturbance of wetland plant communities.

B12.4.4.3 Vehicular Wetland Crossings

The crossings of wetlands will be limited to vehicular crossings along spur roads or access roads as described below.

- **Avoidance Route in Proximity to Wetland.** Equipment and vehicles will avoid crossing wetlands to the greatest extent possible by driving around them or using an existing crossing if one exists nearby. If a wetland will be avoided, but a travel route will be bladed within 20 feet of the wetland edge, silt fence will be installed along the travel route on the wetland side unless the wetland is upgradient. If a wetland is upgradient and the travel route is within 20 feet of the wetland boundary, flagging or construction fencing will be installed to establish a barrier to avoid wetlands.

- **Wetland Crossing.** If the wetland cannot be avoided, vehicles and equipment will cross the wetlands while implementing the following specific stipulations and methods:

  SWWS 17 Wetland crossings will be made during periods of dry conditions, where feasible.

  SWWS 18 Erosion control measures, including silt fence and straw bale dikes will be installed at wetlands crossings, as necessary, to minimize erosion and sedimentation.

  SWWS 19 Traffic will be minimized and the travel route will be restricted to a maximum of 20 feet wide.

  SWWS 20 All other construction equipment will use access roads in upland areas unless there is no other practicable means of accessing a construction area.

  SWWS 21 Grading may be required within wetlands with varying terrain and will be limited to the minimum needed to provide access for equipment and to install towers. If grading is required, the top 12 inches of topsoil will be salvaged and stockpiled separately from upland soils.

  SWWS 22 If a travel route is graded through a wetland, silt fence must be installed on the down-gradient side of the travel route (or on both sides of the travel route if in flat terrain). If a travel route is not bladed, exclusion flagging will be installed on both sides of the travel route within wetlands.

  SWWS 23 Vehicles will not be allowed to travel within a wetland when soils are moist enough for deep rutting (more than 4 inches deep) to occur unless prefabricated equipment pads are installed over the saturated areas or other measures are implemented to prevent rutting.

  SWWS 24 Equipment with low ground pressure tires, wide tracks, or balloon tires will be used to the greatest extent possible.

  SWWS 25 Rutting in wet topsoil that exceeds 4 inches in depth and extends for 100 feet will require the implementation of the measures discussed in Appendix B7 – Erosion, Dust Control, and Air Quality Plan and Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan.

  SWWS 26 Prefabricated equipment pads will also be installed over saturated wetland areas located along existing roads that pass through wetlands.

In addition, wetland soil will be temporarily stored either within the wetland or in upland areas close to the wetland boundaries and will be used to restore the site to preconstruction contours. Silt fences will be installed around tower sites where necessary to minimize the potential for sediment discharge from excavated spoil into adjacent, undisturbed wetlands. Table B12-2 provides vehicular wetland crossing methods and construction details. For the purpose of this plan, wetlands have been divided into two categories: wetlands with dry crossing conditions and wetlands with wet crossing conditions.

TABLE B12-2 VEHICULAR WETLAND CROSSING METHODS AND CONSTRUCTION DETAILS		
Type of Watercourse	**Suggested Vehicular Crossing Method**	**Construction Detail**
Wetland – Dry Crossing Condition	Drive around wetland to avoid it or use an existing crossing, if possible. If crossing is unavoidable, restrict traffic corridor to 20 feet wide and minimize traffic to only the equipment necessary to do the work.	Appendix C1: TA 501 – Roads - Construction Appendix C1: TA 503 – Roads – Water Bars and Dips
Wetland – Wet Crossing Condition	If crossing is unavoidable, use prefabricated equipment pads over saturated areas, restrict traffic corridor to 20 feet wide, and minimize traffic to only the equipment necessary to do the work. The CIC may also require a silt fence or straw bale if the potential for erosion exists.	Appendix C1: TA 501 – Roads - Construction Appendix C1: TA 503 – Roads – Water Bars and Dips
NOTE: This table is intended to provide general guidance and suggestions. The Construction Contractor(s) and CIC will work together to determine the appropriate measures for site-specific treatments and alternative approaches if needed. It is intended to provide flexibility and workable options for the Construction Contractor(s) to meet the goals of this plan and comply with permit requirements.		

B12.4.5 Spill Prevention

To prevent potential spills or discharges from entering and impacting streams and wetlands, the following specific stipulations and methods will be implemented:

SWWS 27 Limit equipment refueling and hazardous materials storage to upland areas outside of a 100-meter (328-foot) radius of a waterbody, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water supply wells. The CIC may reduce this setback if physical features, such as topography or natural berms provide a barrier between hazardous materials usage and a waterway.

SWWS 28 Cleanup all Project-related hazardous materials spills or releases immediately and as quickly as possible when sensitive resources may be impacted or have the potential for being impacted. Pursuant to the conditions for NWP 12, any spill or discharge of oil or other substances that may cause pollution to waters of the State will be immediately reported to the Utah Division of Water Quality (refer to Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework for specific reporting requirements).

SWWS 29 Collect and recycle hazardous materials and wastes that can be readily recycled (e.g., motor oil and lubricants).

SWWS 30 Remove hazardous substances or wastes from construction sites following the construction period.

SWWS 31 Comply with the measures related to potential spills or discharges during construction provided in Appendix B3 – Spill Prevention, Containment, and Countermeasures Plan Framework and Appendix B8 – Hazardous Materials Management Plan Framework.

B12.4.6 Erosion and Sedimentation

To limit erosion and sedimentation from affecting streams and wetlands, the following specific stipulations and methods will be implemented:

SWWS 32 Prior to installing the transmission line across a stream or wetland, the right-of-way will only be cleared to the extent necessary to allow for safe clearance for the conductor and to establish access roads.

SWWS 33 Minimize impacts to riparian or wetland vegetation (e.g., use of a mowing machine to remove woody vegetation instead of blading). Keep root systems intact to enable regrowth.

SWWS 34 Minimize surface-disturbing activities within stream channels (dry or wet) to the extent possible.

SWWS 35 Avoid construction activities involving soil disturbance in a stream during periods of flow whenever possible.

SWWS 36 Use existing vehicular crossings wherever practicable. Stream crossings generally will be perpendicular to the channel, where engineering and routing conditions permit.

SWWS 37 Where possible, locate vehicular crossings in a relatively straight section of the stream where width, depth, bank, and bottom characteristics will reduce the potential for channel alteration.

SWWS 38 Implement the measures in Appendix B7 – Erosion, Dust Control, and Air Quality Plan to conserve soil, minimize erosion and control dust, and prevent soil compaction as necessary.

B12.4.7 Storage of Soil or Organic Debris Near Streams

Any soil or other organic debris piled by bulldozers and grading equipment near the stream banks during construction will be stored a minimum of 100 meters (328 feet) from the banks and appropriately respread and stabilized to prevent sedimentation during rainfall events. The Construction Contractor(s) will also adhere to any additional soil storage measures as required by applicable Project permits such as Utah Department of Water Quality construction general permits or a USACE NWP.

B12.4.8 Stream Obstruction and Flash Flood Hazard

The placement of transmission towers within the channel of a stream, drainage, or flash flood area will be avoided to the extent possible. If placement within these areas is unavoidable, the towers will be engineered to withstand the force of flood flows and will be constructed according to all applicable permits. Where placement of a transmission tower or road is unavoidable within a stream channel, permanent diversion structures, or culverts sufficient to carry the stream's preconstruction conveyance capacity at the site, or armoring for the pole foundations will be constructed.

B12.4.9 Protection of Wells and Springs

The Project Environmental Impact Statement will identify all springs and water wells within 600 feet of the Project centerline. All applicable laws and regulations will be followed in respect to the protection for drinking water sources. Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor(s).

For additional measures pertaining to the protections of wells and springs, refer to Appendix B3 – Spill Prevention, Containment, and Countermeasure Plan Framework; Appendix B5 – Blasting Plan Framework; and Appendix B8 – Hazardous Materials Management Plan Framework.

B12.5 Literature Cited

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B13 – PALEONTOLOGICAL RESOURCES TREATMENT PLAN

B13.1 Introduction

Paleontological resources (i.e., fossils) are the remains or traces of ancient life (U.S. Department of the Interior [USDI] 2000). Fossil remains may include bones, teeth, shells, leaves, and wood that are found in geological deposits within which they were originally buried (USDI 2000). Paleontological resources include not only the actual fossils, but also signs of paleofaunal activities (such as footprints, swimming marks and nests), and the collecting localities and the geological deposits that contain the fossils (USDI 2000).

The purpose of the Paleontological Resources Treatment Plan (PRTP) is to assist the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) in planning and design efforts for the proposed Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Project (Project) as it relates to paleontological resource issues. The PRTP describes in detail the specific mitigation measures needed to avoid or reduce Project-related impacts on paleontological resources, wherever feasible. This plan provides important background and contextual information useful for the paleontological resources mitigation program. The logistics, procedures, and methods outlined in this PRTP ensure compliance with federal and state regulations (BLM 1998, 2008, 2009 and Code of Federal Regulations 261.9i).

The PRTP is a work plan for all of the paleontological-related activities that may ensue during the course of development of the Project. It is not the intent of the PRTP to present a comprehensive list of sites with discussions of all significant taxa found from the vicinity of the Project area. The PRTP offers a research-oriented framework and accompanying logistical guidelines to ensure significant nonrenewable paleontological resources unearthed by development of the Project will be managed appropriately and in a timely manner, thereby effectively mitigating adverse impacts on these fossil resources.

As part of the Environmental Impact Statement (EIS), a review was conducted of relevant published geological and paleontological reports, unpublished geological and paleontological reports, and museum paleontological site records. This approach was followed in recognition of the direct relationship that exists between paleontological resources and the geological units within which fossils are incorporated. By knowing the geology of a particular area and the fossil productivity of particular geological units that occur in the area, it is possible to predict where fossils will likely be found.

B13.2 Regulatory Framework

The following provides a brief overview of federal and state legislation, regulatory compliance, and professional standards applicable to paleontological resources in the Project area considered in the development of this Plan.

B13.2.1 National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat. 852, 42 United States Code [U.S.C.] 4321-4327)

The National Environmental Policy Act of 1969 (NEPA) mandates policies to "preserve important historic, cultural, and natural aspects of our national heritage." NEPA further provides for reports regarding the environmental impacts of federal actions on public lands.

B13.2.2 Federal Land Policy and Management Act of 1976 (Public Law 94-579)

Federal Land Policy and Management Act of 1976 was enacted "to establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes," and requires that important historic, cultural, and natural aspects of our natural history be preserved. As such, paleontological resources on federal lands have been determined to be property of the United States and must be protected under Federal Land Policy and Management Act.

B13.2.3 Paleontological Resources Preservation, Omnibus Public Lands Management Act, Public Law 111-011, Title VI, Subtitle D 16 U.S.C.aaa (2009)

The purpose of the Paleontological Resources Preservation Act of 2009 is to "manage and protect paleontological resources on federal land using scientific principles and expertise." It directs the BLM and USFS to "develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies."

B13.2.4 Utah State Codes

Utah State Code (63-73-11 through 63-73-19) states that paleontological resources are important and requires the preservation of critical fossil resources on state lands. The Code mandates people removing or excavating significant fossils on state lands be qualified and permitted under joint jurisdictional cooperation from the Utah Geological Survey, Utah Museum of Natural History, and the School and Institutional Trust Lands Administration. State Code (53B-17-603) also requires significant fossils be curated by an approved and qualified institution.

B13.3 Paleontological Potential

B13.3.1 Determination of Paleontological Potential

The Potential Fossil Yield Classification (PFYC) system is a measure of the likelihood of impacting fossil resources in a given area based on the occurrence of fossil-bearing geological units. This system predicts the probability of finding paleontological resources in a given area using geological maps of sufficient scale and detail. The numerical nature of the PFYC system also allows for ease of importation into a geographic information system, further facilitating the planning and management decision-making process. The five-part PFYC system, as defined by the BLM (2008), is explained below:

Class 1 – Very low potential. Geological units not likely to contain recognizable fossil remains.

- Units that are igneous or metamorphic, excluding reworked volcanic-ash units
- Units that are Precambrian in age

The probability for impacting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is nonexistent or extremely rare.

Class 2 – Low potential. Sedimentary geological units not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils.

- Vertebrate or significant invertebrate or plant fossils not present or very rare
- Units that are generally younger than 10,000 years before present
- Recent eolian deposits
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration)

The probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities will be managed on a case-by-case basis and assessment or mitigation may be unnecessary except in rare or isolated circumstances.

Class 3 – Moderate or **unknown potential.** Fossiliferous sedimentary geological units where fossil content varies in significance, abundance, and predictable occurrence or sedimentary units of unknown fossil potential.

- Often marine in origin with sporadic known occurrences of vertebrate fossils
- Vertebrate fossils and scientifically significant invertebrate and plant fossils known to occur intermittently and predictably known to be low
- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance

  ***Class 3a* – Moderate potential.** Units are known to contain vertebrate fossils or scientifically significant invertebrate or plant fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area and opportunities may exist for hobby collecting. The potential for a Project to be sited on or impact a significant fossil locality is low, but the potential is somewhat higher for common fossils.

  ***Class 3b* – Unknown potential.** Units exhibit geological features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant fossils. The units in this class may eventually be placed in another class when sufficient surveying and research is performed. The unknown potential of the units in this class should be carefully considered when developing any mitigation or management plans.

This classification includes a broad range of paleontological potential. It includes geological units of unknown potential, as well as units of moderate or infrequent occurrence of fossil resources. Management considerations cover a broad range of options, as well and could include pre-disturbance surveys, monitoring, or avoidance. Ground-disturbing activities will require sufficient assessment to determine where significant paleontological resources occur in the Project area and whether paleontological

resources could be affected. These units may contain areas that would be appropriate to designate as hobby-collecting areas due to the higher occurrence of common fossils and lower concern about affecting significant paleontological resources.

Class 4 – High potential. Geological units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented but may vary in occurrence and predictability. Ground-disturbing activities may adversely affect paleontological resources in many cases.

> ***Class 4a* – High potential.** Units exposed with little or no soil or vegetative cover. Outcrop areas are extensive, with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from ground-disturbing actions. Illegal collecting activities may impact some areas.
>
> ***Class 4b* – High potential.** These are areas underlain by geological units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts on the bedrock resulting from the activity.
>
> - Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
> - Areas of exposed outcrop are smaller than two contiguous acres.
> - Outcrops form cliffs of sufficient height and slope so impacts are minimized by topographic conditions.
> - Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

The probability for impacting significant paleontological resources is moderate to high and is dependent on the construction activities. Mitigation considerations must include assessment of the disturbance, which may include removal or penetration of the protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts on significant fossils can be anticipated, on-the-ground surveys prior to authorizing the ground-disturbing action will usually be necessary. Onsite monitoring or spot-checking may be necessary during construction activities. Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered. Class 4 and 5 units may be combined as Class 5 for broad applications, such as planning efforts or preliminary assessments, when geological mapping at the appropriate scale is not available. Resource assessment, mitigation, and other management considerations are similar at this level of analysis, and impacts and alternatives can be addressed at a level appropriate to the application.

Class 5 – Very high potential. Highly fossiliferous geological units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils and are at risk of human-caused adverse impacts or natural degradation.

> ***Class 5a* – Very high potential.** Units are exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from ground-disturbing activities. Unit is frequently the focus of illegal collecting activities.

***Class 5b* – Very high potential.** These are areas underlain by geological units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources

The probability of impacting significant fossils is high to very high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can be reasonably expected to occur in the impact area. On-the-ground surveys prior to authorizing any ground-disturbing activities or land-use adjustments will usually be necessary. Onsite monitoring may be necessary during construction activities. Mitigation will often be necessary before and/or during these actions. Official designation of areas of avoidance, special interest, and concern may be appropriate.

B13.4 Research Questions

B13.4.1 Introduction

The significance of paleontological resources can be determined by placing the fossils and their associated contextual data into a pertinent research framework. A broad-based, initial research framework can be established that presents questions of scientific interest that can be asked of any sizeable paleontological assemblage.

B13.4.2 Categories for Potential Research

The criteria for interpreting the significance of paleontological resources constitute the foundation for any research design. Since a fossil is not generally considered to be significant unless it corresponds to one or more of these classes, any research program must be designed to reflect this fact. Research questions that do not incorporate one or more of these criteria should not be considered or included in the research design.

Resource significance can be determined by examining the collected fossils in light of the following criteria:

- The resources provide data on the evolutionary relationships and developmental trends among organisms, both living and extinct.
- The resources provide data useful in determining the age of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geological events therein.
- The resources provide data regarding development of paleobiological communities and/or the interaction between paleobotanical and paleozoological biotas.

- The resources represent unusual or spectacular circumstances in the history of life.
- The resources are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation and are not found in other geographic locations.

Based on these criteria, several broad and basic categories for potential research are presented here as being of significant scientific interest, as well as being pertinent to the geological and paleontological history of the fossil strata that might be impacted by development of the Project. These categories do not, in and of themselves, compose a complete research framework. Rather, they provide a starting point from which to address the significance of any fossil assemblage identified from the Project. These categories include:

- Faunal composition of the assemblage
- Age of the assemblage
- Depositional environment of the sedimentary sequence
- Taphonomic factors influencing the assemblage
- Population structure/dynamics of individual species within the assemblage
- Paleoenvironment of the region at the time of deposition
- Questions specific to individual species represented within the assemblage

In addition to these general categories, specific research questions may be asked in advance of excavation within Proterozoic, Paleozoic, Mesozoic, and Cenozoic rocks and deposits. For limestone formations, the collection of a representative sample of diagnostic fossils from exposures of each rock unit in the Project area may very likely help refine and augment understanding of the time of deposition of these formations. Also, the collection of such samples from the Project area will enable more complete faunal and lithologic correlations to be advanced.

For Mesozoic and Cenozoic deposits, research questions will likely focus on (1) advancing accurate generic and specific identifications; (2) identifying diagnostic microfaunal remains to augment the macrofossil assemblage already reported from the formation; (3) correlating species identified among various sedimentary formations, both locally and throughout the western United States; and (4) elucidating the taphonomic factors that have affected fossil preservation. With these questions in mind, the mitigation program must, in turn, focus on collecting not every fossil and/or fossil fragment encountered but rather, those fossils sufficiently complete and diagnostic to enable generic and specific identifications to be made. The program must also endeavor to collect microfossil fossils through screen-washing of exposed sediments. Finally, at the time the fossil resources are exposed, detailed lithologic al, taphonomical, orientational, and positional data should be recorded, sediment samples should be collected and preserved, and sites should be photographed.

B13.5 Paleontological Stipulations and Methods

The following are stipulations and methods to be employed before or during construction conducted in association with development of the Project. These stipulations and methods will effectively mitigate adverse impacts on paleontological resources to less than significant levels. These measures are summarized below as Paleontology Actions (PA) 1 through 6. The specifics of the efforts, including the monitoring of excavation, curation, preparation of the final report, and storage of specimens are described in greater detail (Section B13.6 – Mitigation Recommendations). These stipulations and methods may be amended following review of the preconstruction survey report (PA 2, below).

B13.5.1 Stipulations and Methods

B13.5.1.1 Prior to Construction

PA 1 An orientation workshop shall be prepared, reviewed by the BLM and USFS, and presented by a professional paleontologist to explain paleontological mitigation guidelines and procedures to the Construction Contractor(s) and their construction workers. This workshop can be presented in conjunction with any preconstruction meetings conducted prior to excavation. The workshop will review the PRTP.

Construction workers shall not collect any fossils found during construction before their significance can be assessed by a qualified paleontologist.

PA 2 A preconstruction survey of the area of potential effect for the proposed Project was conducted in June and July 2012, under permit from the BLM and USFS. This survey examined existing rocks and sediments exposed within areas of high to moderate potential for paleontological resources (PFYC of 5 to 3), as well as any recorded localities in the immediate vicinity that might be impacted by the development of new access roads or other construction-related activities. The survey primarily was conducted along the proposed centerline, access roads, multi-use construction yards, and other areas slated for ground disturbance from the Project. The survey results were used to confirm and augment geological mapping. Particular attention was paid to Tertiary fluvial and lake deposits of the Claron, Flagstaff, Wasatch, Green River, Crazy Hollow, Salt Lake, and Sevier River formations. The results of the preconstruction survey were presented to the agencies in a confidential report in October 2012.

B13.5.1.2 During Construction

PA 3 If paleontological resources are found at any time during construction, work shall be redirected to another area nearby so the scientific significance of the discovery may be assessed. Construction monitors shall notify the onsite Construction Monitoring Coordinator. As part of the monitoring procedure, a qualified professional paleontologist with regional experience shall then assess the significance of the discovery and recommend additional mitigation measures, as necessary. The paleontologist shall be retained to perform inspection of the excavation and to salvage exposed fossils. The methods discussed in Sections B13.5.3 – Construction Personnel Procedures, B13.5.4 – Recording and Documenting Paleontological Resources, and B13.5.5 – Collection of Paleontological Resources will be followed. Monitors shall also determine whether any fossils discovered are part of an archaeological deposit. If so, it shall then be considered a cultural resource discovery and treated according to the procedures specified in the Historic Properties Treatment Plan prepared prior to construction.

This measure will be implemented by requiring paleontological monitoring in rock units designated as having high or moderate potential to contain paleontological resources (PFYC of 5, 4, or 3). One paleontological monitor should be placed at each construction location where and when ground disturbance is occurring in all areas of high paleontological potential (PFYC of 5 or 4). In areas of moderate or undetermined paleontological potential (PFYC of 3), full-time monitoring may not

be required, but monitors should instead spot check exposed cuts and spoil piles on a regular basis. Monitors will be qualified paleontologists with regional experience and under permit from the BLM and USFS. Paleontological monitors are empowered to determine significance in the field and collect contextual data immediately. Paleontological monitors may, on direct examination of rock or sediment outcrops, and based on their professional experience, determine the paleontological potential of the formation or rock unit in question differs from previous reports (e.g., a formation designated as "high potential" may be changed to "low potential" based on field examination and monitoring, and then reduced or eliminated appropriately).

If significant fossils are discovered by environmental monitors and/or construction personnel in areas of undetermined or low paleontological potential (PFYC of 3, 2, or 1), work shall be redirected so the scientific significance of the discovery may be assessed. Where such fossils are encountered at any time during construction, crew members should proceed as outlined below.

PA 4 The preservation of significant fossils (if found during construction) by removal will occur as described in PA 3, unless it is not feasible. In cases where the fossil cannot be removed immediately, the location of the fossil shall be stabilized to prevent further deterioration prior to data collection under the direction of a qualified paleontologist. Stabilization in these cases can (as needed and safely feasible) include the following: removal of overburden; exposure of the resource; application of an appropriate hardening agent (e.g., Vinac for vertebrate fossils); and, in those cases where the resource cannot be collected at all, reburial of the resource. Data collection in these cases will include documentation of pertinent data (lithology, stratigraphy, taphonomy, etc.), as well as photo-documentation where possible. This measure will be further implemented by the mobilization of additional paleontological field monitors if unusually large discoveries are encountered during excavation. This procedure will optimize data collection and avoid delays.

B13.5.1.3 After Construction

PA 5 For all fossils (vertebrate, invertebrate, plant) collected during the preconstruction survey or during monitoring of construction, which would have been damaged (or further damaged) by construction activities, a data-collection program shall be undertaken that includes preparation of collected specimens to a point of identification and permanent preservation (including screen washing of fossiliferous sediment samples to collect small to microscopic vertebrate fossils); preparation of large vertebrate fossils collected in plaster jackets; long-term stabilization of all collected significant fossils; and analysis. The paleontological monitoring and salvage team shall include an expert in vertebrate paleontology. A final report, including an itemized and accessioned inventory of collected specimens, shall be prepared by a professional vertebrate paleontologist and distributed to the appropriate lead agencies. This report shall include any important invertebrate and/or plant-fossil localities. These items and procedures are discussed elsewhere under "Curation Plan."

PA 6 All fossils collected before or during construction that could not be avoided by construction activities shall be curated at the expense of PacifiCorp, doing business as Rocky Mountain Power (Proponent), at a federally approved research facility, such as the Utah Museum of Natural History. A repository agreement for curation would be reviewed and approved by a third-party contractor on behalf of the Proponent, BLM, USFS, and the repository, which would provide guaranteed future research access to the fossils. Fossils discovered on private land would be considered property of the landowner. The landowner would have the option to keep the fossils or donate them to a federally approved repository, preferably the same repository receiving fossils discovered on federal and state lands.

B13.5.2 Field Monitoring Procedures

The following procedures and guidelines will be used to ensure the proper protection, salvage, and collection of paleontological resources as they are encountered. Procedures for monitoring and fossil collection by qualified paleontological field monitors are addressed, as well as guidelines for the Construction Contractor(s) who may encounter paleontological resources in the course of their activities during excavation.

A qualified, professional vertebrate paleontologist trained in paleontological salvage guidelines and techniques will be onsite during all excavation activities conducted in rock units identified to have high, moderate, or undetermined paleontological potential (PFYC of 5, 4, or 3). Field monitoring and fossil salvage will be conducted under permit from the BLM and USFS. Paleontological monitors will be equipped to efficiently collect fossils as they are unearthed to avoid excavation or construction delays. Field paleontologists may, based on their experience and on consultation with senior paleontological staff, amend determinations of potential and, accordingly, reduce or eliminate monitoring activities, as dictated by the nature of the exposed rock outcrop.

Paleontological monitors and/or their necessary equipment (including trucks) will be working in the area of active excavation. Construction equipment operators will be instructed to give these monitors a wide berth for safety reasons (approximately 20 feet at least). The paleontological monitors will be prepared to quarry rock samples where necessary and remove samples of sediment likely to contain the remains of small to microscopic fossil invertebrates and vertebrates. The monitors may enlist the assistance of construction personnel and equipment in this undertaking to avoid delays in excavation activities. The monitors will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.

The paleontological monitors will be equipped with appropriate safety materials (hard hats, orange vests with reflective yellow tape, steel-toed boots, etc.).

Because the monitors will be performing their duties in proximity to the excavation equipment, they will have been trained to make themselves visible to equipment operators while in the field and will endeavor to make eye contact with the operators prior to entering a potentially hazardous area. They will frequently be required to operate vehicles or equipment near active excavation areas. For this reason, the operators must be alert at all times to the presence of paleontological monitors and their equipment in the excavation area.

B13.5.3 Construction Personnel Procedures

Crews and supervisors should be on the lookout at all times for fossils, bones, animal trackways, charcoal, ash, or other paleontological resources exposed during all excavation activities. Although paleontological monitors will be present during excavation in rock units with high fossil potential (PFYC of 5 or 4), and additionally will spot-check excavation in geological units with a moderate or undetermined potential (PFYC of 3), the Construction Contractor(s) may provide invaluable assistance in the salvage and collection of paleontological resources.

On encountering an exposed fossil or other paleontological resource, the paleontological monitor(s) will stake-off and flag an area of approximately 2 meters on all sides of the discovery to alert equipment operators to the presence of a potential resource indicator. The monitor(s) will then further expose the discovery to assess the potential significance and determine the appropriate collection requirements. Construction crews must avoid these staked-off/flagged areas by a minimum of 6 meters until the paleontologists have authorized continued excavation.

B13.5.3.1 Fossils Discovered by Construction Personnel during Excavation

As stated above, a qualified paleontological monitor will be onsite initially during all excavation activities conducted in rock units identified to have high to moderate paleontological potential (PFYC of 5, 4, 3). However, it is possible construction crew members or equipment operators may be the first individuals to observe paleontological resources exposed by excavation. It is also possible fossils or other resources will be encountered in areas of low or undetermined paleontological potential (PFYC of 1, 2, or 3) at times when no paleontological monitor is present. In these cases, *it is unlawful for construction workers and other construction contractor personnel to collect fossils from any construction area during construction.* The following guidelines are, therefore, to be employed in these cases.

In the event the construction crew or the equipment operators suspect they have uncovered fossils or other resources, preservation of the resource(s) and notification of the paleontological monitor are of prime importance. On uncovering a potential resource in these sensitive areas, construction personnel should immediately divert excavation activities away from the potential site. Suspected resource localities should be avoided by a *minimum* of 6 meters until the paleontological monitor has approved further excavation. Subsequent to diverting construction equipment, operators and crew members must *immediately* endeavor to catch the attention of the paleontological monitor. The sooner the paleontological monitor is alerted to the presence of the discovery, the sooner he or she can stake-off and flag the area, assess the significance of the remains, collect the resource (if necessary), and permit excavation to continue in that area. Excavation in the affected area must not continue until authorized by the paleontological monitor.

If the paleontological monitor is not in the immediate vicinity, the operator or crew member should immediately stake-off and flag the affected area so subsequent excavation equipment does not further damage or destroy the resource. Equipment operators are advised to carry lathe stakes and colored flagging with them at all times to facilitate this mitigation effort. Once the affected area is staked-off and flagged (if possible), the operator or crew member must then *immediately* contact the Environmental Inspector or Compliance Inspection Contractor. It is this inspector's responsibility to contact the Paleontological Monitor in this situation. The Paleontological Monitor will respond to the Inspector's request for assistance as soon as it is possible for him or her to do so. Construction crews and their supervisors must keep in mind that the Paleontological Monitor may be involved in collecting resources elsewhere in the excavation, so an immediate response may not always be possible.

In every case, supervisors and crew members should *avoid moving or disturbing the resource(s)* until the paleontologist(s) have determined the significance of the discovery. Again, *it is unlawful for construction workers or other construction contractor personnel to collect fossils from any construction areas during construction*. Work may not continue in the affected area until the Paleontological Monitor(s) have removed or otherwise mitigated impacts on the discovery(s) and authorized further excavation.

B13.5.3.2 Resources Identified in Spoil Piles by the Paleontological Monitor

Fossil resources discovered in the spoil piles by the Paleontological Monitor will be flagged off and collected by the monitors for salvage and removal. Construction personnel must not back-fill exposed holes until the stakes and flagging have been pulled by the paleontologist onsite. Stakes and flagging will be removed subsequent to resource collection, and back-filling of holes will then be allowed to proceed.

When bulk samples of sedimentary matrix need to be collected during excavation, the most expeditious and cost-effective manner to remove this material is to employ the construction crew members and equipment for a brief period to remove the sediment in bulk (in the case of a spoils pile, that task has already been accomplished). Exceptionally large fossils or assemblages of fossils are also most easily and economically collected in this manner.

B13.5.4 Recording and Documenting Paleontological Resources

The paleontological mitigation program is designed to collect not only exposed paleontological resources, but also significant contextual data associated with these resources. For this reason, site paleontologists will often be required to stake-off and flag some areas within the excavation to plot resource localities, measure stratigraphic sections, map fossiliferous horizons, photograph exposures, and so forth. Again, the equipment operators must avoid these staked-off and flagged areas until the paleontologists have authorized continued excavation.

All paleontological field monitors will be trained in standardized methods and procedures to ensure data collection is uniform among all identified paleontological resource localities. All data collection and recordation techniques, as well as standard safety equipment and safety procedures, will be reviewed prior to Project start-up.

During the paleontological mitigation program, all observed pertinent data will be recorded on waterproof field notebooks with permanent ink onsite at the time the resource has been exposed and collected. All paleontological field notes will be retained at the appropriate paleontological resource repository. Photocopies will be generated frequently to ensure there are always permanent copies in the event a field notebook is lost or misplaced.

Monitors will be equipped with Brunton transits or equivalent compasses with built-in clinometers to permit precise orientation of fossil horizons. It is imperative accurate stratigraphic information is obtained in this way. The use of global positioning system units will allow monitors to accurately plot paleontological resource localities on Project maps that will be provided for them.

Characterization of the sedimentary lithology is important in paleontological studies. The character of the sediment surrounding the resources provides many clues as to the environment of deposition. Lithologic description is enhanced by the use of rock color charts to uniformly assess sediment color. Additionally, details, such as grain size, shape, sorting, roundness, and sphericity of lithologic samples, will be determined by the monitor in the field with a hand lens. Small samples of sediment will be collected at

each resource site. Monitors will also sketch measured stratigraphic sections of the area surrounding a resource locality. Photo-documentation will be conducted by the field monitor.

For taphonomic studies, magnetic north will be noted using a Brunton transit or equivalent compass and written on the fossil specimens (or plaster jackets that encase them) so the original orientation of the specimen(s) in the sediment is preserved. Other taphonomic data (evidence of trampling, weathering, etc.) will be noted in the field. Taphonomic information is a field observation and is lost once the fossil resource is removed from context.

For safety purposes, paleontological field monitors will be equipped with hard hats, bright orange vests with a reflective coating, and steel-toed boots.

B13.5.5 Collection of Paleontological Resources

B13.5.5.1 Megafaunal Sampling Plan

The distribution of large vertebrate fossils unearthed by the excavation equipment is herein considered random. The megafaunal sampling plan will, therefore, be strictly dictated by the excavation activities planned for a given development project. The paleontologists will monitor *only* in the areas being excavated in rock units that have high (or, in some cases, moderate or undetermined [PFYC of 3]) paleontological potential (PFYC of 5 or 4). Excavation equipment will unearth fossil resources while the Paleontological Field Monitor is observing the excavation. The specific quantity and quality of the fossils cannot be known *a priori*. Based on previous studies, however, it can be proposed that the potential for vertebrate fossils is relatively high where exposures of fluvial and lake sediment is present at the surface or in the subsurface.

As discussed above, *it is not the goal of the megafaunal sampling plan to collect all paleontological resources discovered*. The Paleontological Monitor determines whether the paleontological resource should be collected at the time of discovery. The criteria for this task are very clear. Monitors collect only fossils possessing articulated surfaces or other diagnostic features that aid in precise identification. Bones, or bone fragments, of an indeterminate or unidentifiable nature are usually not to be collected, save in those areas where fossil bones have not previously been recorded. When a Paleontological Monitor discovers a megafaunal resource locality exposed by excavation, the fossils will be expeditiously jacketed with plaster bandages or strips of burlap saturated with plaster, then removed to a curatorial facility for preparation, identification, and permanent storage.

B13.5.5.2 Microfaunal Sampling Plan

The sampling of microvertebrate fossils is critical to understanding both the temporal and the paleoecological aspects of the sediment encountered during construction. Microvertebrate fossils (especially rodents) can be useful to paleontologists in determining the age of the sediment in which they are deposited. Collection and analysis of fossil pollen can potentially enable determination of changes in plant distributions and microclimate through time.

Microfauna are also extremely useful in determining the paleoenvironment in existence at the time the sediment was deposited. Small animals such as amphibians and reptiles are very specific to certain environments (pond turtles, for instance, live near water). Amphibians in a sample are also indicative of a wet environment since they must reproduce in water. Analysis of the microfauna can, therefore, enable us to determine what the climate was like during the time periods that span the rock units exposed during

development. Large vertebrates are less useful for paleoenvironmental analysis, due to their proclivity for traveling large distances during their lifetime. It follows, therefore, that small animals that have restricted geographic ranges will be more likely to yield environmental data.

The collection of bulk samples of sediment that contain microvertebrate fossils has been standardized by Wolf (1975). Standard samples of fossiliferous sediment are generally accepted to be 2,724 kilograms (6,000 pounds = 2.4 cubic meters) per lithologic horizon. As discussed in PA 3 above, the sampling calls for standard samples of sediment to be collected within members or formations that have proved to produce terrestrial vertebrate fossils, or have undetermined potential (PFYC of 3) to produce such fossils. A small test sample of fossiliferous sediment (about 100 pounds) may be collected for terrestrial microvertebrate fossils (e.g., rodents, birds, and rabbits) in areas that contain microvertebrate fossils on the surface or that may contain microvertebrate fossils in the sediment. If the test sample contains scientifically significant microvertebrate fossils, then the much larger standard sample will be collected and processed for microvertebrate fossils (about 2,724 kilograms [6,000 pounds or 2.4 cubic meters]). Sediment will be stockpiled onsite, and subsequently processed. Collected specimens will be identified and curated.

B13.5.5.3 Marine Invertebrate Sampling Plan

Many Paleozoic rocks are fossiliferous and have potential to yield significant marine invertebrate fossils. Samples of these rocks containing representative samples of fossil assemblages contained therein will be collected from areas of potential impact (possibly by quarrying if necessary) and removed for laboratory preparation and storage. The size and nature of the collected samples will be determined during preconstruction field reconnaissance.

B13.5.5.4 Collection/Replication of Fossil Trackways

Unique fossil trackways may occur within the Project area. Trackways are highly visible and are subject to removal by unauthorized collection. In the event trackways cannot be avoided, overburden will be removed to expose the trackways, which will then either be removed (preferred) or replicated for curation. Collected specimens will be curated at a federally approved repository in accordance with appropriate federal, state, and county permits.

B13.5.6 Curation Plan

Curation of fossil specimens collected during the paleontological mitigation program includes the preparation of collected specimens to a point of identification and permanent preservation, including the screen washing of fossiliferous sediment samples to collect small to microscopic vertebrate fossils. Large specimens encased in plaster jackets taken from the site will be prepared in the paleontology laboratory.

B13.5.6.1 Processing and Curation Techniques

The curation plan calls for laboratory preparation of collected fossils to a point of identification and permanent preservation (*not* exhibition). This preparation generally requires exposure of the collected resource(s) by removal of the surrounding sedimentary matrix from the jacket. This matrix may be saved for later microfossil processing. Once the matrix has been removed and the specimen has been cleaned, the fossil is hardened with Vinac, a modified polyvinyl acetate homopolymer, which has been thinned

with acetone to enable the hardener to more fully penetrate the fossil. Vinac may be applied several times before the fossil is deemed to be sufficiently sturdy for permanent storage. Excess plaster from the jacket is then trimmed to reduce the amount of storage space required by the specimen.

The curation plan also includes the processing of standard samples of fossiliferous matrix. Sedimentary matrix will be washed with water through stacked sets of 20- and 30-mesh screens and sun-dried. Where appropriate, some sediment samples may be washed through more finely-meshed screens to enable the collection of microscopic ostracodes or fossil pollen. To accelerate the breakdown of fossiliferous matrix, sediment may be oven-roasted to promote drying and then resubmerged in water to facilitate disaggregation of clays and fine silts. Subsequent screen washing will remove these fine sediments and leave fossil specimens in a clean concentrate. This concentrate will be visually examined with a binocular microscope and hand-sorted to remove fossil specimens.

The curation plan further includes sampling for fossil pollen. In those cases where pollen is identified from bulk samples in the field, additional sampling should be initiated where warranted in a series of more precise (e.g., 2 centimeter) sampling horizons. This potentially will enable determination of changes in plant distributions and microclimate through time, as well as age determination.

Should plant macrofossils be exposed or identified, such fossils should be collected and prepared to a point of identification and permanent preservation (*not* exhibition). Preparation generally requires full exposure of the collected resource(s) by splitting thin sedimentary layers along their bedding planes, followed by application of a hardening agent. Misting with a 10:1 water/white glue mixture is usually sufficient for preserving such fossils. Application of nitrocellulose thinned with acetone is also recommended in some instances (LePage and Basinger 1993). In some cases, at the discretion of the Principal Investigator, select rock slabs thought to contain fossilized plant remains will be left intact for future researchers.

Other curatorial tasks will include the identification, curation, and accessioning of all collected specimens into the retrievable storage collections of a federally approved curation facility. All data pertaining to the specimens will be recorded in the collections database of the repository. Resource locality information will also be plotted on topographic maps and entered into a computerized locality database. Card stock printouts of all pertinent faunal, floral, locational, and lithologic data pertaining to each resource locality will be produced and filed. Card stock files from the locality database will also be printed and kept on file. All paleontological resources will be catalogued and accessioned under a unique number, which will identify the appropriate property and/or development project as the source of the fossils. All specimens collected will be reported to the federal organization from which the specimen was obtained.

Following preparation, fossils will be stored in steel cabinets with steel geological specimen trays. Accession and locality data will be printed in archival ink on acid-free paper tags associated with each specimen, generated from the specimen database. Accession numbers of large fossils will be written on the bone in permanent ink. Large fossils will be stored in their plaster jackets where necessary to help retain the integrity of the bone. Excess plaster will be cut away prior to storage to maximize storage space. Microfossils will be stored in glass vials with cork stoppers. Extremely small specimens (e.g., ostracodes) will be placed in gelatin capsules within the glass vials. Accession data slips, also generated from the computer database, will be placed inside each of the glass vials to prevent inadvertent shuffling of the collection, and provide a means of “earthquake-proofing” the collection. The glass vials will be placed in cardboard jewelers’ boxes with their data slips, and then permanently stored in the geological specimen trays. Labels bearing accession number data will be glued to rock slabs bearing marine invertebrates or fossil plant remains in such a manner so as not to damage or obscure the fossil(s).

Specimens collected during the course of the mitigation program will be identified by professional paleontologists who have appropriate expertise in vertebrate and invertebrate paleontology or in paleobotany.

A final report of methods and results of the paleontological mitigation plan will be provided at the cessation of the mitigation program. The report will include a detailed discussion of how the research goals of the Project have been met, in addition to descriptions of significant discoveries, discussion of the curation of the resources, and results of sampling and analysis, as well as an itemized accession inventory of all specimens collected. A discussion of the significance of each taxon discovered will be provided, where feasible. All resource locality information will be presented as a confidential appendix and a printout of all locality data, as well as pull-out maps with all paleontological resource localities plotted.

B13.6 Mitigation Recommendations

This section summarizes the results of the paleontological inventory and impact analysis presented in the Final EIS for the Project. An overview of the paleontological sensitivity for the Project is presented on the Paleontological Sensitivity Map at the end of this appendix, and areas of moderate or high paleontological sensitivity requiring a monitor during construction will be shown in Volume II – POD Map Set 2. This section also applies the mitigation measures described in the previous section to the Project area according to broad geological units. These measures apply to the length of the proposed Project, as well as to all accompanying areas of potential impact (tower locations, access roads, multi-use construction yards, etc.). These measures can be finalized on receipt of the final construction plans. Recent sediment present at the surface throughout the extent of the Project area may be underlain by fossil-bearing geological units. Excavation in the younger sediment may expose paleontologically sensitive rocks or deposits at depth.

B13.6.1 Proterozoic Rocks

Formations: Unnamed sedimentary and metamorphic rocks
Rock Type: Sedimentary and meta-sedimentary
Potential: **Low**
Recommendations: Worker education and briefing of environmental monitors and construction inspectors should be conducted prior to excavation (PA-1). The BLM and USFS require no other monitoring or mitigation protocols for Proterozoic rocks along the proposed Project Corridor. The discovery of any and all paleontological resources (fossils) as the result of operations under this plan shall immediately be brought to the attention of the authorized BLM or USFS officer. The Proponent shall cease operations until authorized to proceed by the BLM or USFS Authorized Officer or his/her designated representative.

B13.6.2 Paleozoic Rocks

Formations: Pilot Shale, Kaibab, Toroweap, Park City, and other formations
Rock Type: Limestone, Dolostone, Shale, Siltstone, Sandstone, Conglomerate
Potential: **Low or Undetermined**
Recommendations: Worker education and briefing of environmental monitors and construction inspectors should be conducted prior to excavation (PA-1). The BLM and USFS

require no other monitoring or mitigation protocols for Paleozoic rocks along the proposed Project Corridor. The discovery of any and all paleontological resources (fossils) as the result of operations under this plan shall immediately be brought to the attention of the BLM or USFS Authorized Officer or his/her designated representative. The Proponent shall cease operations until authorized to proceed by the authorized BLM or USFS officer.

B13.6.3 Mesozoic Deposits and Rocks

Formations: Carmel, Arapien Shale, Frontier, Indianola, Mancos, Mowry, Wahweep, Straight Cliffs, and Iron Springs formations

Rock Type: Limestone, Shale, Mudstone, Siltstone, Sandstone

Potential: **Undetermined**

Recommendations: In fluvial and lake deposits of Mesozoic age, the "Prior to Construction" general mitigation measures should be applied to this area of excavation. These measures include worker education and briefing of construction personnel (PA-1) and preconstruction survey of the area(s) of potential impact (PA-2). In areas of undetermined potential, monitoring of construction by a professional paleontologist under permit from the BLM and USFS (PA-3) is also required. Field monitoring should be by spot-checking exposed cuts and spoil piles on a regular basis. Large vertebrate fossils will be jacketed and collected. Sediment yielding remains of aquatic or terrestrial vertebrates will be screened in the field to determine the potential for the recovery of significant paleontological resources and the efficacy of more detailed sampling. Sediment yielding invertebrate fossils will be screened in the field and sampled only in those cases where significant data are likely to be found. Fossil animal trackways, if not avoided, will be either collected or replicated. If significant fossils are collected, then PA-4 through PA-6 will apply.

B13.6.4 Tertiary Deposits and Rocks

Formations: Claron, Flagstaff, Wasatch, Green River, Crazy Hollow, and Salt Lake formations

Rock Type: Limestone, Shale, Mudstone, Siltstone, Sandstone, Conglomerate, volcanic rocks

Potential: **High** (Claron, Flagstaff, Wasatch, Green River, Crazy Hollow, and Sevier River formations**)**
Undetermined (Salt Lake Formation)
Low (volcanic rocks)

Recommendations: In fluvial and lake deposits of Tertiary age, the "Prior to Construction" general mitigation measures should be applied to this area of excavation. These measures include worker education and briefing of construction personnel (PA-1) and preconstruction survey of the area(s) of potential impact (PA-2). In areas of high potential, monitoring of construction by a professional paleontologist under permit from the BLM and USFS (PA-3) is also required. Field monitoring should be initiated full time, with the provision that, as warranted by field examination of deposits exposed by ground disturbance, the field effort may be reduced to part-time monitoring or spot-checking where feasible as the Project proceeds. Large vertebrate fossils will be jacketed and collected. Sediment yielding

remains of aquatic or terrestrial vertebrates will be screened in the field to determine the potential for the collection of significant paleontological resources and the efficacy of more detailed sampling. Sediment yielding invertebrate fossils will be screened in the field and sampled only in those cases where significant data are likely to be found. Fossil animal trackways, if not avoided, will be either collected or replicated. If significant fossils are collected, then PA 4 through PA 6 will apply.

B13.6.5 Quaternary Deposits

Formations: Terrace, alluvial, and colluvial deposits
Rock Type: Silt, Sand, Gravel
Potential: **Low**
Recommendations: Worker education and briefing of environmental monitors and construction inspectors should be conducted prior to excavation (PA-1). The BLM and USFS require no other monitoring or mitigation protocols for Quaternary deposits along the proposed Project Corridor. The discovery of any and all paleontological resources (fossils) as the result of operations under this plan shall immediately be brought to the attention of the BLM or USFS Authorized Officer or his/her designated representative. The Proponent shall cease operations until authorized to proceed by the authorized BLM or USFS officer.

B13.7 Literature Cited

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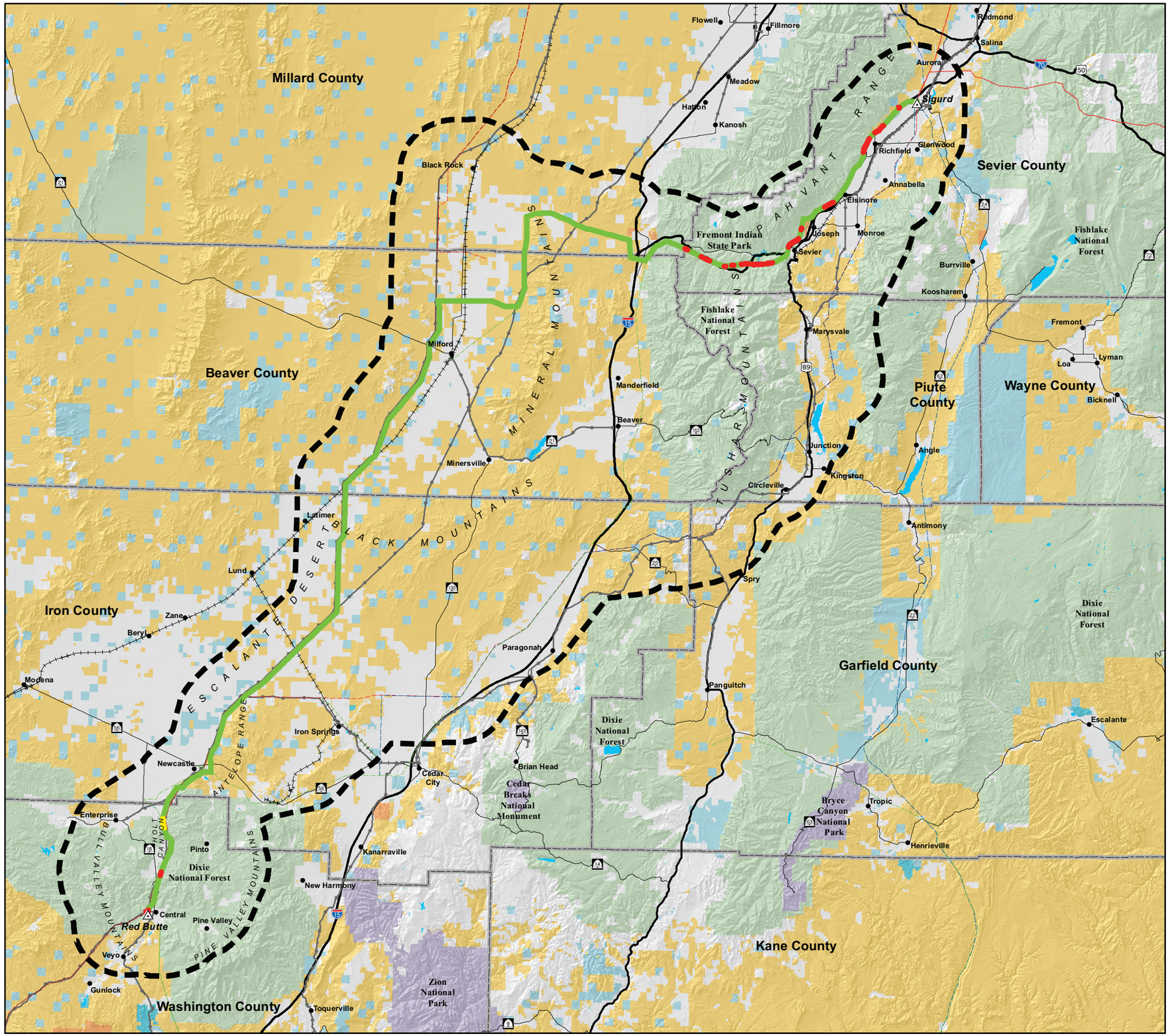

Paleontological Sensitivity

PALEONTOLOGICAL SENSITIVITY

- High
- Moderate/Unknown
- Low

GENERAL REFERENCE FEATURES

- Project Study Area
- Substation
- 500kV +/- DC Transmission Line
- 345kV Transmission Line
- 230 to 287kV Transmission Line
- 138 to 161kV Transmission Line
- Pipeline
- County Boundary
- Interstate & U.S. Highway
- State Highway
- Railroad
- Lake, Pond, or Reservoir

JURISDICTIONS

- Indian Reservation
- U.S. Forest Service
- Bureau of Land Management
- National Park Service
- State of Utah Trust Lands
- State Park
- Private Land

SOURCES:

Transportation: Streetmap 50K to 250K, 2008
POWERmap, powermap.platts.com
©2007 Platts, A Division of The McGraw-Hill Companies

0 6 12 24 Miles

SIGURD TO RED BUTTE NO. 2 345kV TRANSMISSION PROJECT

ROCKY MOUNTAIN POWER

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Appendix B14 – Reclamation, Revegetation, and Monitoring Framework Plan

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B14 – RECLAMATION, REVEGETATION, AND MONITORING FRAMEWORK PLAN

B14.1 Introduction

This Reclamation, Revegetation, and Monitoring Framework Plan has been developed based on the principles and procedures established by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS). This plan is applicable to the construction of Project facilities, transmission structures, permanent and temporary access roads, staging areas, tension and pulling stages, and other work areas associated with the Sigurd to Red Butte No. 2 – 345-kilovolt (kV) Transmission Project (Project) on lands managed by federal and cooperating agencies (e.g., State of Utah). Requirements for reclamation, revegetation, and monitoring on private lands will be negotiated between PacifiCorp, doing business as Rocky Mountain Power (Proponent), and the affected land owner. The intent of this plan is to provide a framework for reclamation treatments to be applied to the Project on identification of construction-related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas such that these areas are ecologically functional and visually compatible with the surrounding environment to the greatest extent practicable.

B14.1.1 Organization of the Plan

To facilitate the review and understanding of this plan, the contents have been organized into the following eight major sections:

Section B14.1 Introduction – Section B14.1 introduces the plan and provides a general overview of the organization and its contents.

Section B14.2 Regulatory Requirements and Authorities – Section B14.2 presents a listing and description of applicable regulatory requirements and agencies having authority with regard to the plan.

Section B14.3 Purpose – Section B14.3 provides an overview of the purpose of the plan, BLM and USFS objectives for reclamation practices, and Proponent and Construction Contractor(s) responsibilities.

Section B14.4 Overview of Existing Environments – Section B14.4 presents a brief description of the vegetation communities that will be affected during construction and post-construction activities.

Section B14.5 Reclamation Plan Methodology – Section B14.5 presents the process used to develop the levels of reclamation associated with the plan.

Section B14.6 Reclamation Plan – Section B14.6 outlines the right-of-way preparation and preconstruction and post-construction actions that will be implemented by the Proponent and/or Construction Contractor(s).

Section B14.7 Reclamation Success Standards, Monitoring, and Maintenance – Section B14.7 describes the monitoring procedures that will be implemented for the Project.

Section B14.8 References – Section B14.8 lists the specific information that has been used in the development of the plan.

Attachment A – A list of the reclamation zones by milepost

Attachment B – Agency-approved Seed Mixture and Methods

B14.2 Regulatory Requirements and Authorities

Authority for the reclamation practices defined in this plan is provided under the following regulations, land use plans, initiatives, and general guidelines:

B14.2.1 Guide Documents

14.2.1.1 BLM Terms and Conditions of Right-of-Way Grants and Temporary Use Permits, 43 Code of Federal Regulations 2881.2

"The authorized officer shall impose stipulations which shall include, but not be limited to requirements for reclamation, revegetation, and curtailment of erosion of the surface of the land [and] requirements designed to control or prevent damage to the environment (including damage to fish and wildlife habitat)..."

14.2.1.2 BLM National Sage-Grouse Habitat Conservation Strategy 2004, Section 1.4.1

BLM's goal is to "Sustain or reestablish the integrity of the sagebrush biome to provide the amount, continuity, and quality of habitat that is necessary to maintain sustainable populations of sage-grouse and other sagebrush-dependent wildlife species."

14.2.1.3 Federal Land Policy and Management Act, Section 101(a)(8)

Requires "public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition..."

14.2.1.4 Endangered Species Act of 1973, as amended, Section 7(a)(2)

Requires that federal agencies ensure any authorized action "will not result in the adverse modification" of critical habitat.

In addition to the guiding documents above, the following initiatives and guidelines also support the requirements and reclamation practices identified in this plan.

B14.2.1 Great Basin Restoration Initiative

The BLM's Great Basin Restoration Initiative (GBRI) was launched in 1999 in response to major changes taking place in the Great Basin landscape. These changes were attributed to major wildfires in 1999, invasive weed and annual grass invasions, and deteriorating rangeland and wildlife habitat conditions. There is a growing realization of the enormous economic and ecological consequences of these interconnected landscape changes. In response, the GBRI was created to provide guidance for restoring functional native plant communities, stabilizing watersheds and soils, improving wildlife habitat, improving rangeland quality for wild horses and livestock, protecting areas with high resource values, improving recreational opportunities, reducing invasive weeds and annual grasses (e.g., cheatgrass), and reducing risks and costs of wildfires. Guiding principles for this plan identified through the GBRI are outlined below:

- Restoration will encompass all landscapes in the Great Basin including areas burned in 1999.
- Restoration will be consistent with BLM's Standards for Rangeland Health.
- Decisions about restoration activities must be coordinated with the BLM and USFS, neighboring landowners, American Indian tribes, and other agencies.
- Restoration work will be based on the best available science.
- Restoration must incorporate sound fire-management strategies.
- Funds will be devoted to on-the-ground work to the extent possible.
- Native species will be given preference in seeding projects, pending seed availability, cost, and chance of success.
- All restoration projects will include monitoring, data evaluation, and information sharing to improve restoration success in the future.
- Restoration activities must balance ecological needs with social, political, and economic considerations.
- The Great Basin must be managed for no net loss of complete sagebrush and salt desert shrub stands.

B14.2.2 Revegetation Guidelines for the Great Basin

The Revegetation Guidelines for the Great Basin: Considering Invasive Weeds (ARS-168: U.S. Department of Agriculture 2008) provides an in-depth, step-by-step guide to the processes and procedures of establishing desired plant species in the Great Basin ecosystem. The Guidelines assist in the preliminary planning process for projects involving revegetation. The purpose of revegetation is to return the land to conditions and productive uses similar to pre-disturbance conditions, or to a desired site-specific plant community.

The guidelines call for use of native or sterile nonnative plant species in the revegetation process to help promote the long-term maintenance of the Great Basin's remaining native vegetation, as well as to improve and reclaim degraded habitat.

B14.3 Purpose

The purpose of this plan is to describe and recommend construction and reclamation treatment actions that will meet BLM and USFS goals and objectives under the applicable land use plans, guidelines, and initiatives described above for land health standards to recover habitat for sensitive plant species, and to provide protocols and/or requirements for implementing and monitoring required reclamation.

Important actions in mitigating the effects associated with the Project include (1) minimizing to the greatest degree practicable, the effects associated with right-of-way preparation and the construction of facilities and (2) stabilizing temporarily disturbed construction areas to an acceptable condition to speed up natural recovery. The procedures outlined in this plan will assist in restoring plant communities to near preconstruction conditions and associated wildlife habitat and range, preventing substantial increases in noxious weeds in the Project area, minimizing Project-related soil erosion, and reducing visual impacts of sensitive areas caused by construction activities. To achieve these goals, this plan outlines actions to be applied during the preconstruction and post-construction phases of the Project.

B14.3.1 Responsible Parties

The Proponent will have the overall responsibility of directing and monitoring the reclamation efforts for the Project. The Construction Contractor(s) may retain the services of a subcontractor, subject to the approval of the BLM and USFS, who specializes in reclamation to implement the protocols identified in this plan during and following construction. It is anticipated post-construction reclamation monitoring would occur concurrent with the practices outlined in Appendix B10 – Noxious Weed Management Plan (as appropriate).

Additional linear facilities currently exist within, have been proposed adjacent to, or are being constructed near the right-of-way to be occupied by the Project (e.g., TransWest Express, UNEV Pipeline, West-wide Energy Corridor). Where feasible, consolidation of access (i.e., utilizing existing access from other facilities or retaining Project construction access for additional future facilities use, thereby reducing overall new road construction) with additional linear facilities may result in an overall reduction of access-related concerns and/or impacts on the environmental resources within and near the right-of-way. Prior to issuance of a right-of-way grant/special-use permit for the Project, the BLM and USFS, in coordination with the Proponent, will determine which of the newly constructed access roads will be closed, reclaimed, or retained for operation and maintenance activity. New access roads not required for operation and maintenance of the Project and/or other planned facilities may be closed using the most effective and least environmentally damaging methods appropriate to that area. Where access is to be closed, the practices identified in this Plan of Development (POD) will be implemented accordingly.

B14.4 Overview of Existing Environments

Reclamation actions shall be specific to the setting and vegetation communities of the Project potentially affected during preconstruction and post-construction activities. In particular, seeding and alternative seeding actions require information to develop appropriate seed mixes that will incorporate the dominant plant species of the existing vegetation communities, where applicable. In addition, vegetation clearing practices may vary based on dominant plant communities (e.g., sagebrush, pinyon-juniper).

The classification of vegetation communities in the Project area was based on geographic information system (GIS) data obtained from the Southwest Regional Gap Analysis Project (GAP) (Lowry et al. 2005). The GAP data was supplemented with high-resolution aerial photography and refined through field investigations.

Wetland data was delineated in the field specifically for this Project during the Environmental Impact Statement process. The GAP data also includes a water category. The proposed alignment for the Project is located within the Central Basin and Range Level III Ecoregion (Woods et al. 2001). The Project area encompasses several small mountain ranges, including the Mineral Mountains, Pahvant Range, Tushar

Mountains, Pine Valley Mountains, the Wah Wahs, and Indian Peak Mountain. The western portion of the Project area lies in the Escalante Desert. Elevations in the study corridor range from approximately 5,000 feet above mean sea level in the northern valleys to over 7,000 feet above mean sea level in the southern mountains.

The primary vegetation communities in the study corridor include desert scrub, grassland, and sagebrush communities in lower elevation valleys; pinyon-juniper and mountain shrub communities on mid-elevation slopes; and mixed conifer and aspen at higher elevations. A portion of the study corridor vegetation was burned during wildfires (e.g., the Milford Flat, Dog Valley, and Twitchell wildfires) and may require unique reclamation treatments for areas disturbed during construction, as identified by the BLM or USFS Authorized Officers or his/her designated representative.

A total of 57 land cover categories identified by GAP occur within the study corridors. For the purposes of this POD, these categories were consolidated into 15 vegetation communities and are described below and are illustrated in Figure B14-1. In addition, data on recent wildfires (U.S. Geological Survey 2009), and associated data from BLM restoration and reseeding projects and noxious weed survey data (BLM 2010) were incorporated into the vegetation data and used to identify burn, post-burn (reseeded), and noxious weed vegetation communities. These habitat types are presented in table format, as they occur along the proposed route, in Attachment A – Reclamation Zones by Milepost. These vegetation communities are illustrated in Figure B14-1 and identified in Volume II – POD Map Sets 1, 2, and 3, and should be directly referenced during right-of-way preparation and reclamation activities.

The Construction Contractor(s) shall coordinate with the agency resource specialists to develop site-specific restoration treatments specific to the setting and vegetation communities where disturbance occurs, select appropriate seed mixes, and delineate the geographic extent in which each seed mix will be distributed within the right-of-way and areas disturbed by construction. In addition to GAP data, the agencies also use the Soil Survey Geographic (SSURGO) database developed and maintained by the Natural Resources Conservation Service – National Geospatial Management Center for planning purposes to assist in identification of vegetation communities. The process for identifying site-specific restoration treatments is to be achieved through analysis of aerial imagery, review of the GAP and SSURGO data, and ground verifications of existing vegetation communities. Coordination and inventory should occur during the preconstruction phase of the project to ensure the proper amount of each seed mix can be purchased and is available when needed.

B14.4.1 Agriculture

Agriculture habitat consists of both irrigated and nonirrigated agricultural lands. This vegetation community occurs in the Sevier River Valley and the Milford-Minersville area. Sensitive biological resources potentially occurring in the project area associated with agricultural habitats include bald eagle (*Haliaeetus leucocephalus*), long-billed curlew (*Numenius americanus*), Utah prairie dog (*Cynomys parvidens*), and yellow warbler (*Dendroica petechia*).

B14.4.2 Aspen

Aspen habitat consists of the GAP Rocky Mountain aspen forest and woodland land cover categories. This community occurs in montane areas and is dominated by quaking aspen (*Populus tremuloides*) with less than 25 percent conifer species. The distribution of this land cover type is limited by soil moisture and growing season. The understory vegetation generally includes a complex shrub-herb community or a simple herbaceous layer. Primary shrub species include snowberry (*Symphoricarpos* spp.), thimbleberry

(*Rubus parviflorus*), Saskatoon serviceberry (*Amerlanchier alnifolia*), and kinnikinnick (*Arctostaphylos uva-ursi*). This vegetation community originates and is maintained by stand-replacing disturbances, such as avalanches, crown fire, insect outbreak, windthrow, and vegetation management practices. Sensitive biological resources potentially occurring in the Project area associated with aspen habitats include broad-tailed hummingbird (*Selasphorus platycercu*), northern flicker (*Colaptes auratus*), northern gowshawk (*Accipiter gentilis*), three-toed woodpecker (*Picoides tridactylus*), and western bluebird (*Sialia Mexicana*).

B14.4.3 Barren/Sparsely Vegetated

Barren/sparsely vegetated habitat includes the GAP inter-mountain basins playa land cover type and occurs at lower elevations in the Escalante Desert. This community includes barren or sparsely vegetated playas (less than 10 percent plant cover) that are intermittently flooded. Characteristic plant species include inland saltgrass (*Distichlis spicata*), iodinebush (*Allenrolfea occidentalis*), greasewood (*Sarcobatus vermiculatus*), sickle saltbush (*Atriplex falcata*), pickleweed (*Salicornia europeae*), spiny hopsage (*Grayia spinosa*), and basin wildrye (*Leymus cinereus*). Sensitive biological resources potentially occurring in the Project area associated with barren/sparsely vegetated habitats include American avocet (*Recurvirostra americana*).

B14.4.4 Big Sagebrush

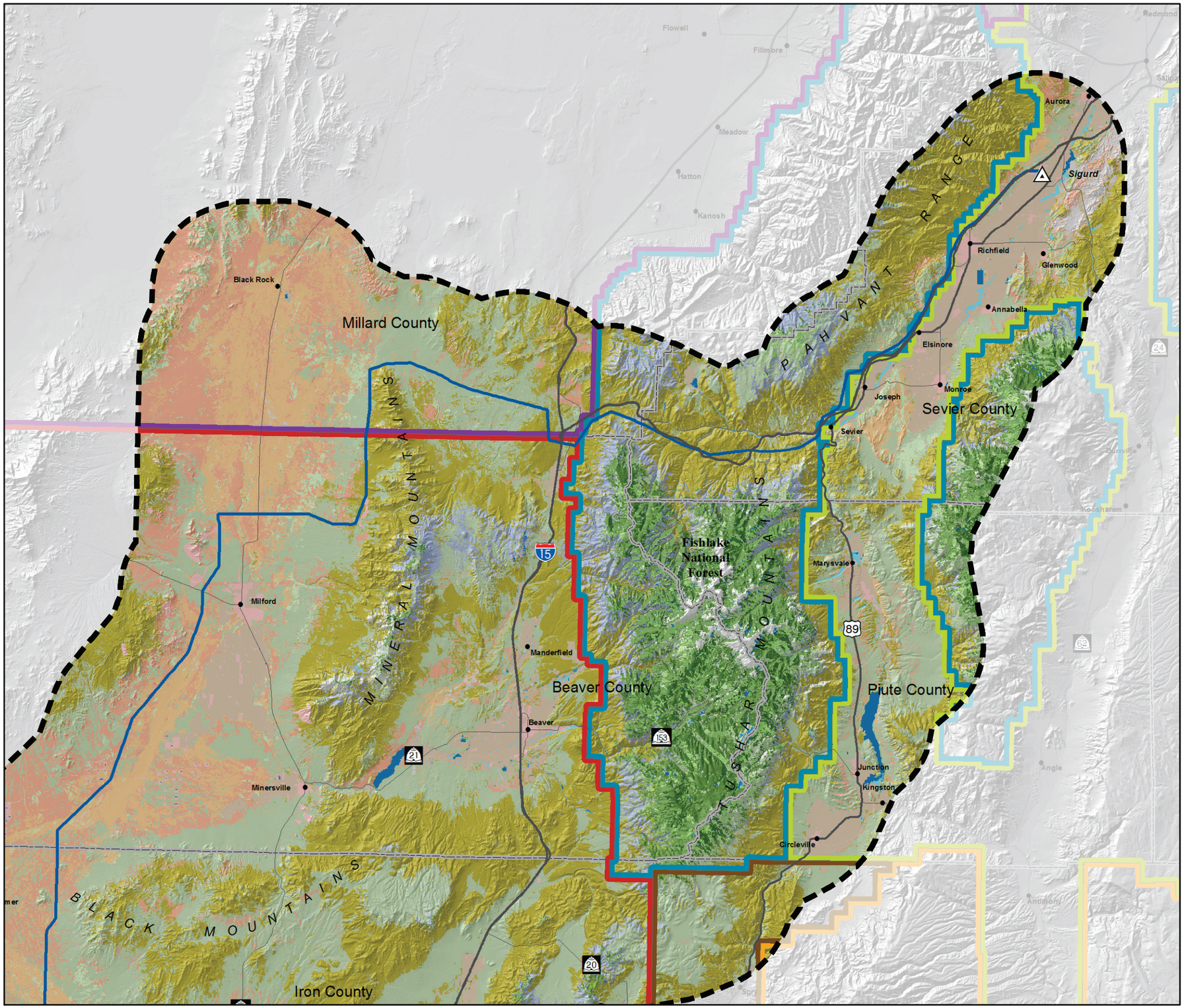
Big sagebrush habitat consists of the GAP inter-mountain basins big sagebrush shrubland land cover type. This community occurs on well-drained, nonalkaline soils at middle elevations and is dominated by basin big sagebrush (*Artemisia tridentata ssp. tridentata*) and Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*). Typical codominant species include antelope bitterbrush (*Purshia tridentata*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), and rubber rabbitbrush (*Ericameria nauseosa*). Big sagebrush habitat occurs in valleys and foothills throughout the study corridor. Sensitive biological resources potentially occurring in the Project area associated with big sagebrush habitats include greater sage-grouse (*Centrocercus urohasianus*), mule deer (*Odocoileus hemionus*), pygmy rabbit (*Brachylagus idahoensis*), and vesper sparrow (*Pooecetes gramineus*).

B14.4.5 Desert Shrub

Desert shrub habitat consists of the GAP inter-mountain basins greasewood flat and inter-mountain basins mixed salt desert shrub land cover types. These represent open-canopied shrub communities that occur on alkaline soils in desert basins. Greasewood flat is typically dominated by greasewood with saltbush (*Atriplex* spp.), sagebrush (*Artemisia* spp.), and winterfat (*Krascheninnikovia lanata*). Salt desert shrub is typically dominated by one or more species of saltbush, including shadscale saltbush (*Atriplex confertifolia*), fourwing saltbush (*Atriplex canescens*), cattle saltbush (*Atriplex polycarpa*), and spinescale saltbush (*Atriplex spinifera*). Common codominant species include Wyoming big sagebrush, yellow rabbitbrush, rubber rabbitbrush, winterfat, Mormon tea (*Ephedra nevadensis*), and spiny hopsage. Desert shrub occurs in valley bottoms throughout the study corridors, particularly in the Sevier River Valley and the Escalante Desert. Sensitive biological resources potentially occurring in the Project area associated with desert shrub habitats include Brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), dark kangaroo mouse (*Microdipodops megacephalus*), kit fox (*Vulpes macrotis*), mountain plover (*Charadrius montanus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), and spotted bat (*Euderma maculatum*).

Panel 1

FIGURE B 14-1
VEGETATIVE COMMUNITIES



VEGETATION COMMUNITY

- Agriculture
- Alpine
- Aspen
- Barren/Sparsely Vegetated
- Big Sagebrush
- Bigtooth Maple
- Desert Shrub
- Disturbed
- Grassland
- Mixed Conifer
- Mountain Shrub
- Pinyon-juniper
- Ponderosa Pine
- Riparian
- Shrub Steppe
- Water
- Wetland

GENERAL REFERENCE FEATURES

- Project Study Area
- Transmission Centerline
- Substation
- County
- Interstate & U.S. Highway
- State Highway

DIAGRAMMATIC BLM/USFS BOUNDARIES FOR APPLICATION OF SEED MIXES

- Dixie National Forest
- Fishlake National Forest
- BLM Cedar City Field Office
- BLM Fillmore Field Office
- BLM Kanab Field Office
- BLM Richfield Field Office
- BLM St. George Field Office

SOURCES:
Base Map: National Geographic, ESRI 2012
Transportation: Streetmap 50K to 250K, 2008
Vegetation: Southwest Regional GAP Project, Lowry et al. 2005
POWERmap, powermap.platts.com
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SIGURD TO RED BUTTE NO. 2
345kV TRANSMISSION PROJECT

ROCKY MOUNTAIN POWER

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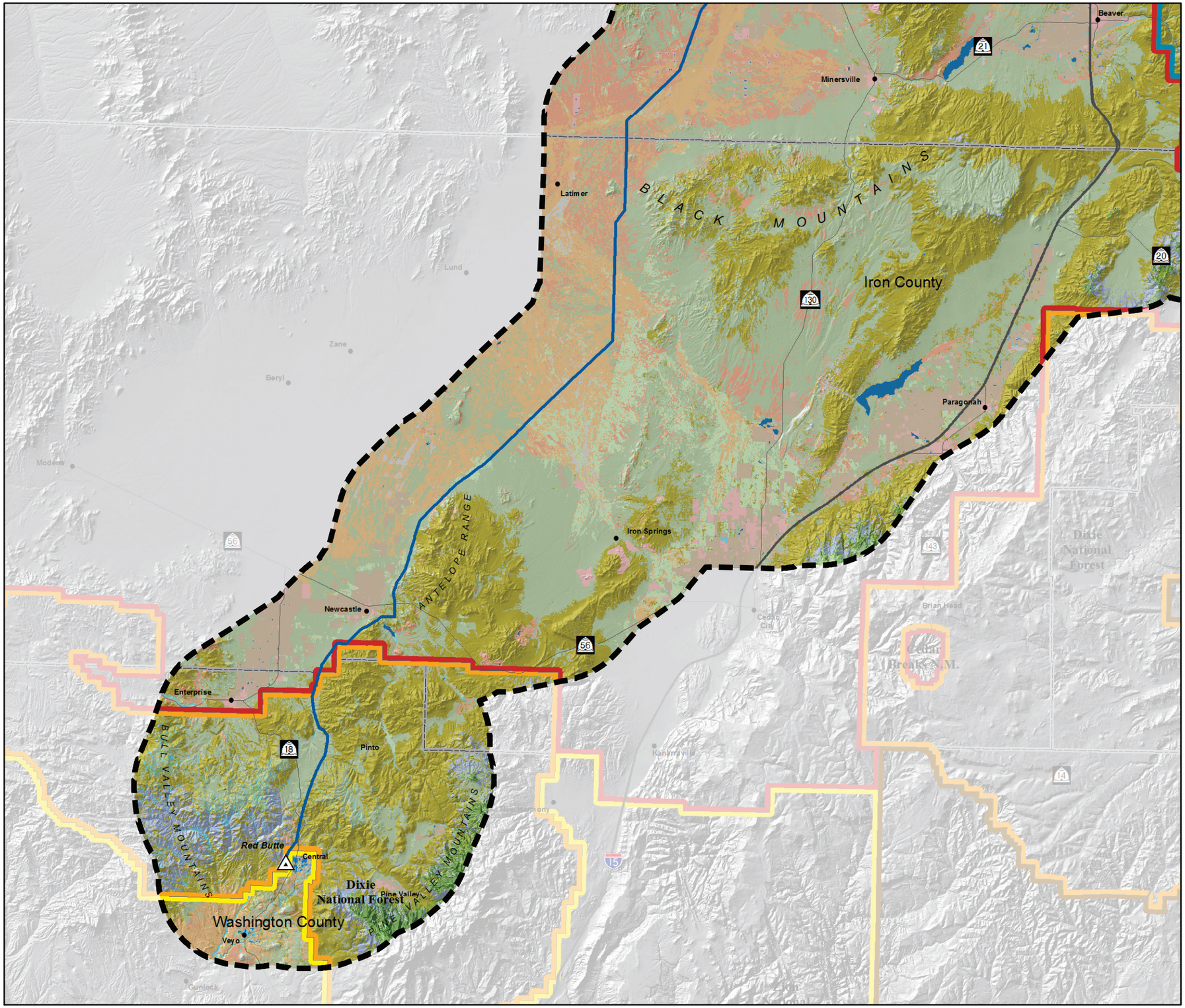

Panel 2

FIGURE B 14-1
VEGETATIVE COMMUNITIES

VEGETATION COMMUNITY

- Agriculture
- Alpine
- Aspen
- Barren/Sparsely Vegetated
- Big Sagebrush
- Bigtooth Maple
- Desert Shrub
- Disturbed
- Grassland
- Mixed Conifer
- Mountain Shrub
- Pinyon-juniper
- Ponderosa Pine
- Riparian
- Shrub Steppe
- Water
- Wetland

GENERAL REFERENCE FEATURES

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DIAGRAMMATIC BLM/USFS BOUNDARIES FOR APPLICATION OF SEED MIXES

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345kV TRANSMISSION PROJECT

ROCKY MOUNTAIN POWER

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B14.4.6 Disturbed

Disturbed lands consist of the GAP developed, medium high intensity and developed, open space-low intensity land cover types. This vegetation community includes areas in which native vegetation communities have been altered or eliminated as a result of urban land development and construction of roadway infrastructure. Disturbed lands occur throughout the study corridors.

B14.4.7 Grassland

Grassland habitat consists of the GAP southern Rocky Mountain montane-subalpine grassland land cover type. This vegetation community typically occurs on flat to gently rolling topography at higher elevations. This habitat often consists of a mosaic of several plant associations with a dominant bunch grass, such as an oatgrass (e.g., *Danthonia intermedia* and *Danthonia parryi*), fescue (e.g., *Festuca idahoensis*, *F. arizonica*, and *F. thurberi*), or slimstem muhly (*Muhlenbergia filiculmis*). Sensitive biological resources potentially occurring in the Project area associated with grassland habitats include burrowing owl, long-billed curlew, pronghorn (*Antilocapra americana*), sage sparrow, short-eared owl (*Asio flammeius*), Utah prairie dog, and vesper sparrow.

B14.4.8 Invasive

The invasive vegetation community consists of the GAP invasive annual and biennial forbland, invasive annual grassland, and invasive perennial grassland land cover types. This habitat is dominated by invasive non-native species, including cheatgrass (*Bromus tectorum*), smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), halogeton (*Halogeton glomeratus*), kochia (*Kochia prostrata*), and Russian thistle (*Salsola* spp.). Invasive habitats occur intermittently throughout the study corridors.

B14.4.9 Noxious Weed

The Utah Noxious Weed Act defines noxious weeds as “any plant the commissioner determines to be especially injurious to public health, crops, livestock, land, or other property” (Utah State Code Annotated §4-17-2). The State of Utah currently classifies 27 plant species as noxious weeds (Belliston et al. 2009). Plants designated as noxious weeds by the state of Utah and counties crossed by the Project are listed in Table B10-1 of Appendix B10 – Noxious Weed Management Plan. Although not prevalent, several noxious weeds (e.g., Scotch thistle) do occur in the study corridor.

This vegetation community is based on recent mapping completed by the BLM (BLM 2010). Noxious weed species known to occur along the transmission line route include black henbane (*Hyoscyamus niger*), field bindweed (*Convolvulus arvensis*), hoary cress (*Cardaria draba*), houndstongue (*Cynoglossum officinale*), leafy spurge (*Euphorbia esula*), musk thistle (*Carduus nutans*), saltcedar (*Tamarix ramossissima*), Scotch thistle (*Onopordum acanthium*), bull thistle (*Cirsium vulgare*), diffuse knapweed (*Acosta diffusa*), and spotted knapweed (*Centaurea maculosa*).

B14.4.10 Mountain Shrub

Mountain shrub habitat consists of the GAP mogollan chaparral and Rocky Mountain Gambel oak-mixed montane shrubland land cover types. Mogollan chaparral is associated with xeric, coarse-textured substrates on foothills and mountain slopes. Dominant species include shrub live oak (*Quercus turbinella*), Toumey oak (*Quercus toumeyi*), mountain mahogany (*Cercocarpus montanus*), desert *ceanothus (Ceanothus greggii),* and Stansbury cliffrose (*Purshia stansburiana*). This community occurs in the Bull Valley Mountains northwest of the Red Butte Substation. Gambel oak-mixed montane shrubland occurs on more mesic habitats. Vegetation is dominated by Gambel oak (*Quercus gambelii*) alone or codominant with antelope bitterbrush, serviceberry (*Amelanchier* spp.), and chokecherry (*Prunus virginiana*). This community occurs on mid-elevation slopes in the Tushar Mountains, Mineral Mountains, and Bull Valley Mountains. Sensitive biological resources potentially occurring in the Project area associated with mountain shrub habitats include Lincoln's sparrow (*Melospiza lincolnii*), mountain bluebird (*Sialia currucoides*), mule deer, prairie falcon (*Falco mexicanus*), Rocky Mountain elk (*Cervus Canadensis),* Townsend's big-eared bat (*Corynorhinus townsendi*), and western bluebird (*Sialia Mexicana*).

B14.4.11 Pinyon-Juniper

Pinyon-Juniper vegetation communities consists of the GAP Colorado plateau pinyon-juniper woodland, Great Basin pinyon-juniper woodland, and recently chained pinyon-juniper land cover types. These communities occur on dry, mid-elevation foothills and mountain slopes. Utah juniper (*Juniperus osteosperma*) and pinyon pine *(Pinus monophylla* and *P. edulis*) represent the dominant tree species. Common understory species include greenleaf manzanita (*Arctostaphylos patula*), bitterbrush, sagebrush (*Artemisia* spp.), mountain mahogany (*Cercocarpus intricatus* and *C. montanus*), oaks (*Quercus* spp.), Stansbury's cliffrose, and various grasses. Pinyon-juniper vegetation communities occur throughout the study corridors. Sensitive biological resources potentially occurring in the Project area associated with pinyon-juniper habitats include Allen's big-eared bat (*Idionycteris phyllotis*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), hairy woodpecker (*Picoides villosus*), mountain bluebird, northern flicker (*Colaptes auratus*), Rocky Mountain elk, Townsend's big-eared bat, and wild turkey (*Meleagris gallopavo*).

B14.4.12 Ponderosa Pine

This vegetation community occurs on a wide variety of slopes and aspects commonly with moderate to steep slopes, rocky areas with good soil aeration and drainage, and periods of drought during the growing season. Ponderosa pine (*Pinus ponderosa*) is the predominant conifer with juniper (*Juniperus* spp.) often present in the tree canopy. The understory is usually shrubby, dominated by sagebrush and Gambel oak. Muhlygrasses (*Muhlenbergia* spp.), and blue grama (*Bouteloua gracilis*) are common grasses. Ponderosa pine habitat occurs within the Project area, but does not occur within the study corridors. Sensitive biological resources potentially occurring in the project area associated with ponderosa pine habitats include flammulated owl (*Otus flammeoulus*), hairy woodpecker, Lewis's woodpecker (*Melanerpes lewis),* northern goshawk (*Accipiter gentilis*), peregrine falcon (*Falco peregrinus anatum*), and three-toed woodpecker.

B14.4.13 Shrub Steppe

Shrub steppe habitat consists of the GAP Colorado plateau mixed low sagebrush shrubland, Great Basin xeric mixed sagebrush shrubland, inter-mountain basins montane sagebrush steppe, and inter-mountain basins semi-desert shrub steppe land cover types. These communities occur on relatively xeric sites with shallow, rocky, nonsaline soils. While specific species composition varies, common dominant shrub species include sagebrush (*Artemisia nova*, *A. arbuscula*, and *A. bigelovii*), rabbitbrush, Mormon tea, broom snakeweed (*Gutierrezia sarothrae*) and semi-arid grasses such as bluebunch wheatgrass (*Pseudoroegneria spicata*), Indian ricegrass (*Achnatherum hymenoides*), desert needlegrass (*Achnatherum speciosum*), bluegrasses (*Poa fendleriana* and *Poa secunda*), blue grama, and needle and thread (*Hesperostipa comata*). This vegetation community occurs at middle elevations throughout the study corridors. Sensitive biological resources potentially occurring in the Project area associated with shrub-steppe habitats include Brewer's sparrow, dark kangaroo mouse, ferruginous hawk, golden eagle, greater sage-grouse, prairie falcon, pygmy rabbit, and sage thrasher.

B14.5 Reclamation Plan Methodology

This section of the plan describes the process used to identify reclamation actions that will be required upon identification of construction-related disturbance for the Project. Because the Restoration Plan for Energy Projects in the BLM Las Vegas Field Office (BLM 2001) provides reclamation guidance specifically for large-scale transmission projects on BLM-administered lands, this has served as the primary framework to identify the appropriate reclamation levels (RL) and actions for the Project. The following discussion focuses on two key components (1) Identification of Reclamation Zones, and (2) Identification of Reclamation Levels that have been used to designate or prescribe the required preconstruction and post-construction actions for each Reclamation Zone (described in detail in Section B14.5.1 – Identification of Reclamation Zones). The implementation of the reclamation actions described in Section B14.6 – Reclamation Plan varies based on these two components, as well as the vegetation communities potentially affected (e.g., seed mixtures).

B14.5.1 Identification of Reclamation Zones

This plan identifies four reclamation zones (Z1 to Z4), which describe an appropriate range of reclamation actions that will be implemented during preconstruction and post-construction activities. These zones are based on an aggregation of the vegetation types described in Section B14.4 – Overview of Existing Environments, as they relate to the types of vegetation typically found within the biomes, and the reclamation actions applicable to such vegetation. While species composition will vary within the reclamation zone, similar types of vegetation will likely be found within the designated zone that will support similar reclamation actions. For example, vertical mulch is a reclamation technique applicable in the forest and shrub-land areas due to the abundance of woody and shrubby material, but would not be applicable to the grassland areas. The reclamation zones are also mapped in Figure B14-2 and in Volume II – POD Map Sets 1, 2, and 3.

BLM resources of concern may include sensitive animal habitat, sensitive plant occurrences, visual resources, or other sensitive environmental features and will be shown in Volume II – POD Map Sets 1, 2, and 3. These resources may require additional mitigation measures and have been described in the preceding appendices. The following is a description of each reclamation zone applicable to the Project.

B14.5.1.1 Reclamation Zone 1 – Conifer/Woodlands (Z1)

Reclamation Zone 1 (Z1) includes an aggregation of aspen, pinyon-juniper, and ponderosa pine. This zone is typically composed of coniferous and deciduous trees and woody plants, with a limited grass understory as described in Sections B14.4.2, B14.4.11, and B14.4.12. This zone will typically range from approximately 4,400 to 8,000 feet in elevation, and receive approximately 10 to 25 inches of rainfall annually. All reclamation actions described in Section B14.6 – Reclamation Plan are potentially applicable to this zone, dependent on site conditions.

B14.5.1.2 Reclamation Zone 2 –Shrublands (Z2)

Reclamation Zone 2 (Z2) includes an aggregation of big sagebrush, desert shrub, mountain shrub, and shrub steppe areas. This zone is typically composed of a variety of low, shrubby and woody vegetation, with a limited to moderate grass understory as described in Sections B14.4.4, B14.4.5, B14.4.10, and B14.4.13. This zone will typically range from approximately 4,400 to 8,000 feet in elevation, and receives approximately 7 to 20 inches of rainfall annually. All reclamation actions described in Section B14.6 – Reclamation Plan with the exception of selective feathering are potentially applicable to this zone, dependent on site conditions.

B14.5.1.3 Reclamation Zone 3 – Grasslands (Z3)

Reclamation Zone 3 (Z3) includes an aggregation of native grassland and invasive grassland areas. This zone is typically composed of a variety of low, abundant grasses, both native and exotic, as described in Sections B14.4.7 and B14.4.8. This zone is typically found in both valley and montane environments ranging from 4,400 to 8,000 feet in elevation and receives approximately 15 to 25 inches of rainfall annually. All reclamation actions described in Section B14.6 – Reclamation Plan with the exception of selective feathering and vertical mulch are potentially applicable to this zone, dependent on site conditions.

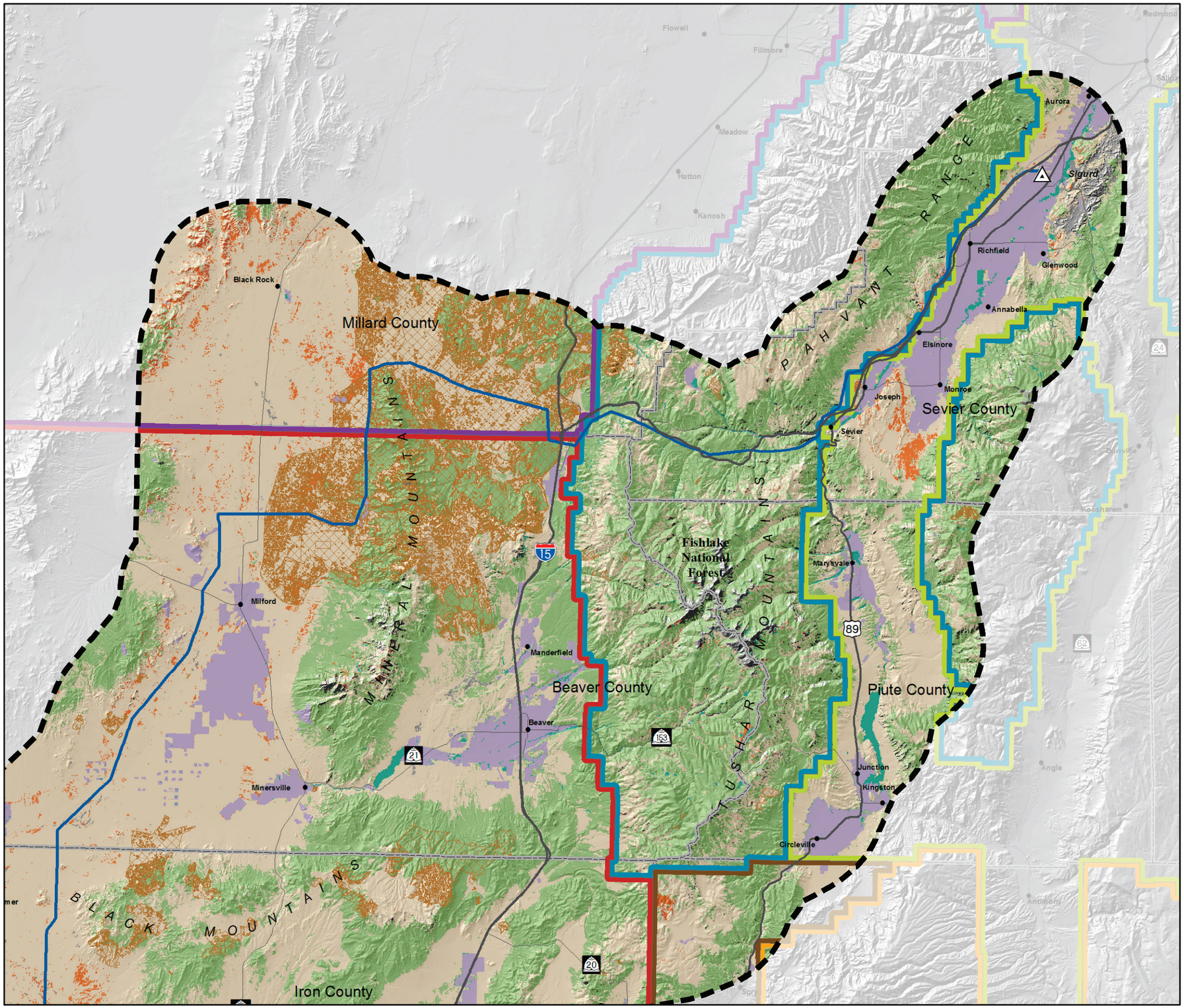
B14.5.1.4 Reclamation Zone 4 – Riparian (Z4)

Reclamation Zone 4 (Z4) is composed of only riparian areas. In riparian areas, reclamation actions associated with Zones 1-3 may not be applicable due to site-specific conditions requiring modification from standard actions or agency-requested actions. In these more sensitive areas, the appropriate land-management agency (BLM or USFS) and reclamation subcontractor must give approval for reclamation actions to be applied and in some cases may require additional, detailed planting plans to accommodate riparian conditions and BLM objectives.

In all Z4 areas, construction disturbance will be limited, where possible, to prevent soil and vegetation loss. Any existing roads in this zone will be used to access construction work areas to limit new access roads and overland crushing. Seed mixes will be determined by soil type and vegetation community in cooperation with the reclamation Subcontractor and a BLM or USFS specialist (e.g., botanist, range management specialist, or soil scientist designated by the BLM or USFS Authorized Officer or his/her designated representative). Alternative seed mixes containing adaptive or sterile species may be considered if competition from noxious or invasive species could affect reclamation success. Prevention of soil erosion and loss are discussed in detail in Appendix B7 – Erosion, Dust Control, and Air Quality Plan.

Panel 1

FIGURE B 14-2
RECLAMATION ZONES



RECLAMATION ZONES

- Agriculture/Disturbed
- Conifer/Woodlands Z1
- Shrublands Z2
- Grasslands Z3
- Riparian Z4
- Wildfire Impacted Areas SZ1

GENERAL REFERENCE FEATURES

- Project Study Area
- Transmission Centerline
- Substation
- County
- Interstate & U.S. Highway
- State Highway

DIAGRAMMATIC BLM/USFS BOUNDARIES FOR APPLICATION OF SEED MIXES

- Dixie National Forest
- Fishlake National Forest
- BLM Cedar City Field Office
- BLM Fillmore Field Office
- BLM Kanab Field Office
- BLM Richfield Field Office
- BLM St. George Field Office

SOURCES:

Base Map: National Geographic, ESRI 2012
Transportation: Streetmap 50K to 250K, 2008
Vegetation: Southwest Regional GAP Project, Lowry et al. 2005
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SIGURD TO RED BUTTE NO. 2
345kV TRANSMISSION PROJECT

ROCKY MOUNTAIN POWER

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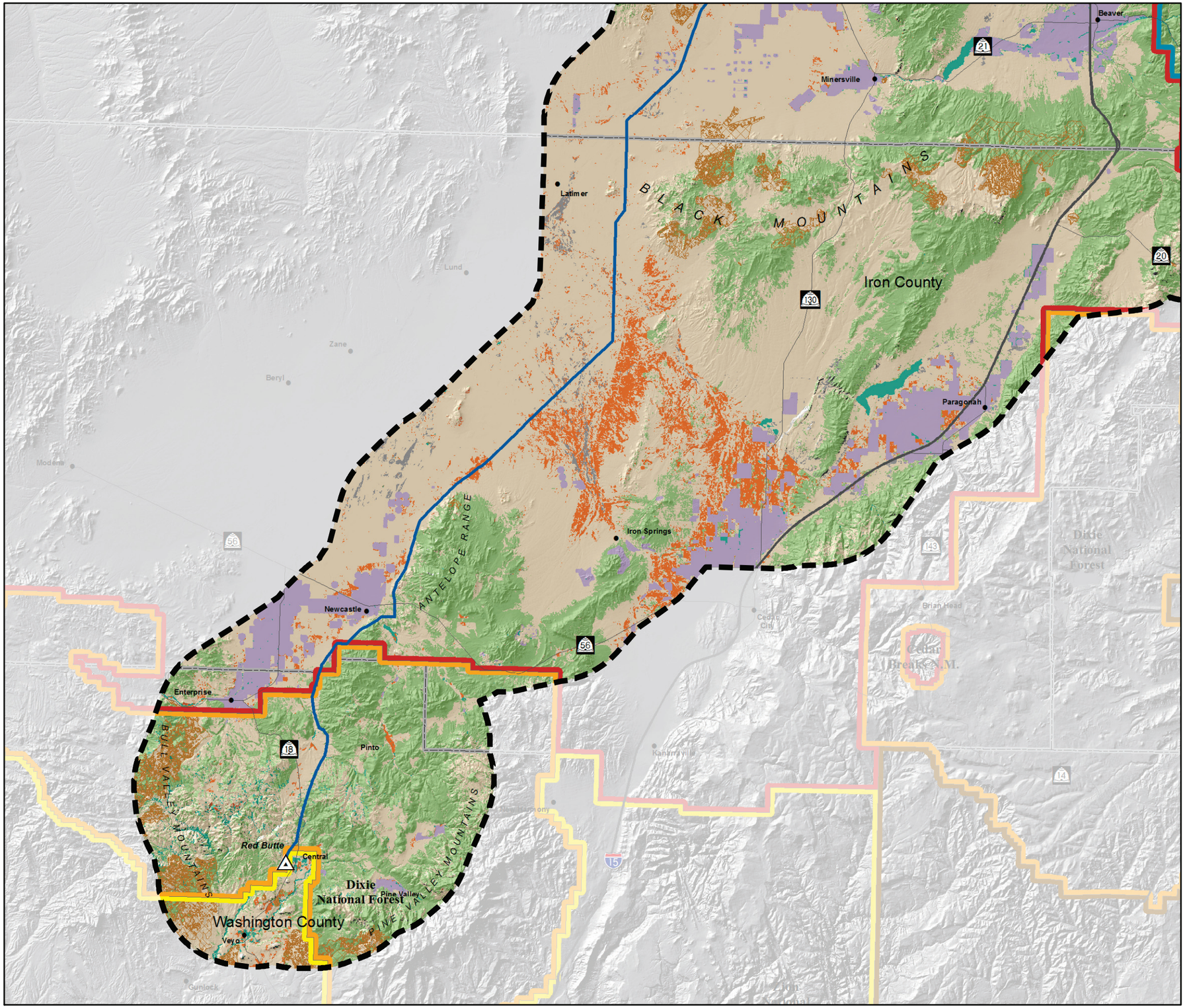
Panel 2

FIGURE B 14-2
RECLAMATION ZONES



RECLAMATION ZONES

- Agriculture/Disturbed
- Conifer/Woodlands Z1
- Shrublands Z2
- Grasslands Z3
- Riparian Z4
- Wildfire Impacted Areas SZ1

GENERAL REFERENCE FEATURES

- Project Study Area
- Transmission Centerline
- Substation
- County
- Interstate & U.S. Highway
- State Highway

DIAGRAMMATIC BLM/USFS BOUNDARIES FOR APPLICATION OF SEED MIXES

- Dixie National Forest
- Fishlake National Forest
- BLM Cedar City Field Office
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SOURCES:
Base Map: National Geographic, ESRI 2012
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SIGURD TO RED BUTTE NO. 2
345kV TRANSMISSION PROJECT

ROCKY MOUNTAIN POWER

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B14.5.1.5 Reclamation Subzone 1 – Wildfire Impacted Areas

In some areas of the Project, reclamation actions associated with Zones 1 to 4 may not be applicable due to site-specific conditions attributed to wildfire. As previously stated, the majority of wildfire areas have been revegetated to some degree following the BLM Emergency Stabilization and Rehabilitation Efforts. These efforts typically included planting a diverse seed mix, including native and nonnative species, to quickly establish site stabilization and rehabilitation following wildfire conditions. These seed mixes typically support herbaceous vegetation, including globe mallow (*Sphaeralcea coccinea*), bluebunch wheatgrass (*Pseudoroegneria spicata*), intermediate wheatgrass (*Thinopyrum intermedium*), Western wheatgrass (*Pascopyrum smithii*), bottlebrush squirreltail (*Elymus elymoides*), Palmer penstemon (*Penstemon palmeri*), small burnett (*Sanguisorba minor*), Wyoming big sagebrush (*Artemisia tridentata*. ssp. *Wyomingensis*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), bitterbrush (*Purshia tridentata*), Indian ricegrass (*Achnatherum hymenoides*), forage Kochia (*Kochia prostrata*), tall wheatgrass (*Agropyron elongatum*), and crested wheatgrass (*Agropyron cristatum*).

In these areas, seed mixes to be used following construction activities will be determined by soil type and surrounding vegetation communities in coordination with the agency management objectives and approval of the BLM or USFS Authorized Officer or his/her designated representative. Alternative seed mixes containing adaptive or sterile species may be considered if competition from noxious or invasive species could affect reclamation success.

B14.5.2 Identification of Reclamation Levels

Reclamation levels (RLs) that prescribe the types of required preconstruction and post-construction actions were determined based on (1) the type(s) of construction activity, facility features, and the area of associated disturbance, (2) the duration of disturbance (temporary or permanent) associated with these features, and (3) the type of disturbance associated with each activity as described below.

B14.5.2.1 Types of Construction Activities and Facility Features

As presented in Appendix A – Construction Considerations of the POD, the activities associated with the construction of the major and ancillary facilities of the Project will include the following tasks:

- Surveying the transmission centerline, other project features, and work areas
- Upgrading or constructing temporary and permanent access roads
- Clearing and grading activities for the right-of-way, tower sites, staging areas, substations, regeneration sites, and batch plants
- Excavating foundations
- Installing foundations
- Assembling and erecting towers with temporary and permanent pad sites.
- Stringing conductors and ground wires.
- Installing counterpoise (tower grounds) where needed.
- Conducting cleanup and reclamation of affected areas.

The area affected by construction of the major facility features will vary as presented in Table 3-2 of Section 3 of this POD. This table identifies major Project features and describes the area of potential, temporary, or permanent disturbance and effect. The location of key construction activities and Project

features (e.g., access roads, tower sites, pulling and tensioning sites, staging areas) will be identified in Volume II – POD Map Sets 1, 2, and 3 for reference by the Construction Contractor(s) during preconstruction and post-construction reclamation activities.

B14.5.2.2 Disturbance Duration

This plan defines two broad types of disturbance durations. These are described below and summarized by construction activity or Project feature in Table 3-2 of Section 3 of this POD.

Long-term/Permanent Use Areas. the use of these areas is long-term and the landscape is permanently altered through removing vegetation, site leveling, modifying natural drainages, fencing, and constructing facilities, towers, and other structures. Permanent disturbance also includes constructing access roads needed for regularly scheduled maintenance of facilities and structures.

Short-term/Temporary Use Areas. these areas are used only for the amount of time it takes to construct the Project. Examples include work areas where heavy equipment is used to move and install towers, pulling and tensioning sites, driving across public land to gain access to the Project area and parking vehicles, temporary access roads, and designated staging areas for equipment and materials.

B14.5.2.3 Disturbance Type

This plan defines four broad disturbance types based on activities associated with the construction of Project facilities considered in the identification of RLs and practices. These include the following:

Disturbance Type 1 (D1) – No New Disturbance

These areas include existing access roads and pre-disturbed locations that do not require improvement (vegetation removal or grading) that will remain permanent (in place) after Project construction is complete.

Disturbance Type 2 (D2) – Overland Drive-and-Crush and Crane Matting

In these areas, disturbance is caused by access to a site or construction activities within a work area that does not significantly modify the landscape. Vegetation is crushed, but not cropped. Soil is compacted, but no surface soil is removed. Examples may include tensioning and pulling areas, tower pad sites, overland access to regeneration sites, spur roads to towers, and wetland areas requiring crane mats for access. Even though vegetation may be damaged and even destroyed, the surface soil and seed bank remains in place. Some crushed vegetation will likely resprout after disturbance ceases. These activities would result in minimal to moderate disturbance.

Disturbance Type 3 (D3) – Overland Clear-and-Cut

In these areas, disturbance is caused by access to the Project site or construction activities within a work area that requires the clearing of all vegetation to improve or provide suitable access for equipment and vehicles. Most woody shrub vegetation is removed, soils are compacted, but no surface soil is removed (i.e., no blading of topsoil). Examples include temporary access roads where overland access may be used

in the construction of facilities, or in some areas where roads may be improved for access (selective tree and brush clearing). In general, clear-and-cut activities will result in moderate amounts of disturbance.

Disturbance Type 4 (D4) – Blading

Disturbance in these areas is caused by removing vegetation in the affected zone. The soils are compacted and the surface soil is displaced (i.e., blading of topsoil). These activities result in heavier disturbance and examples include new access roads that require grading and filling, clearing and grading that may be associated with tower sites, and improvements to existing access.

B14.5.2.4 Reclamation Levels

Five levels of reclamation (RL1 to RL5) have been identified based on the potential type of disturbance and the duration of disturbance associated with the construction of the Project. These RLs are identified in Table B14-2 and briefly described below.

TABLE B14-2
RECLAMATION LEVELS

Disturbance Level		Disturbance Duration	
		Permanent	**Temporary**
D1	No new disturbance	RL 1	–
D2	Overland: Drive-and-Crush	RL 1	RL 2
D3	Overland: Clear-and-Cut	RL 4	RL 3
D4	Blading	RL 4	RL 5

Reclamation Level 1 (RL1) – Minimal Level of Disturbance, Minimal Actions (Permanent)

Construction in these areas does not result in new disturbance, requires minimal preconstruction treatment, and will normally require no post-construction actions (outside of routine maintenance). As described in Section B14.6 – Reclamation Plan, pre-treatment of existing weeds is one action that will be required in selected areas to protect from the infestation and the spreading of noxious weeds.

Reclamation Level 2 (RL2) – Low Level of Disturbance, Few Actions (Temporary)

Construction and activities in these areas are temporary and will result in disturbance that is confined to overland construction, including vegetation crushing requiring limited reclamation actions. As presented in Section B14.6 – Reclamation Plan, reclamation actions focus on noxious weed control, decompaction, and seeding of affected soils.

Reclamation Level 3 (RL3) – Moderate Level of Disturbance, Several Actions (Temporary)

Construction and activities in these areas will result in moderate temporary disturbance, limited to clearing and cutting of vegetation and several reclamation actions as described in Section B14.6 – Reclamation Plan. In addition to the actions described under RL2, cleared vegetation will be used as

vertical mulch and supplemental mulch such as straw may be used to protect cleared areas. Areas of reclamation will be flagged or signage provided for protection in areas as appropriate.

Reclamation Level 4 (RL4) – Moderate/High Level of Disturbance, Few Actions (Permanent)

Construction of Project facilities in these areas results in a high level of disturbance (e.g., clearing, cutting, and soil removal); however, few reclamation actions will be required because these areas are permanent. This applies most specifically to new access roads that will serve for long-term maintenance and operation of the transmission line. In these locations, seeding and alternative seeding will be applied where appropriate and replacement of soils and vertical mulch will be limited.

Reclamation Level 5 (RL5) – High Level of Disturbance, Maximum Actions (Temporary)

These are the construction areas that will result in a high level of disturbance due to vegetation and soil removal, but are planned for long-term reclamation. In these areas, as presented in Section B14.6 – Reclamation Plan, actions pertaining to soil salvage and seeding will be necessary to reclaim the disturbed seedbank.

Table B14-3 identifies the various RLs to be specifically applied for each of the construction components and associated disturbance levels/durations. In general, the order of preference for disturbance levels, from greatest to least, is overland drive-and-crush, clear-and-cut, and , and blading.

TABLE B14-3
CONSTRUCTION COMPONENT - RECLAMATION LEVELS

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Permanent	Temporary	
Structure work area	D2: Overland Drive-and-Crush		●	RL2
	D3: Overland Clear-and-Cut		●	RL3
	D4: Clear-and-Cut with Soil Removal		●	RL5
Wire-pulling and tensioning sites, wire-splicing sites, wash stations, multi-use construction yards, staging areas, guard structures, and other ancillary facilities that result in temporary disturbance.	D2: Overland Drive-and-Crush		●	RL2
	D3: Overland Clear-and-Cut		●	RL3
	D4: Blading		●	RL5
Helicopter landing/laydown areas, helicopter refueling sites	D2: Overland Drive-and-Crush		●	RL2
Regeneration sites and other ancillary facilities that result in permanent (long-term) disturbance	D2: Overland Drive-and-Crush	●		RL1
	D3: Overland Clear-and-Cut	●		RL4
	D4: Blading	●		RL4
Substation construction areas	D2: Overland Drive-and-Crush		●	RL2
	D3: Overland Clear-and-Cut		●	RL3
	D4: Blading	●	●	RL4/RL5

TABLE B14-3 CONSTRUCTION COMPONENT - RECLAMATION LEVELS				
		Disturbance Duration		Reclamation Level
Construction Component	Disturbance Level	Permanent	Temporary	
Existing paved roads, access roads (no improvement)	D1: No New Disturbance	●		RL1
Existing access road (with improvements)	D4: Clear-and-Cut with Soil Removal	●		RL4
New access road	D2: Overland Drive-and-Crush	●	●	RL1/RL2
New access road	D3: Overland Clear-and-Cut	●	●	RL4/RL3
New access road	D4: Blading	●	●	RL4/RL5

B14.6 Reclamation Plan

The actions required specifically for each level of reclamation (RL1 to RL5) with respect to the reclamation zones previously discussed (Z1 to Z4) are presented in this section of the plan.

Reclamation actions are physical treatments and activities that will occur throughout each phase of the Project and are specific to the levels of reclamation as previously discussed and illustrated in the Reclamation Action Identification Table (Table B14-4). These actions will facilitate resource protection during construction, recovery for areas temporarily disturbed by Project construction, and promote the re-establishment of vegetation similar in species composition cover and diversity to preconstruction conditions in predetermined areas.

The reclamation actions described in this plan are consistent with the relevant mitigation measures defined in Section 5 of the POD and all other mitigation measures identified in Appendices A and B of this POD. The Reclamation Action Identification Table (Table B14-4) was created to illustrate appropriate reclamation actions for each reclamation zone and level as they would occur during preconstruction and post-construction activities. Reclamation Zones, facility features, disturbance types, and vegetation communities have been identified in Volume II – POD Map Sets 1, 2, and 3. Table B14-3 is to be used to discern RLs presented in Table B14-4 for each construction component as they occur in the reclamation zone. If a variance is required due to unforeseen environmental or engineering constraints, Table B14-3 provides direction for reclamation actions in areas where modifications are required.

As described below, preconstruction actions are those that occur before construction of the Project is initiated to preserve resources or features of interest, and include activities associated with right-of-way preparation for reclamation and preconstruction activities. Post-construction actions focus on activities that will occur after Project construction has terminated and generally include reclamation and maintenance activities.

If these reclamation practices cannot be implemented immediately following construction, the appropriate interim erosion control measures discussed in the Stormwater Pollution Prevention Plan (SWPPP) (to be developed by the Construction Contractor(s), refer to Appendix B2 – Stormwater Pollution Prevention Plan Methodology) will be installed until revegetation can occur.

B14.6.1 Right-of-Way Preparation and Preconstruction Actions

Right-of-way preparation includes general site preparation involving flagging of the right-of-way boundaries and construction areas. It also includes identification of plants to preserve in place, weed infested areas, and storage areas for windrowed plant and soil materials. Monitoring sites will also be established during preconstruction activities, as described in Section B14.7 –Reclamation Success, Standards, Monitoring, and Maintenance. Preconstruction actions focus on protection of sensitive areas and resources identified for preservation. Disturbance related to Project construction may begin after all right-of-way preparation and preconstruction actions have been completed for that segment.

Preconstruction actions identified for the Project are discussed below.

B14.6.1.1 Weed Plan Implementation

Refer to Appendix B10 – Noxious Weed Management Plan for specific mitigation measures to implement where noxious weeds have been identified as well as preventive measures to be implemented to prevent the spread of noxious weeds during construction and minimize impacts on sensitive plants. When control measures have been implemented for the preconstruction phase, subsequent actions for right-of-way preparation may proceed.

B14.6.1.2 Monitoring Transect Selection

As discussed in Section B14.7.2 – Monitoring Practices (Methodology), preliminary site monitoring locations will be established along the right-of-way based on Project engineering data provided in Volume II – POD Map Sets 1, 2, and 3 during preconstruction surveys. Sites will be selected for each of the reclamation zones and vegetation communities traversed by the Project, illustrated in Figures B14-1 and B14-2, as well as each disturbance area affecting sensitive plants. The number of sites on federally managed lands will be based on criteria needs and approved by the BLM and USFS. An average of five paired (treatment and control) monitoring sites per vegetation community is recommended, based on the type of vegetation community and the size of its affected area. Larger areas affected (relative to other vegetative communities) may require more than the recommended average of five paired monitoring sites while smaller areas may require less. Once monitoring site locations are finalized, photographs will be taken prior to any construction-related disturbance.

B14.6.1.3 Selective Clearing/Feathering (Wire Zone-Border Zone Technique)

Selective clearing and feathering is the normal practice for mitigating impacts in areas where trees or brush of high densities have been cleared due to Project activities. Additionally, selective clearing and feathering can be implemented to meet safety standards for conductor clearance for the Project. A representative of the Proponent's vegetation management group will participate in the identification of trees or brush to be selectively cleared. Selective clearing and feathering is to be specifically considered in the conifer woodland reclamation zones of the Project. Guiding principles used in the clearing of vegetation during construction are described below.

TABLE B14-4
RECLAMATION ACTION IDENTIFICATION TABLE

	Reclamation Zone 1 (Conifer/Woodlands)					**Reclamation Zone 2** (Shrub-lands)					**Reclamation Zone 3** (Grasslands)					**Reclamation Zone 4** (Wetlands/Riparian and Playa)				
Reclamation Level	**RL1**	**RL2**	**RL3**	**RL4**	**RL5**	**RL1**	**RL2**	**RL3**	**RL4**	**RL5**	**RL1**	**RL2**	**RL3**	**RL4**	**RL5**	**RL1**	**RL2**	**RL3**	**RL4**	**RL5**
PRECONSTRUCTION ACTIONS																				
Weed plan implementation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Selective clearing/feathering			●	●	●													●	●	●
Topsoil segregation					●					●					●					●
Windrow vertical mulch			●	●	●			●	●	●								●	●	●
POST-CONSTRUCTION ACTIONS																				
Earthworks		●	●	●	●		●	●	●	●		●	●	●	●		●	●	●	●
Topsoil replacement					●					●					●					●
Seeding		●	●	●	●		●	●	●	●		●[1]	●[1]	●	●		●[1]	●[1]	●	●
Alternative seeding		●	●	●	●		●	●	●	●		●[1]	●[1]	●			●[1]	●[1]	●	
Supplemental planting																		●		●
Vertical mulch replacement			●		●			●		●								●[2]		●[2]
Permeon™ (or approved equal)[2]			●	●	●			●	●	●			●	●	●			●	●	●
Supplemental mulch				●					●				●	●	●			●	●	●
Off-highway vehicle (OHV) deterrent		●	●		●		●	●		●		●	●		●		●	●		●
Signage		●	●		●		●	●		●		●	●		●			●		●
Monitoring		●	●	●	●		●	●	●	●		●	●	●	●		●	●	●	●

NOTES:
[1]Seeding and alternative seeding to be applied only as required and described in Appendix B10 – Noxious Weed Management Plan
[2]To be approved on case-by-case basis by BLM or USFS and reclamation Subcontractor
RL = Reclamation level

Where tree removal is necessary within the right-of-way, trees will be cut primarily in accordance with the principles of the Wire Zone-Border Zone technique described in Section 4 of this POD. Tree and shrub removal will only occur within authorized areas and trees to be thinned, or selectively cleared, will be identified (flagged) by the Construction Contractor(s) and coordinated with the CIC.

The Construction Contractor(s) will prune trees in preference to cutting trees, and will cut trees in preference to bulldozing them, in coordination with the CIC. Cut material may be placed in slash piles and/or used as vertical mulch as approved by the BLM and USFS. Pruning will comply with Proponent's Transmission and Distribution Vegetation management program specification manual. Pruning will be accomplished by use of pruning saws, power saws, nippers, bow saws, or cross-cuts. Use of axes for pruning will be prohibited.

Where necessary, tree removal will be accomplished by cutting as near to the surrounding grade wherever possible, and will not exceed 8 inches above grade when measured on the downhill side of the tree, and 2 inches on the uphill side of the tree. Where tree removal is necessary through dense stands of timber, feathering of the edge may occur in selective areas to visually soften the edge between the cleared and remaining trees as approved by the BLM and USFS.

Where the right-of-way crosses sensitive roads and trails, such as scenic or historic designated routes, selective clearing shall allow natural vegetation to be left in the right-of-way on each side (as possible). Also, cutting or pruning of trees will occur so the fresh cut is oriented away from these areas where possible. To the extent practicable, pruning should occur around the entire tree, to reduce the appearance of flat sided trees facing facilities.

Removal of "snags" also will be avoided where possible. Snag trees are large, often dead trees that provide wildlife habitat created by voids in the trunk. Raptors, particularly, can be found nesting in these trees.

B14.6.1.4 Topsoil Segregation

This activity includes the separation of topsoil from subsoils (if subsoils are disturbed), which contains organic material, including the seeds of plants growing on the site, to be set aside for post-construction replacement. The Construction Contractor(s) is to conduct topsoil salvage and include all rocks and vegetation as vertical mulch. The depth of topsoil separation will be dependent on the soil type within which the reclamation activity will occur and will be identified by the Construction Contractor(s) and approved by the BLM or USFS Authorized Officer or his/her designated representative. This topsoil should be labeled as such and protected from erosion and inadvertent use as fill. Topsoil shall never be mixed with subsoil. When stockpiled, topsoil shall be tackified with water to a 2 inch wetting depth to minimize erosion. Overall handling should be kept to a minimum. Separation between salvaged topsoil and subsoils will always be maintained. Topsoil taken from areas of sensitive plant populations shall be stockpiled separately from other topsoil and replaced in the same location from which it was taken as soon as practical (refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan).

B14.6.1.5 Windrow Vertical Mulch

Materials, including dead plants, cut plants, and rocks, are to be temporarily set aside during right-of-way preparation so they may be shredded or otherwise placed on the soil surface (post-construction) to increase fertility, provide microclimates for seeds to germinate, and stabilize soil. Large rocks and boulders shall also be removed to the side. Care will be taken to prevent the disturbance of the natural

patina or desert varnish of these rocks. Rocks over 6 inches can be removed and stockpiled outside the disturbance areas (within the right-of-way). If an outcrop of boulders will be disturbed, some specimens may be windrowed as recommended by the Construction Contractor(s) and approved by the CIC. In some vegetation communities where mulch density would be very high, removal of excess mulch offsite will be arranged after replacement quantities have been determined. Vertical mulch temporary storage areas will be located within the right-of-way. Project locations near sensitive viewers should locate windrowed mulch in a less visible area, where possible.

B14.6.2 Post-Construction Actions

Post-construction actions occur after Project construction has terminated, and primarily focus on stabilizing permanent use areas and restoring temporary areas to allow reoccupation of vegetation. Construction Reclamation actions that may be used are defined below and are organized by their sequence of implementation. The Construction Contractor(s) shall describe and document the specific techniques for the reclamation actions identified below in a site specific post-construction treatment plan that will be reviewed and approved by the BLM or USFS Authorized Officer or his/her designated representative before post-construction actions commence.

B14.6.2.1 Earthworks

These activities may include (1) recontouring (2) soil decompaction, and (3) applying appropriate soil erosion measures in conformance with the SWPPP. Earthmoving equipment replaces the removed material as close to the pre-construction contour as possible to reclaim the visual quality and provide stability to the slope. Soil decompaction, if required, may include ripping or scarifying to allow permeation of water into the ground. Erosion control measures such as water bars may be installed as recommended by the Construction Contractor(s) or CIC and used in conformance with the SWPPP, as described in Appendix B2 – Stormwater Pollution and Prevention Plan Methodology of the POD. Topsoil shall be replaced following recontouring and soil decompaction (refer to B14.6.2.2 – Topsoil Replacement).

Recontouring includes burying subsurface soils (backfilling holes) excavated during construction activities so the natural terrain contours are maintained to the extent practicable and do not inhibit access for maintenance activities. Excess subsoil from excavated or graded areas (around transmission tower bases) will be evenly spread over disturbed areas and moistened and compacted to a relative average density comparable to undisturbed adjacent material before respreading topsoil. Subsoils will not be spread outside of these flagged construction areas and will be restricted to areas of permanent disturbance (i.e., access roads).

Where any compaction or detrimental puddling exists, the surface will be ripped or scarified to a depth of 6 inches as appropriate (e.g., not applicable to rock faces, severe slopes, or cliff areas), and will retain a 12-inch buffer from existing vegetation or plants designated as preserve in place. Depth and area of compaction and/or puddling relief will depend on site-specific conditions. Decompaction or ripping will be conducted to avoid corn rows. Cross-ripping is preferable and care should be taken to prevent inverting the soil layers and preserving any vegetation in place. Deep sandy soils do not need to be decompacted and will not be ripped.

Installation of water bars or other erosion control measures will be coordinated with the Construction Contractor(s) in coordination with the CIC and detailed to site specific conditions.

B14.6.2.2 Topsoil Replacement

Topsoil will be replaced without mixing with subsoil. The purpose of this practice is to prevent mixing fertile, shallow soils with deeper soils that may be less productive because of rock, gravel, sand, calcareous layers, salinity, or other chemical characteristics that would adversely affect desired vegetation. Salvaged topsoil shall be dispersed evenly across the disturbed site. Topsoil taken from areas of sensitive plant populations shall be replaced in the same location from which it was taken as soon as practical (refer to Appendix B6 – Plant and Wildlife Species Conservation Measures Plan). Additional erosion control and soil stabilization may be required to minimize soil movement, especially for heavily sloped areas or for fine-textured soils, as determined by the CIC, in conformance with the SWPPP and Appendix B7 – Erosion, Dust Control, and Air Quality Plan. Handling of surface soil will be minimized during windy conditions. Soil will be wet to a depth of 2 inches to prevent further erosion. The site will be left adequately rough after surface soil placement to provide micro sites for seed germination and to prevent significant movement of soil by seasonal weather events (wind or rain).

B14.6.2.3 Seeding

Reseeding involves planting new seed of indigenous native species to establish desired vegetation within affected areas. However, in some cases as determined by the BLM or USFS, non-native species may be recommended in seeding mixes as a tool to improve chances of reclamation success when ecological site(s) have large quantities of invasive species such as cheat grass or red brome or other limiting factors such as precipitation variability and ecological site potential. Attachment B includes a list of approved seed mixes provided by each BLM and USFS field office crossed by the Project. In this regard, mixtures that discourage the establishment of invasive and noxious weeds or encourage the establishment of sensitive plant species will be considered as described under Alternative Seeding below. Seed mixtures will be based on vegetation communities described in Section B14.4 – Overview of Existing Environments and site-specific vegetation conditions identified in the field by the Construction Contractor(s) and approved by the BLM or USFS Authorized Officer's designated representative. Reseeding will be conducted at the first appropriate time after completion of construction. Seeding methods (e.g., drilling, hydroseeding, and broadcasting) and timeframe for seeding will be identified by the Construction Contractor(s) and approved by the BLM or USFS Authorized Officer's designated representative. Seeding for Project areas outside the jurisdiction of the BLM Cedar City Field Office are recommended to be performed during September 1 through December 15 to maximize the chance of success. Within the jurisdiction of the BLM Cedar City Field Office, seeding is recommended to be performed during October 15 through December 15. If seeding operations are delayed due to weather or other Project constraints, undesirable vegetation will be removed prior to seed application (refer to Appendix B-10, Noxious Weed Management Plan). Seeding shall be repeated if a satisfactory stand is not established as determined by the authorizing agency officer upon evaluation after the second growing season, in conformance with the standards identified in Section B14.7 – Overview of Existing Environments. Where substation landscaping is required, native species will be selected that do not require irrigation once established.

In order to favor recolonization by sensitive plant species and reduce competition among sensitive plants and other plant species in disturbed areas with sensitive plants, the Construction Contractor(s) shall prepare site-specific reseeding/revegetation/soil stabilization plans for all areas disturbed by construction or maintenance within 500 feet of mapped sensitive plant occurrence. The site-specific revegetation/reseeding/soil stabilization plans shall be approved by the BLM or USFS Authorized Officer or his/her designated representative prior to implementation. The plans shall be designed to ensure sensitive plant species are re-established and are not disadvantaged. The plans shall include proposed seed mixes, seeding application rates, seeding methodologies, seeding timeframes, and any other revegetation

or soil stabilization techniques (e.g., natural recolonization, alternative seeding, supplemental planting, supplemental watering, supplemental mulch, surface pocking, the use of soil stabilizers). The seed mixes shall be developed in consultation with the BLM or USFS botanist, favor the sensitive plant species, and be based on the site-specific vegetation found on the undisturbed areas adjacent to the areas to be revegetated or reseeded. If the standards identified in Section B14.7 – Reclamation Success Standards, Monitoring, and Maintenance for the percent of sensitive plants (refer to Table B14-5) are not met by the third year of monitoring, seeds from unaffected sites are to be collected and used to augment recolonization during years 4 and 5.

BLM-administered lands in the Fillmore and Cedar City Field Offices are subject to high winds. In order to promote germination and prevent seed loss, seed bed preparation will include roughening of the surface as directed by the agency in coordination with the Construction Contractor(s) and CIC. Where rangeland drills are used to apply seed, a furrow depth of approximately 6 inches is recommended.

B14.6.2.4 Alternative Seeding

Alternative seeding is employed to establish ground cover in disturbed or weed infested areas by seeding of annual grasses and/or forbs. The annual grasses are usually sterile rye or oats, since the regeneration of non-natives is not desirable. Annuals provide short-term soil cover, stabilization, and a source of organic litter until other vegetation can become established. Similar to regular seeding, alternative seeding mix compositions and seeding methods will be determined prior to construction through coordination with a BLM or USFS botanist, range management specialist, seed core officer, or soil scientist (as determined by the BLM or USFS Authorized Officer or his/her designated representative).

B14.6.2.5 Supplemental Planting

Supplemental planting will be employed in Z4 areas as an additional technique to achieve rapid site disturbance recovery and stabilization. The feasibility of supplemental planting will be assessed on a case-by-case basis, and will be implemented where local conditions are favorable to the success of continued establishment of the planting. Where supplemental planting is determined to be a viable reclamation option, planting types and patterns will mimic conditions found in surrounding undisturbed areas. In general, areas conducive for supplemental planting include, but are not limited to, riparian/wetland areas, areas of lesser slope and erosional runoff, and areas with relatively low rates of herbivory.

B14.6.2.6 Vertical Mulch/Slash

Vertical mulch/slash is brush and limbs less than 6 inches in diameter removed during tree operations. Vertical mulch/slash is not entirely in contact with the soil surface, rather, parts of the mulch rise above the surface. Removed and stored trees and shrubs are the sources of vertical mulch/slash. For cleared areas, vegetation windrowed to the outside of the disturbance boundary will be replaced back onto the site. Vertical mulch/slash should be placed randomly and in accordance with Section 2.7, Slash Disposal, of PacifiCorp's Transmission and Distribution Vegetation Management Program Specification Manual (2012) (refer to Appendix C2). Additionally, all non-merchantable biomass on BLM-administered lands that exceeds three (3) inches in diameter will be treated as follows. These specifications address insect and fire-risk concerns:

- All remaining green pinyon pine slash greater than three (3) inches in diameter shall be cut into lengths not to exceed 18 inches and scattered in a sunny location.

- All remaining dead pinyon, and all green or dead juniper slash greater than three (3) inches in diameter shall be cut in lengths not to exceed four (4) feet.

- All slash shall be in contact with the ground and rise no higher than 24 inches above the ground.

- All branches shall be severed from the main trunks of cut trees as close to the main stem as is feasible.

- Alternatively to lopping, non-merchantable and slash may be chipped and the chips may be removed or scattered. If chipping is done between May 1 and August 31, green pinyon chips shall not be scattered within 60 feet of living pinyon pine. This will not apply to dry material regardless of the chipping date or to green material chipped between September 1 and April 30.

- All vertical mulch (including large rocks and boulders as described below) will be scattered on temporary disturbance areas in a natural manner that is consistent with agency visual resource management objectives.

Large rocks and boulders removed to the side of the disturbance will be placed back with the darkened side facing up in a natural appearing pattern. Permeon™ (or approved equal, refer to Section B14.6.2.7) may be applied to rocks to enhance the desert varnish, when necessary, according to the manufacturer's specifications where approved by the BLM or USFS based on site conditions. Boulder outcrops that were windrowed shall be replaced by the Construction Contractor(s) in a manner similar to preconstruction conditions where possible.

B14.6.2.7 Permeon™ (or Approved Equal)

Permeon™ (or approved equal) is an artificial desert varnish that reproduces natural colors similar in appearance to aged desert varnish in a short period of time. It is non-toxic to plants and animals. In areas identified as having high visual sensitivity (e.g., BLM Visual Resource Management Class II areas, trails, scenic roads, residential viewers, etc.), and depending upon the soil type, Permeon™ (or approved equal) may be required if the soil surface contrast is high, due to cut slopes and aged rocks (Selective Mitigation Measure 16, Table 5-2). Application rates and color tint will be site specific and may require both a blanket application and spot treatments depending on the adjacent natural landscape. The product is applied via backpacks or a truck-mounted sprayer, if access to the area adjacent to the reclamation site remains open. Product application may be necessary for large boulders that have been windrowed, and application would occur after they have been replaced as recommended by the Construction Contractor(s) and approved by the CIC. Application rates and techniques will be determined by the Construction Contractor(s) and/or BLM or USFS Visual Resource Specialist.

B14.6.2.8 Supplemental Mulch

Mulch usually consists of shredded plant material or straw, but also includes wood fiber, paper mulch, or biodegradable erosion mats. Straw mulch may be utilized as an alternative to vertical mulch when vertical mulch is not available or will not provide adequate coverage in areas that will not be seeded. Hydroseeding, wood fiber, use of tackifiers or erosion blankets may be a less expensive alternative to straw mulch in areas that require seeding as well. The quantity of mulch to be used shall be recommended

by the Construction Contractor(s) and approved by BLM or USFS based on site conditions and will be installed according to the manufacturer's specifications. Straw mulch and other alternative mulches shall be weed-free as specified in Appendix B10 – Noxious Weed Management Plan. Hay will not be used on BLM-administered land.

B14.6.2.9 Off-Highway Vehicle Deterrents

Operation of OHVs can cause mechanical damage to stabilization structures and soils and mortality to plants. Access by such vehicles will be limited in areas of reclamation. Measures to minimize or eliminate access may include the installation of signs, fences with latching/locking gates, selectively placed boulders, and/or vertical mulch of heavy woody material. Development of site-specific off-highway vehicle (OHV) deterrents will be determined on a case-by-case basis based on BLM requirements and Construction Contractor(s) recommendations. . Specific areas of potential access to the right-of-way by OHVs have been identified (refer to Volume II– POD Map Sets 2, and 3), and measures to minimize or eliminate access will be identified on a site-specific basis, as appropriate. Locations of additional OHV deterrents may be required as determined by the BLM or USFS Authorized Officer or his/her designated representative.

Site-specific OHV deterrents identified by the Fishlake National Forest are included in Attachment A of Appendix B1 – Traffic and Transportation Management Plan. Specific locations of OHV deterrents are to be verified in the field with a Fishlake National Forest Representative as reclamation occurs.

On the Dixie National Forest, OHV deterrents are to be located at the beginning of each new temporary access route (refer to Volume II –POD Map Sets 2 and 3). The specific location and type of the OHV deterrent to be used will be identified by an authorized Dixie Forest Representative as reclamation occurs. The specific type of OHV deterrent to be used will be selected from the OHV deterrent prescription options identified in Section 3.1.2.1.1 – Closed Routes of the *Dixie National Forest Motorized Travel Plan Implementation Plan* (refer to Attachment B of Appendix B1 – Traffic and Transportation Management Plan).

B14.6.2.10 Signage

Reclamation areas will require informational signs pertaining to reclamation efforts to prevent further disturbance by humans within these recovering areas. All reclamation areas will have signs installed at locations where the right-of-way intersects permanent access roads to deter vehicular damage to the site. The sign shall read "Restoration in Progress – No Vehicle Traffic Allowed". Refer to Table A1-1 in Appendix A1.3.2.1 – Signing for flagging scheme.

The Construction Contractor(s) will provide the reclamation signs and t-posts. Sign locations will be provided by the Construction Contractor(s) to the BLM or USFS following completion of post-construction reclamation procedures and prior to the initiation of reclamation monitoring.

B14.6.2.11 Reclamation Monitoring

Monitoring will be conducted prior to construction and continue through post-construction phases of the Project. Evaluation of reclamation success will be based on criteria as described in Section B14.7.1 – Reclamation Goals and Success Standards.

B14.6.3 Modifications and Field Changes

The reclamation actions described in this plan shall be implemented in coordination with the Construction Contractor(s) or assigned Subcontractor and will be coordinated with the CIC. Adjustments to RLs or actions by the Construction Contractor(s) may be necessary if Project conditions change (e.g., disturbance levels change at a specific tower work site, access roads disturbance type changes based on Project needs, etc.). However, any changes to these levels of reclamation and the associated actions will be reviewed and approved by the CIC. This plan is intended to provide flexibility with respect to construction and unknown constraints that may be encountered in the field. Changes to the original disturbance level or duration, previously described, will be documented by the Construction Contractor(s) and reclamation level will be reassessed to ensure appropriate reclamation actions will be implemented.

As described in Section B14.3.1 – Responsible Parties, additional linear facilities have been proposed in the same area to be occupied by the Project. Where feasible, consolidation of access (i.e., utilizing existing access from other facilities or retaining Project construction access for additional future facilities use, thereby reducing overall new road construction) may result in an overall reduction of access-related concerns and/or impacts to the environmental resources within and near the right-of-way.

B14.7 Reclamation Success Standards, Monitoring, and Maintenance

This plan requires post-construction reclamation monitoring to evaluate reclamation success of reclaimed areas associated with the construction of Project facilities, to identify the need for adaptive management measures, and to make a final determination regarding reclamation success to release the Proponent (and the Construction Contractor[s] by contractual obligation) from further monitoring and reclamation actions.

Reclamation success standards will be used by the BLM and USFS to determine if the implemented reclamation actions have adequately achieved the goals and objectives outlined in the reclamation plan, with consideration for the local site conditions. The monitoring practices include standard techniques for monitoring sites, data collection, as well as the quantitative (numerical) and qualitative (descriptive) measures to be used in monitoring reclamation success. Specific monitoring requirements, including the site specific data analysis protocol, will be developed by the Reclamation Contractor in cooperation with the BLM and USFS prior to start of preconstruction activities. This will allow the BLM to make more accurate conclusions pertaining to reclamation success based on site specific conditions, such as biotic community and climatic conditions, once construction has been completed.

The CIC or third-party contractor will prepare and submit to the Proponent, the BLM and USFS Authorized Officers, and the Construction Contractor(s), a Reclamation Monitoring Report on an annual basis for up to 5 years following completion of construction. The purpose of the Reclamation Monitoring Report is to (1) present reclamation goals and success standards (2) describe the monitoring practices to be implemented, and (3) discuss adaptive management and site release from monitoring. The foundation of the Reclamation Monitoring Report will describe, in detail, the monitoring practices used in developing the Reclamation Monitoring Report, and will, at a minimum, include:

- a description of the monitoring practices implemented,
- a presentation of the annual reclamation goals and successes, and
- a discussion of the adaptive management and proposed site release(s) from monitoring.

Adaptive management may be necessary to determine appropriate remedial actions, based on monitoring observations, for sites that have not demonstrated a trend toward reclamation success. If required, implementation of remedial actions will be determined by the BLM and USFS based on the monitoring data and annual report. After 5 years of post-construction monitoring, a final report will be submitted to the BLM and USFS summarizing monitoring data, observations, and the overall trend toward reclamation for each vegetation community. Areas with sensitive plant occurrences affected by Project activities will be monitored to determine whether the sensitive plants are recolonizing the site, if soils are stable or erosion is occurring, and if noxious weeds are present. If necessary, a post construction site-specific treatment plan to encourage establishment of the sensitive plants and other desired vegetation, stabilize soils, and address noxious weeds in these areas will be provided by the Construction Contractor(s) or Reclamation Contractor for review and approval by the BLM or USFS Authorized Officer or his/her designated representative. The Proponent will be released from further reclamation and monitoring after the report and annual monitoring data are submitted to the BLM and USFS documenting that a reclamation success criteria have been met. However, reclamation in soils with low moisture and salt content or areas with sensitive plant occurrences may take longer than 5 years to re-establish satisfactory vegetative cover and the Proponent would maintain responsibility for post construction monitoring for these areas.

B14.7.1 Reclamation Goals and Success Standards

Consistent with reclamation plan statement in Section B14.1, "the intent of this plan is to provide a framework for reclamation treatments to be applied to the Project upon identification of construction-related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas such that these areas are functionally and visually compatible…" Reclamation success, as presented in this monitoring plan, is defined by the progression of vegetation and soils toward preconstruction disturbance conditions.

As presented in Section B14.3.1 – Responsible Parties, the Proponent will be responsible for monitoring reclamation efforts for the Project. Reclamation success will be evaluated by the BLM and USFS by comparing Project-affected treatment sites with control site conditions in terms of desirable species density and cover. Reclamation of treatment sites will be considered successful if each site is within a specified percentage of the mean native species density and cover of the control site and the specified percentage of sensitive plants are re-established within each area of disturbance affecting sensitive plants. Control sites will be representative areas that exhibit the same target plant community located adjacent to, or near the Project-affected treatment sites. The establishment of control sites within undisturbed communities will allow the monitor to compare the reclamation progress of the treatment site against the control site.

The specifications in the Reclamation, Revegetation, and Monitoring Framework Plan detail reclamation zones and RLs that provide guidance for specific reclamation actions. This plan presents four reclamation zones, which have been identified based on vegetation characteristics aggregated by biomes. Particularly sensitive environmental features (e.g., sensitive plant areas, critical winter range habitat, noxious weeds, etc.) throughout the Project may require additional reclamation actions to mitigate disturbance issues associated with the Project and maximize the prospect for reclamation success.

Reclamation success is highly dependent on vegetation community type, environmental conditions (e.g., annual precipitation), avoidance of future disturbance, proper implementation of reclamation actions, and to a certain extent, reclamation zone. Recommended success standards will be monitored within each of the previously described reclamation zones specific to the setting of the Project, including topography and the vegetation communities as identified in this plan, and sensitive plant disturbance areas. If the final

monitoring report concludes (with agency concurrence) typical environmental conditions, proper implementation of reclamation actions, and lack of disturbance is evident, reclamation success will be based on desirable vegetation cover and density for each community type and the number of sensitive plants that occupy each areas of disturbance affecting sensitive plants, as presented in Table B14-5 and illustrated on Figures B14-1 and B14-2. If these conditions are not evident by the final monitoring report (with agency concurrence), adaptive management and/or remedial actions (Section B14.7.4 – Adaptive Management and Site Release) may be required by the BLM/USFS. Percent cover (amount of vegetation canopy per unit) and density (number of plant species per unit) will be based on the quantitative data (refer to Section B14.7.3 – Data Collection) collected from the control plot for each monitoring site. For example, if a control plot in Great Basin Desert shrub exhibits an average of 30 percent native vegetation cover, a treatment plot with 18 percent native cover would indicate reclamation success. These standards have been established by the BLM and USFS and may be modified, if appropriate, by the BLM or USFS prior to preconstruction activities for the Project.

Reclamation of new permanent roads within the Fishlake National Forest will be in accordance with the Sigurd to Red Butte #2 Transmission Line Project Fishlake National Forest OHV Deterrent Strategy (refer to Attachment A of Appendix B1 – Traffic and Transportation Management Plan). Reclamation of permanent roads will be considered successful when perennial vegetation is re-established onsite as approved by the Fishlake National Forest Representative. A specific success standard of established vegetation cover is not identified; however, some of the seed onsite must be established for the protection of vegetation and water resources, soil stabilization, and to blend the road into the natural surroundings.

TABLE B14-5
RECLAMATION MONITORING SUCCESS STANDARDS

Vegetation Community (as found in Section B14.4)	Percent Desirable Vegetation Cover	Percent Desirable Species Density	Percent of Sensitive Plants[1]
Bureau of Land Management			
Riparian	80	50	Not applicable
Barren/sparsely vegetated	–	–	Not applicable
Disturbed areas of sensitive plants	Not applicable	Not applicable	Not applicable
All other vegetation communities	60	50	Not applicable
U.S. Forest Service			
Disturbed areas of sensitive plants	50	50	50
All other vegetation communities (non-riparian)	80	--	Not applicable

NOTE: [1]Percent of the numbers of sensitive plants (measured by stem count) that occupied the areas of disturbance prior to disturbance that are re-established within each area of disturbance affecting sensitive plants

B14.7.2 Monitoring Practices (Methodology)

All monitoring sites will be delineated during preconstruction activities and will include the collection of baseline data for subsequent post-construction monitoring. Post-construction annual monitoring and collection of data will be conducted during the flowering season after construction and reclamation actions are completed. An annual summary of monitoring information will be provided to the BLM and USFS for review and discussion of reclamation conditions. As currently anticipated, construction activities will result in varying disturbance levels that will require two types of monitoring:

1. **General route monitoring**. General field reconnaissance (windshield survey) and reporting of conditions in treated areas along the entire length of the transmission line right-of-way.

2. **Site monitoring**. Detailed field reconnaissance and reporting at designated reclamation monitoring sites and control areas along the transmission line right-of-way.

A description of the activities associated with these two monitoring methods (practices), and how these practices will be assigned to areas affected by construction of the transmission line and associated facilities, is presented below.

The Proponent's contractor responsible for performing reclamation monitoring will consult with the BLM and USFS to adapt these protocols, as needed, to meet localized conditions and concerns.

B14.7.2.1 Route Monitoring

A general field review of the entire transmission line route, where accessible by vehicle, will be conducted in conjunction with annual site monitoring. The intent of this review is to document overall recovery conditions associated with the construction of the transmission line. Conditions to be observed may include areas of dead plants, establishment of noxious weed populations within the right-of-way or along access roads used for the Project, and/or significantly eroded soils. In lieu of establishing transects, documentation may include establishing single photo points at agreed on locations with the BLM and USFS, estimating area or plant populations affected, and/or recording the apparent cause or remediation efforts required. Site locations may be documented by the transmission line tower number or global positioning system coordinates. Adaptive management actions may be implemented based on findings from the route monitoring as recommended by the BLM and USFS and described in Section B14.7.4 – Adaptive Management and Site Release. Each annual visit will be used to assess designated route monitoring locations and document new locations where appropriate. Areas that will be considered through route monitoring are illustrated in Table B14-6.

TABLE B14-6
RECLAMATION MONITORING REQUIREMENTS

Construction Component (activity areas)	Disturbance Level	Disturbance Duration		Reclamation Level	Monitoring
		Permanent	Temporary		
Structure work area	D2		●	RL2	Route
	D3		●	RL3	Route
	D4		●	RL5	Route, Site
Wire-pulling and tensioning sites, wire-splicing sites, construction yards, staging areas, helicopter refueling sites, wash stations, guard structures, and other ancillary facilities that result in temporary disturbance	D2		●	RL2	Route
	D3		●	RL3	Route
Regeneration sites and other ancillary facilities that result in permanent (long-term) disturbance	D4	●		RL4	None
Existing paved roads, access roads (no improvement)	D1	●		RL1	None
Existing access roads (with improvements)	D4	●		RL4	None
Overland access	D2		●	RL2	Route
Overland access	D3		●	RL3	Route
New access roads	D4	●	●	RL1/RL5	None/Route, Site

B14.7.2.2 Site Monitoring

Preliminary site monitoring locations will be established along the right-of-way and temporary disturbance areas based on Project engineering data provided in Volume II – POD Map Sets 1, 2, and 3 during preconstruction surveys, in accordance with the processes identified below. Sites will be selected for each of the reclamation zones and vegetation communities traversed by the Project illustrated in Figures B14-1 and B14-2.

- Site selection will be prioritized to include sensitive plant areas and locations with high visual resource values.
- At least one pair of monitoring sites shall be located within each area of disturbance affecting sensitive plants.
- Where possible, site monitoring locations will meet more than one of these selection criteria, and the number of sites will be determined by the BLM and USFS.
- An average of five paired (treatment and control) monitoring sites per vegetation community is recommended based on the type of vegetation community and the size of its affected area, as well as one pair for each area of disturbance affecting sensitive plants.
- Vegetation communities with larger areas affected (relative to other vegetation communities in the Project area) may require more than the recommended average of five paired monitoring sites, while vegetation communities with smaller areas affected (relative to other vegetation communities in the Project area) may require less.

Final determination of monitoring sites will be approved by the BLM and/or USFS prior to construction. Cooperation with the Contractor(s) may be necessary immediately prior to construction if changes to construction work area(s) affect the location of the preliminary monitoring site. Once monitoring site locations are finalized, photographs will be taken (1) prior to any construction-related disturbance, (2) when initial reclamation efforts have been completed, and, (3) during each yearly monitoring visit.

For each monitoring site, paired vegetation transects will be installed and documented as treatment or control for quantitative monitoring. In general, the treatment transect will be placed within an affected area (normally within the immediate right-of-way), and the control transect will be placed immediately adjacent to the right-of-way, on undisturbed ground. Transect size and quantity will be determined based on the final footprint of disturbed areas, in cooperation with the BLM and USFS. Transect pairs should be sized and oriented in a similar manner, for consistency, if terrain or construction conditions require deviation. In addition, the location of transect sites should avoid areas susceptible to future human disturbance (OHV, transmission line maintenance, planned future utilities), where possible, to preserve the integrity of each transect for the duration of the monitoring period.

Plots will be examined annually, and a variety of vegetation data will be collected including quantitative and descriptive information. Parameters that will be used to measure reclamation success are presented in detail in Section B14.7.1 – Reclamation Goals and Success Standards. Reclamation monitoring sites will also assess noxious and invasive weed establishment that may require remedial actions such as removal or treatment. However, it should be noted monitoring for known noxious weed locations may occur independently of reclamation monitoring, as outlined in Appendix B10 – Noxious Weed Management Plan. Reclamation monitoring will also include the consideration of erosion control as a key indicator to measure the trend toward reclamation success (where applicable), and remedial actions may be taken in conjunction with monitoring efforts to control erosion, as recommended by the BLM and USFS. These

remedial actions will also follow requirements as stipulated in Appendix B7 – Erosion, Dust Control, and Air Quality Plan of the POD.

B14.7.2.3 Monitoring Requirements

To address the various construction activities (components) associated with the transmission line, the disturbance types, and duration of disturbance associated with these construction activities, reclamation monitoring will occur according to the RLs (RL1 to RL 5) and their associated construction components as described in Section B14.5.2.4 – Reclamation Levels. Categories RL1 and RL4 (e.g., at structure bases, existing and long-term access) are permanent disturbance areas that will not require reclamation monitoring. However, all reclamation level areas will follow measures for noxious weed monitoring as specified in Appendix B10 – Noxious Weed Management Plan. RL2, RL3, and RL5 are temporary disturbance areas that will require reclamation actions and post-construction monitoring in selected locations to evaluate reclamation success. The highest disturbance level for construction activities is associated with RL5 areas that occur in temporary structure work areas and are associated with new access roads. A summary of reclamation monitoring requirements for these construction components (activity areas) is presented in Table B14-6.

The specific location of monitoring sites associated with these different activities in key areas (e.g., critical habitat, sensitive plant areas, visually sensitive areas, and areas of sensitive soils) will be identified, reviewed, and approved by the BLM and USFS prior to initiation of preconstruction activities. Once monitoring sites have been approved, the Construction Contractor(s) will establish the sites in the field and baseline data (i.e., photographs, biometrics, soil conditions) will be collected for subsequent monitoring up to 5 years following post-construction activities. For disturbed areas affecting sensitive plants, at minimum, photos from permanent photo plots, individual counts of sensitive plants within the affected areas, and noxious weed presence and treatment data will be collected and reported annually in the Reclamation Monitoring Report with an evaluation of whether recolonization is occurring.

B14.7.3 Data Collection

Reclamation monitoring will include both quantitative (numerical) and qualitative (descriptive) data collection at the designated monitoring sites approved by the BLM and USFS. Quantitative monitoring will document the trend and degree of change at each site, and qualitative monitoring will detect the initiation of change and changes resulting from environmental conditions, such as precipitation, allowing for a record of change over time.

Reclamation monitoring for the Project will use vegetation as the main indicator of recovery, but observations on soil conditions will also be collected and considered when assessing progress toward functionality. Measurements and descriptions will be accompanied by photographs that will be used to help document the status of recovery at all monitoring sites. Sampling points will be located and mapped according to global positioning system coordinates. Photographic reference points will be the primary method of qualitative monitoring for the Project. A protocol for taking photographs and a standardized data-recording form will be developed by the BLM and USFS to ensure consistency of monitoring. Qualitative (descriptive) and quantitative (numerical) information that will be gathered during general route monitoring and site monitoring are described in detail below.

B14.7.3.1 Qualitative (Descriptive) Information

Qualitative data collection will occur annually for both route and site monitoring. The goal of qualitative monitoring is to document site conditions and assess the need for remedial actions to ensure sites are progressing toward the success standard established by the BLM. The Project area typically has unpredictable weather patterns that may affect reclamation success within the allotted 5-year post-construction monitoring timeframe currently established by the BLM. Qualitative evaluations conducted at predetermined monitoring sites during monitoring will serve as representative indicators for similarly disturbed areas in the same vegetation community. These site evaluations will then serve as a baseline when conducting general overall route surveys for the remainder of the treated areas within that vegetation community. Any outstanding or non-Project-related disturbances that could affect reclamation will also be described during the general route monitoring. Recovery from construction-disturbance activities, such as clearing and grading in the semi-arid and arid climactic zones, typically does not occur in a short amount of time, and it is for this reason the monitoring plan will assess the trend toward reclamation success standards outlined in Section B14.7.1 – Reclamation Goals and Success Standards and presented in Table B14-5.

Reclamation success may be assessed by the presence or condition of certain site characteristics that encourage recruitment of native vegetation. Reclamation actions of a given site, if implemented successfully, are anticipated to contribute to the stabilization of soils, seedling or seedbank recruitment, and avoidance of the establishment of noxious weeds. Lack of erosion at a site provides evidence soils have been adequately stabilized, while natural recruitment and/or reproduction indicates important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Noxious weeds could potentially compete with native perennial species, and relatively high abundances can have negative effects on site conditions. Evidence of animal use also is used as an indicator that habitat conditions have been reclaimed; however, grazing can negatively affect reclamation success if unmanaged. Patterns of established vegetation help to determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation. Each of these site characteristics will help determine trends that relate to reclamation success. Once recruitment conditions have been met, established vegetation is anticipated to contribute to the maintenance and functionality of the community to ensure continued success after monitoring has concluded.

B14.7.3.2 Quantitative (Numerical) Information

Desirable vegetation cover will be numerically measured on those treatment sites, as identified with the BLM (refer to Section B14.7.1 – Reclamation Goals and Success Standards), during the third and fifth growing seasons (or sooner if deemed appropriate) to determine if there is a trend toward reclamation success based on comparison of the control transect for each site. Quantitative assessment during the third year will provide enough time for vegetation establishment of the affected areas based on climatic trends for the area. Trends toward reclamation success, as well as remedial actions (if necessary), will be identified during the third year. Quantitative monitoring in year five will allow any remedial actions or climatic events to discernibly affect treated areas. Density monitoring records the number of plants per unit of area. This technique is sensitive to changes in the vegetation community caused by climatic conditions and resource uses, and provides useful information on seedling emergence, survival, and mortality. Not all plant species present will be monitored. Monitoring will focus on indicator perennial species as determined by control-site observations of the adjacent plant community. Species density will be evaluated by comparing the total number of indicator species in the treatment site to that of the control site. Other plant species will be inventoried, but densities will not be evaluated. Vegetation cover monitoring records the coverage of vegetation canopy per unit of area. Density and cover data, along with other biometrics (e.g., noxious weed composition, litter, erosion evident, etc.), will be recorded on

standard field data sheets to be developed by the Reclamation Contractor and approved by the BLM/USFS.

B14.7.4 Adaptive Management and Site Release

The BLM requires an adaptive management approach designed to allow frequent review and feedback on the progress of reclamation be implemented as a part of monitoring activities for the Project. Adaptive management greatly increases the potential for reclamation success by providing early detection of problems and the opportunity to implement remedial actions to address these problems. Effective monitoring is an essential element of adaptive management because it provides reliable feedback on the effects of reclamation actions. Adaptive management actions may be recommended on a case-by-case basis where feasible, and as determined by the BLM, during the 5-year monitoring timeframe.

If it has been determined adaptive measures are necessary, monitoring data (both qualitative and quantitative) will provide information on reclamation components that are deficient, such as desirable vegetation cover, soil compaction, or lack of natural surface material. Based on this information, appropriate reclamation actions may include measures such as supplemental seeding, mulching, and additional weed control and/or erosion control measures. Recommendations could also include waiting to determine if favorable germination/establishment conditions are expected. All adaptive management actions will be subject to the review and approval of the agencies. The Contractor(s) will use all reasonable methods to help the Proponent ensure reclamation is progressing toward the success standards identified in Section B14.7.1 – Reclamation Goals and Success Standards and Table B14-5. It is possible some sites will be incapable of supporting adequate vegetation to progress towards the success standards due to conflicting land management, and environmental limitations not associated with the Project. For instance, reclamation may fail in areas with unmanaged OHV access, grazing of domestic livestock, natural disasters such as fire or flooding, and construction of other utility projects. If reclamation failure on federally managed or other cooperating agency (i.e., State of Utah) lands is determined by the CIC to be caused by these conditions, neither the Proponent, nor any of its construction/reclamation primary contractors or subcontractors, will be held responsible for continued reclamation and monitoring of these sites.

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Attachment A
Reclamation Zones by Milepost

ATTACHMENT A – RECLAMATION ZONES BY MILEPOST

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
24	0.1	0.3	Big Sagebrush	Shrublands (Z2)	
24	0.3	0.3	Disturbed	Agriculture/Disturbed	
25	0.0	0.1	Disturbed	Agriculture/Disturbed	
25	0.1	0.3	Big Sagebrush	Shrublands (Z2)	
25	0.3	0.6	Desert Shrub	Shrublands (Z2)	
25	0.6	0.6	Big Sagebrush	Shrublands (Z2)	
27	0.0	0.2	Big Sagebrush	Shrublands (Z2)	
30	0.0	0.3	Disturbed	Agriculture/Disturbed	
30	0.3	0.4	Shrub Steppe	Shrublands (Z2)	
30	0.4	0.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	
30	0.5	1.0	Shrub Steppe	Shrublands (Z2)	
30	1.0	1.1	Big Sagebrush	Shrublands (Z2)	
30	1.1	1.2	Shrub Steppe	Shrublands (Z2)	
30	1.2	1.5	Shrub Steppe	Shrublands (Z2)	
30	1.5	1.8	Desert Shrub	Shrublands (Z2)	
30	1.8	1.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
30	1.9	2.0	Desert Shrub	Shrublands (Z2)	
30	2.0	2.1	Grassland	Grasslands (Z3)	
30	2.2	2.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
30	2.4	2.5	Big Sagebrush	Shrublands (Z2)	
30	2.5	2.6	Grassland	Grasslands (Z3)	
30	2.6	2.9	Shrub Steppe	Shrublands (Z2)	
30	2.9	3.0	Big Sagebrush	Shrublands (Z2)	
30	3.0	3.1	Disturbed	Agriculture/Disturbed	
30	3.3	3.4	Shrub Steppe	Shrublands (Z2)	
30	3.4	3.5	Grassland	Grasslands (Z3)	
30	3.5	3.7	Big Sagebrush	Shrublands (Z2)	
30	3.7	4.2	Grassland	Grasslands (Z3)	
30	4.2	4.5	Big Sagebrush	Shrublands (Z2)	
30	4.5	4.6	Grassland	Grasslands (Z3)	
30	4.6	5.0	Big Sagebrush	Shrublands (Z2)	
30	5.0	5.2	Grassland	Grasslands (Z3)	
30	5.2	5.3	Disturbed	Agriculture/Disturbed	
30	5.3	5.5	Big Sagebrush	Shrublands (Z2)	
30	5.5	5.6	Grassland	Grasslands (Z3)	
30	5.6	6.1	Big Sagebrush	Shrublands (Z2)	
30	6.2	6.4	Big Sagebrush	Shrublands (Z2)	
30	6.4	6.9	Grassland	Grasslands (Z3)	
30	6.9	7.9	Disturbed	Agriculture/Disturbed	
30	7.9	8.4	Big Sagebrush	Shrublands (Z2)	
30	8.4	8.9	Grassland	Grasslands (Z3)	
30	8.9	9.5	Grassland	Grasslands (Z3)	
30	9.5	9.7	Desert Shrub	Shrublands (Z2)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
30	9.7	10.5	Grassland	Grasslands (Z3)	
30	10.5	11.3	Desert Shrub	Shrublands (Z2)	
30	11.3	11.4	Big Sagebrush	Shrublands (Z2)	
30	11.4	11.5	Grassland	Grasslands (Z3)	
30	11.5	11.6	Big Sagebrush	Shrublands (Z2)	
30	11.6	11.8	Grassland	Grasslands (Z3)	
30	11.8	11.9	Desert Shrub	Shrublands (Z2)	
30	11.9	12.0	Grassland	Grasslands (Z3)	
30	12.0	12.1	Big Sagebrush	Shrublands (Z2)	
30	12.1	12.2	Desert Shrub	Shrublands (Z2)	
30	12.2	12.3	Big Sagebrush	Shrublands (Z2)	
30	12.3	12.4	Grassland	Grasslands (Z3)	
30	12.4	12.8	Big Sagebrush	Shrublands (Z2)	
30	12.8	12.9	Grassland	Grasslands (Z3)	
30	12.9	14.0	Big Sagebrush	Shrublands (Z2)	
30	14.0	14.1	Desert Shrub	Shrublands (Z2)	
30	14.1	14.5	Big Sagebrush	Shrublands (Z2)	
30	14.5	14.6	Desert Shrub	Shrublands (Z2)	
30	14.6	16.9	Big Sagebrush	Shrublands (Z2)	
30	16.9	17.0	Barren/Sparsely Vegetated	Shrublands (Z2)	
30	17.0	17.2	Desert Shrub	Shrublands (Z2)	
33	0.0	0.7	Big Sagebrush	Shrublands (Z2)	
33	0.7	0.8	Shrub Steppe	Shrublands (Z2)	
33	0.8	1.5	Disturbed	Agriculture/Disturbed	
33	1.5	1.7	Disturbed	Agriculture/Disturbed	
33	1.7	1.8	Disturbed	Agriculture/Disturbed	
33	1.8	2.8	Disturbed	Agriculture/Disturbed	
33	2.8	3.0	Grassland	Grasslands (Z3)	
33	3.0	3.1	Shrub Steppe	Shrublands (Z2)	
33	3.1	3.4	Big Sagebrush	Shrublands (Z2)	
33	3.4	3.7	Desert Shrub	Shrublands (Z2)	
33	3.7	4.0	Big Sagebrush	Shrublands (Z2)	
33	4.0	4.5	Shrub Steppe	Shrublands (Z2)	
33	4.5	4.6	Grassland	Grasslands (Z3)	
33	4.6	4.9	Disturbed	Agriculture/Disturbed	
45	0.0	0.1	Desert Shrub	Shrublands (Z2)	
45	0.1	0.5	Barren/Sparsely Vegetated	Shrublands (Z2)	
45	0.5	0.6	Pinyon-Juniper	Conifer/Woodlands (Z1)	
45	0.6	0.7	Barren/Sparsely Vegetated	Shrublands (Z2)	
45	0.7	0.8	Pinyon-Juniper	Conifer/Woodlands (Z1)	
45	0.8	1.1	Big Sagebrush	Shrublands (Z2)	
45	1.1	1.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
63	0.0	0.8	Pinyon-Juniper	Conifer/Woodlands (Z1)	
63	0.8	0.9	Big Sagebrush	Shrublands (Z2)	
63	0.9	0.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
64	0.0	0.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
64	0.1	0.4	Big Sagebrush	Shrublands (Z2)	
64	0.4	0.5	Desert Shrub	Shrublands (Z2)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
64	0.5	0.6	Big Sagebrush	Shrublands (Z2)	
64	0.6	0.7	Desert Shrub	Shrublands (Z2)	
64	0.7	0.8	Disturbed	Agriculture/Disturbed	
64	0.8	1.2	Big Sagebrush	Shrublands (Z2)	
64	1.2	1.3	Pinyon-Juniper	Conifer/Woodlands (Z1)	
64	1.3	1.4	Big Sagebrush	Shrublands (Z2)	
64	1.4	5.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	0.0	0.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	0.1	0.2	Disturbed	Agriculture/Disturbed	
66	0.2	0.3	Big Sagebrush	Shrublands (Z2)	
66	0.3	0.5	Shrub Steppe	Shrublands (Z2)	
66	0.5	1.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	1.0	1.1	Barren/Sparsely Vegetated	Conifer/Woodlands (Z1)	
66	1.1	3.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	3.4	3.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	3.5	3.6	Big Sagebrush	Shrublands (Z2)	
66	3.6	3.7	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	3.7	3.8	Disturbed	Agriculture/Disturbed	
66	3.8	6.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	6.2	6.3	Big Sagebrush	Shrublands (Z2)	
66	6.3	7.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	7.0	7.1	Big Sagebrush	Shrublands (Z2)	
66	7.1	7.3	Wetland	Riparian (Z4)	
66	7.3	7.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	7.9	8.0	Big Sagebrush	Shrublands (Z2)	
66	8.0	8.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	8.1	8.2	Big Sagebrush	Shrublands (Z2)	
66	8.3	8.8	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	8.8	8.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
66	8.9	9.1	Mountain Shrub	Shrublands (Z2)	
66	9.1	12.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
68	0.0	2.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
155	0.0	0.3	Desert Shrub	Shrublands (Z2)	
155	0.3	0.5	Shrub Steppe	Shrublands (Z2)	
155	0.5	1.0	Desert Shrub	Shrublands (Z2)	
155	1.0	1.2	Shrub Steppe	Shrublands (Z2)	
155	1.3	1.4	Desert Shrub	Shrublands (Z2)	
155	1.4	1.5	Shrub Steppe	Shrublands (Z2)	
155	1.5	2.2	Desert Shrub	Shrublands (Z2)	
155	2.2	2.3	Grassland	Grasslands (Z3)	
155	2.4	2.5	Shrub Steppe	Shrublands (Z2)	
155	2.5	2.9	Desert Shrub	Shrublands (Z2)	
155	2.9	3.1	Shrub Steppe	Shrublands (Z2)	
155	3.1	3.2	Desert Shrub	Shrublands (Z2)	
155	3.2	4.2	Shrub Steppe	Shrublands (Z2)	
155	4.2	5.2	Desert Shrub	Shrublands (Z2)	
155	5.2	5.3	Shrub Steppe	Shrublands (Z2)	
155	5.3	5.4	Water	Riparian (Z4)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
155	5.4	5.7	Shrub Steppe	Shrublands (Z2)	
155	5.7	5.8	Desert Shrub	Shrublands (Z2)	
155	5.8	6.0	Desert Shrub	Shrublands (Z2)	
155	6.0	6.1	Shrub Steppe	Shrublands (Z2)	
155	6.1	7.4	Desert Shrub	Shrublands (Z2)	
155	7.4	8.3	Shrub Steppe	Shrublands (Z2)	
155	8.3	8.4	Desert Shrub	Shrublands (Z2)	
155	8.4	8.5	Shrub Steppe	Shrublands (Z2)	
155	8.5	8.6	Big Sagebrush	Shrublands (Z2)	
155	8.7	9.0	Shrub Steppe	Shrublands (Z2)	
155	9.0	9.1	Big Sagebrush	Shrublands (Z2)	
155	9.1	9.7	Shrub Steppe	Shrublands (Z2)	
155	9.7	9.8	Big Sagebrush	Shrublands (Z2)	
155	9.8	10.1	Shrub Steppe	Shrublands (Z2)	
155	10.1	10.2	Big Sagebrush	Shrublands (Z2)	
155	10.2	10.3	Desert Shrub	Shrublands (Z2)	
155	10.3	10.5	Shrub Steppe	Shrublands (Z2)	
155	10.5	10.6	Big Sagebrush	Shrublands (Z2)	
155	10.6	10.8	Shrub Steppe	Shrublands (Z2)	
155	10.8	11.0	Big Sagebrush	Shrublands (Z2)	
155	11.0	11.2	Desert Shrub	Shrublands (Z2)	
155	11.2	11.8	Shrub Steppe	Shrublands (Z2)	
155	11.8	11.9	Big Sagebrush	Shrublands (Z2)	
155	11.9	12.0	Shrub Steppe	Shrublands (Z2)	
160	0.0	0.1	Shrub Steppe	Shrublands (Z2)	
160	0.1	0.3	Grassland	Grasslands (Z3)	
160	0.3	0.7	Desert Shrub	Shrublands (Z2)	
160	0.7	0.8	Shrub Steppe	Shrublands (Z2)	
160	0.8	1.0	Desert Shrub	Shrublands (Z2)	
160	1.0	1.1	Shrub Steppe	Shrublands (Z2)	
160	1.1	1.2	Desert Shrub	Shrublands (Z2)	
160	1.2	1.6	Shrub Steppe	Shrublands (Z2)	
160	1.6	1.9	Desert Shrub	Shrublands (Z2)	
160	1.9	2.0	Shrub Steppe	Shrublands (Z2)	
160	2.0	2.7	Desert Shrub	Shrublands (Z2)	
160	2.7	2.9	Desert Shrub	Shrublands (Z2)	
160	2.9	3.0	Shrub Steppe	Shrublands (Z2)	
160	3.0	3.6	Desert Shrub	Shrublands (Z2)	
160	3.6	3.7	Grassland	Grasslands (Z3)	
160	3.7	3.9	Desert Shrub	Shrublands (Z2)	
160	3.9	4.1	Grassland	Grasslands (Z3)	
160	4.1	4.4	Desert Shrub	Shrublands (Z2)	
160	4.4	5.2	Desert Shrub	Shrublands (Z2)	
160	5.2	5.3	Shrub Steppe	Shrublands (Z2)	
160	5.3	5.7	Desert Shrub	Shrublands (Z2)	
160	5.7	5.9	Big Sagebrush	Shrublands (Z2)	
160	5.9	6.9	Shrub Steppe	Shrublands (Z2)	
160	6.9	7.0	Desert Shrub	Shrublands (Z2)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
160	7.0	7.3	Shrub Steppe	Shrublands (Z2)	
160	7.3	7.4	Desert Shrub	Shrublands (Z2)	
160	7.4	8.0	Shrub Steppe	Shrublands (Z2)	
160	8.0	8.1	Big Sagebrush	Shrublands (Z2)	
160	8.1	8.2	Shrub Steppe	Shrublands (Z2)	
160	8.2	8.4	Big Sagebrush	Shrublands (Z2)	
160	8.4	8.5	Shrub Steppe	Shrublands (Z2)	
160	8.5	8.6	Big Sagebrush	Shrublands (Z2)	
160	8.6	8.9	Shrub Steppe	Shrublands (Z2)	
160	8.9	9.0	Big Sagebrush	Shrublands (Z2)	
160	9.0	9.7	Shrub Steppe	Shrublands (Z2)	
160	9.7	10.3	Big Sagebrush	Shrublands (Z2)	
160	10.3	10.6	Shrub Steppe	Shrublands (Z2)	
160	10.6	11.1	Desert Shrub	Shrublands (Z2)	
160	11.1	11.4	Big Sagebrush	Shrublands (Z2)	
160	11.4	11.9	Shrub Steppe	Shrublands (Z2)	
160	11.9	12.0	Big Sagebrush	Shrublands (Z2)	
160	12.1	12.3	Desert Shrub	Shrublands (Z2)	
160	12.3	12.4	Shrub Steppe	Shrublands (Z2)	
160	12.4	12.6	Desert Shrub	Shrublands (Z2)	
160	12.6	13.1	Shrub Steppe	Shrublands (Z2)	
160	13.1	13.7	Desert Shrub	Shrublands (Z2)	
160	13.7	13.8	Shrub Steppe	Shrublands (Z2)	
160	13.8	14.0	Big Sagebrush	Shrublands (Z2)	
160	14.0	14.9	Shrub Steppe	Shrublands (Z2)	
160	14.9	15.1	Desert Shrub	Shrublands (Z2)	
160	15.1	15.2	Big Sagebrush	Shrublands (Z2)	
160	15.2	15.6	Desert Shrub	Shrublands (Z2)	
160	15.6	15.8	Grassland	Grasslands (Z3)	
160	15.8	16.0	Desert Shrub	Shrublands (Z2)	
160	16.0	16.1	Shrub Steppe	Shrublands (Z2)	
160	16.1	16.2	Desert Shrub	Shrublands (Z2)	
160	16.2	16.4	Shrub Steppe	Shrublands (Z2)	
160	16.4	16.6	Grassland	Grasslands (Z3)	
160	16.6	16.7	Desert Shrub	Shrublands (Z2)	
160	16.7	16.8	Shrub Steppe	Shrublands (Z2)	
160	16.8	16.9	Desert Shrub	Shrublands (Z2)	
160	16.9	17.0	Grassland	Grasslands (Z3)	
160	17.0	17.3	Desert Shrub	Shrublands (Z2)	
163	0.0	0.9	Desert Shrub	Shrublands (Z2)	
163	0.9	1.1	Big Sagebrush	Shrublands (Z2)	
163	1.1	1.4	Desert Shrub	Shrublands (Z2)	
163	1.4	1.5	Shrub Steppe	Shrublands (Z2)	
163	1.5	1.7	Desert Shrub	Shrublands (Z2)	
163	1.7	1.8	Grassland	Grasslands (Z3)	
163	1.8	3.2	Desert Shrub	Shrublands (Z2)	
165	0.0	0.1	Desert Shrub	Shrublands (Z2)	
165	0.1	0.6	Big Sagebrush	Shrublands (Z2)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
165	0.6	0.8	Desert Shrub	Shrublands (Z2)	
165	0.8	1.1	Big Sagebrush	Shrublands (Z2)	
165	1.1	2.4	Desert Shrub	Shrublands (Z2)	
165	2.4	2.8	Barren/Sparsely Vegetated	Shrublands (Z2)	
165	2.8	2.9	Desert Shrub	Shrublands (Z2)	
165	2.9	3.0	Barren/Sparsely Vegetated	Shrublands (Z2)	
165	3.0	4.1	Desert Shrub	Shrublands (Z2)	
165	4.2	4.3	Desert Shrub	Shrublands (Z2)	
165	4.3	4.4	Shrub Steppe	Shrublands (Z2)	
165	4.4	4.5	Desert Shrub	Shrublands (Z2)	
165	4.5	4.6	Barren/Sparsely Vegetated	Shrublands (Z2)	
165	4.6	4.7	Desert Shrub	Shrublands (Z2)	
165	4.7	5.2	Desert Shrub	Shrublands (Z2)	
165	5.3	5.4	Grassland	Grasslands (Z3)	
165	5.4	6.1	Desert Shrub	Shrublands (Z2)	
165	6.1	6.2	Shrub Steppe	Shrublands (Z2)	
165	6.2	6.9	Desert Shrub	Shrublands (Z2)	
165	6.9	7.0	Grassland	Grasslands (Z3)	
165	7.1	7.2	Grassland	Grasslands (Z3)	
165	7.2	7.6	Desert Shrub	Shrublands (Z2)	
165	7.6	7.8	Grassland	Grasslands (Z3)	
165	7.8	8.4	Desert Shrub	Shrublands (Z2)	
165	8.4	8.7	Desert Shrub	Shrublands (Z2)	
165	8.7	8.9	Big Sagebrush	Shrublands (Z2)	
165	8.9	9.3	Desert Shrub	Shrublands (Z2)	
165	9.3	9.7	Big Sagebrush	Shrublands (Z2)	
165	9.7	9.8	Desert Shrub	Shrublands (Z2)	
165	9.8	10.2	Big Sagebrush	Shrublands (Z2)	
165	10.2	10.4	Desert Shrub	Shrublands (Z2)	
165	10.4	10.6	Big Sagebrush	Shrublands (Z2)	
165	10.6	10.8	Desert Shrub	Shrublands (Z2)	
165	10.8	10.9	Big Sagebrush	Shrublands (Z2)	
165	10.9	11.1	Desert Shrub	Shrublands (Z2)	
165	11.1	12.0	Big Sagebrush	Shrublands (Z2)	
165	12.0	12.4	Grassland	Grasslands (Z3)	
165	12.4	12.5	Big Sagebrush	Shrublands (Z2)	
165	12.5	13.8	Grassland	Grasslands (Z3)	
165	13.8	14.2	Big Sagebrush	Shrublands (Z2)	
165	14.2	14.6	Grassland	Grasslands (Z3)	
165	14.6	14.6	Grassland	Grasslands (Z3)	
220	0.0	0.1	Grassland	Grasslands (Z3)	
220	0.1	1.2	Big Sagebrush	Shrublands (Z2)	
220	1.2	1.8	Shrub Steppe	Shrublands (Z2)	
220	1.8	4.4	Big Sagebrush	Shrublands (Z2)	
220	4.4	5.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
220	5.1	6.7	Big Sagebrush	Shrublands (Z2)	
220	6.7	6.8	Grassland	Grasslands (Z3)	
220	6.8	7.5	Big Sagebrush	Shrublands (Z2)	

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
220	7.5	7.7	Pinyon-Juniper	Conifer/Woodlands (Z1)	
220	7.7	8.5	Big Sagebrush	Shrublands (Z2)	
220	8.5	8.6	Shrub Steppe	Shrublands (Z2)	
220	8.6	9.2	Big Sagebrush	Shrublands (Z2)	
220	9.2	9.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	
220	9.5	9.6	Big Sagebrush	Shrublands (Z2)	
221	0.0	0.5	Big Sagebrush	Shrublands (Z2)	
221	0.5	0.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
221	0.9	1.4	Big Sagebrush	Shrublands (Z2)	
221	1.4	1.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	
221	1.5	1.8	Big Sagebrush	Shrublands (Z2)	
221	1.8	2.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
221	2.0	2.4	Big Sagebrush	Shrublands (Z2)	
221	2.4	3.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
221	3.0	3.2	Big Sagebrush	Shrublands (Z2)	
221	3.2	3.7	Pinyon-Juniper	Conifer/Woodlands (Z1)	
221	3.7	4.9	Big Sagebrush	Shrublands (Z2)	
221	4.9	5.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
270	0.0	0.5	Big Sagebrush	Shrublands (Z2)	
270	0.5	0.6	Pinyon-Juniper	Conifer/Woodlands (Z1)	
270	0.6	1.4	Big Sagebrush	Shrublands (Z2)	
272	0.0	1.6	Big Sagebrush	Shrublands (Z2)	
272	1.6	1.7	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	1.7	2.0	Big Sagebrush	Shrublands (Z2)	
272	2.0	2.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	2.2	2.5	Big Sagebrush	Shrublands (Z2)	
272	2.5	2.6	Riparian	Riparian (Z4)	
272	2.6	3.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	3.0	3.1	Riparian	Riparian (Z4)	
272	3.1	3.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	3.4	4.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	4.1	4.4	Big Sagebrush	Shrublands (Z2)	
272	4.4	5.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
272	5.2	5.3	Big Sagebrush	Shrublands (Z2)	
272	5.3	5.4	Shrub Steppe	Shrublands (Z2)	
272	5.4	5.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
275	0.0	0.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	
275	0.1	0.2	Mountain Shrub	Shrublands (Z2)	
275	0.2	0.3	Pinyon-Juniper	Conifer/Woodlands (Z1)	
275	0.3	0.5	Big Sagebrush	Shrublands (Z2)	
275	0.5	0.9	Mountain Shrub	Shrublands (Z2)	
275	0.9	1.0	Shrub Steppe	Shrublands (Z2)	
275	1.0	2.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
275	2.2	2.3	Mountain Shrub	Shrublands (Z2)	
275	2.3	2.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
305	0.0	0.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	
305	0.4	0.8	Big Sagebrush	Shrublands (Z2)	
305	0.8	0.9	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
305	0.9	1.0	Disturbed	Agriculture/Disturbed	Post Burn Reseed
305	1.0	2.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
305	2.0	2.1	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
305	2.1	3.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
320	0.0	0.3	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
320	0.3	0.8	Big Sagebrush	Shrublands (Z2)	Burn
320	0.8	0.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
320	0.9	1.2	Big Sagebrush	Shrublands (Z2)	Burn
320	1.2	1.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
320	1.4	5.5	Big Sagebrush	Shrublands (Z2)	Burn
330	0.0	1.1	Big Sagebrush	Shrublands (Z2)	Burn
345	0.0	0.4	Big Sagebrush	Shrublands (Z2)	Burn
345	0.4	0.5	Shrub Steppe	Shrublands (Z2)	Burn
345	0.5	0.8	Big Sagebrush	Shrublands (Z2)	Burn
345	0.8	0.9	Desert Shrub	Shrublands (Z2)	Burn
345	0.9	1.0	Big Sagebrush	Shrublands (Z2)	Burn
345	1.0	1.1	Desert Shrub	Shrublands (Z2)	Burn
345	1.1	1.2	Big Sagebrush	Shrublands (Z2)	Burn
345	1.2	1.6	Shrub Steppe	Shrublands (Z2)	Burn
345	1.6	1.7	Big Sagebrush	Shrublands (Z2)	Burn
345	1.7	1.8	Shrub Steppe	Shrublands (Z2)	Burn
345	1.8	1.9	Big Sagebrush	Shrublands (Z2)	Burn
345	1.9	2.2	Shrub Steppe	Shrublands (Z2)	Burn
345	2.2	2.6	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	2.6	2.7	Shrub Steppe	Shrublands (Z2)	Burn
345	2.7	2.9	Big Sagebrush	Shrublands (Z2)	Burn
345	2.9	3.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	3.0	3.2	Big Sagebrush	Shrublands (Z2)	Burn
345	3.2	3.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	3.4	3.5	Big Sagebrush	Shrublands (Z2)	Burn
345	3.5	3.6	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
345	3.6	3.7	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
345	3.7	4.8	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
345	4.8	5.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
345	5.1	5.2	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
345	5.2	5.4	Big Sagebrush	Shrublands (Z2)	Burn
345	5.4	5.5	Shrub Steppe	Shrublands (Z2)	Burn
345	5.5	5.6	Big Sagebrush	Shrublands (Z2)	Burn
345	5.6	5.7	Shrub Steppe	Shrublands (Z2)	Burn
345	5.7	5.8	Big Sagebrush	Shrublands (Z2)	Burn
345	5.8	6.8	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	6.8	7.4	Big Sagebrush	Shrublands (Z2)	Burn
345	7.4	7.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	7.5	7.6	Grassland	Grasslands (Z3)	Burn
345	7.6	8.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	8.5	8.7	Big Sagebrush	Shrublands (Z2)	Burn
345	8.7	9.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	Burn
345	9.0	9.1	Pinyon-Juniper	Conifer/Woodlands (Z2)	Post Burn Reseed

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
348	0.0	0.8	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
348	0.8	0.9	Pinyon-Juniper	Conifer/Woodlands (Z2)	Burn
348	0.9	1.3	Disturbed	Agriculture/Disturbed	Burn
348	1.3	2.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
348	2.1	2.2	Pinyon-Juniper	Conifer/Woodlands (Z2)	Burn
348	2.2	2.4	Pinyon-Juniper	Conifer/Woodlands (Z3)	Post Burn Reseed
348	2.4	2.6	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
348	2.6	2.9	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
348	2.9	2.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
350	0.0	4.3	Big Sagebrush	Shrublands (Z2)	Burn
350	4.3	4.4	Desert Shrub	Shrublands (Z2)	Burn
350	4.4	5.3	Big Sagebrush	Shrublands (Z2)	Burn
381	0.0	0.2	Desert Shrub	Shrublands (Z2)	
381	0.2	0.5	Big Sagebrush	Shrublands (Z2)	
381	0.5	0.7	Desert Shrub	Shrublands (Z2)	
381	0.7	1.0	Shrub Steppe	Shrublands (Z2)	
381	1.0	1.2	Desert Shrub	Shrublands (Z2)	
381	1.2	2.1	Big Sagebrush	Shrublands (Z2)	
381	2.1	2.3	Desert Shrub	Shrublands (Z2)	
381	2.3	4.9	Big Sagebrush	Shrublands (Z2)	
381	4.9	5.5	Shrub Steppe	Shrublands (Z2)	
381	5.5	6.9	Big Sagebrush	Shrublands (Z2)	
381	6.9	7.1	Shrub Steppe	Shrublands (Z2)	
381	7.1	7.3	Desert Shrub	Shrublands (Z2)	
381	7.3	7.4	Shrub Steppe	Shrublands (Z2)	
381	7.4	8.0	Desert Shrub	Shrublands (Z2)	
381	8.0	8.6	Shrub Steppe	Shrublands (Z2)	
381	8.6	8.6	Desert Shrub	Shrublands (Z2)	
385	0.0	0.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
385	0.1	0.3	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	0.3	0.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
385	0.4	0.6	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	0.6	0.8	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	0.8	0.9	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	0.9	1.0	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	1.0	1.1	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	1.1	1.5	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	1.5	1.9	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	1.9	2.0	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	2.0	2.1	Shrub Steppe	Shrublands (Z2)	Post Burn Reseed
385	2.1	2.2	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	2.2	2.4	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
385	2.4	3.1	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	3.1	3.2	Desert Shrub	Shrublands (Z2)	Post Burn Reseed
385	3.2	3.3	Big Sagebrush	Shrublands (Z2)	Post Burn Reseed
385	3.3	3.6	Desert Shrub	Shrublands (Z2)	Post Burn Reseed
385	3.6	3.7	Shrub Steppe	Shrublands (Z2)	Burn
385	3.7	3.8	Desert Shrub	Shrublands (Z2)	Burn

TABLE 1 RECLAMATION ZONES BY MILEPOST					
Link Number	**From Milepost**	**To Milepost**	**Vegetation Communities**	**Reclamation Zone**	**Burn Areas**
385	3.8	3.9	Grassland	Grasslands (Z3)	Burn
385	3.9	4.4	Big Sagebrush	Shrublands (Z2)	Burn
385	4.4	4.6	Desert Shrub	Shrublands (Z2)	Burn
385	4.6	4.7	Shrub Steppe	Shrublands (Z2)	Burn
385	4.7	4.9	Big Sagebrush	Shrublands (Z2)	Burn
385	4.9	5.4	Desert Shrub	Shrublands (Z2)	Burn
385	5.4	5.5	Shrub Steppe	Shrublands (Z2)	Burn
385	5.5	5.7	Desert Shrub	Shrublands (Z2)	Burn
385	5.7	5.8	Big Sagebrush	Shrublands (Z2)	Burn
385	5.8	5.9	Desert Shrub	Shrublands (Z2)	Burn
385	5.9	6.0	Big Sagebrush	Shrublands (Z2)	Burn
385	6.0	6.1	Shrub Steppe	Shrublands (Z2)	Burn
385	6.1	6.2	Desert Shrub	Shrublands (Z2)	
386	0.0	1.0	Desert Shrub	Shrublands (Z2)	
386	1.0	1.1	Shrub Steppe	Shrublands (Z2)	
386	1.1	1.5	Desert Shrub	Shrublands (Z2)	
386	1.5	1.6	Shrub Steppe	Shrublands (Z2)	
386	1.6	2.1	Desert Shrub	Shrublands (Z2)	
386	2.1	2.6	Shrub Steppe	Shrublands (Z2)	
386	2.6	2.8	Desert Shrub	Shrublands (Z2)	
386	2.8	2.9	Shrub Steppe	Shrublands (Z2)	
386	2.9	3.2	Big Sagebrush	Shrublands (Z2)	
441	0.0	0.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
441	0.2	3.2	Big Sagebrush	Shrublands (Z2)	
442	0.0	0.1	Big Sagebrush	Shrublands (Z2)	
442	0.1	0.2	Pinyon-Juniper	Conifer/Woodlands (Z1)	
442	0.2	0.6	Big Sagebrush	Shrublands (Z2)	
442	0.6	1.0	Pinyon-Juniper	Conifer/Woodlands (Z1)	
442	1.0	1.8	Big Sagebrush	Shrublands (Z2)	
445	0.0	1.4	Big Sagebrush	Shrublands (Z2)	
445	1.4	1.5	Pinyon-Juniper	Conifer/Woodlands (Z1)	
445	1.5	1.6	Pinyon-Juniper	Conifer/Woodlands (Z1)	
445	1.6	1.7	Big Sagebrush	Shrublands (Z2)	
445	1.7	2.9	Pinyon-Juniper	Conifer/Woodlands (Z1)	
445	2.9	3.0	Big Sagebrush	Shrublands (Z2)	
455	0.0	0.3	Pinyon-Juniper	Conifer/Woodlands (Z1)	Post Burn Reseed
500	0.0	0.1	Pinyon-Juniper	Conifer/Woodlands (Z1)	

Attachment B
Agency-approved Seed Mixture and Methods

ATTACHMENT B – AGENCY-APPROVED SEED MIXES

The following seed mixes have been provided by each BLM and USFS field offices crossed by the Project and are to be applied in the vegetation communities or environmental conditions as described in each table. Seeding rates (quantities) are listed as pounds per acre of pure live seed and are assumed to be drill seeded. Seeding rates will be 1.5 times the rate identified in the "Quantities" column if a hydroseed or broadcast method of application is used. The seed mixes identified below may be modified based on site-specific conditions, identification of additional useful species for rapid site stabilization, species success in past revegetation efforts, and seed availability and cost. Any modifications to the seed mixes identified below must be approved by the BLM/USFS or landowner. An alternative seeding rate may be applied in areas deemed appropriate by BLM/USFS or the landowner. As requested by the BLM, seeds will be treated with "Germ-N-8" to enhance germination, root development, and seedling vigor. Table 1 illustrates the relationship between the vegetation communities, reclamation zones, and seed mixes identified below (refer to Figures B14-1 – Vegetation Communities and B14-2 – Reclamation Zones)

TABLE 1
VEGETATION COMMUNITIES, RECLAMATION ZONES, AND SEED MIXES

Vegetation Community	Reclamation Zone	BLM-approved Seed Mixes			USFS-approved Seed Mixes		Other
		Richfield Field Office	Cedar City Field Office	Fillmore Field Office	Dixie National Forest	Fishlake National Forest	
Barren/sparsely vegetated	Z1, Z2, Z3	1A, 1B	2A, 2B, 2E, 2F, 2G	5A, 5B	3A, 3B	4A, 4B	Site specific
Big sagebrush	Shrublands (Z2)	1A, 1B	2A, 2B, 2E, 2F	5A, 5B	3A, 3B	4A, 4B	Site specific
Desert shrub	Shrublands (Z2)	1A, 1B	2A, 2B, 2E, 2F	5A, 5B	3A, 3B	4A, 4B	Site specific
Grassland	Grasslands (Z3)	1A, 1B	2G	Site specific	3A, 3B	4A, 4B	Site specific
Invasive	Grasslands (Z3)	Site specific	2G	Site specific	3A, 3B	4A, 4B	Site specific
Mountain shrub	Shrublands (Z2)	1A, 1B	2A, 2B, 2E, 2F	5A, 5B	3A, 3B	4A, 4B	Site specific
Shrub-steppe	Shrublands (Z2)	1A, 1B	2A, 2B, 2E, 2F	5A, 5B	3A, 3B	4A, 4B	Site specific
Pinyon-juniper	Conifer/Woodlands (Z1)	1A, 1B	2A, 2B	Site specific			Site specific
Riparian	Riparian (Z4)	Site specific	2C, 2D	Site specific			Site specific
Aspen	Conifer/Woodlands (Z1)	Site specific					Site specific
Ponderosa pine	Conifer/Woodlands (Z1)	Site specific					Site specific
Agriculture	Agriculture/ Disturbed	Not applicable					Site specific
Disturbed	Agriculture/ Disturbed	Not applicable					Site specific

TABLE 2 REVEGETATION SEED MIXTURE 1A – RICHFIELD FIELD OFFICE (Pinyon-Juniper, Sagebrush/Shadscale/Grass Steppe – Precipitation Less Than Eight Inches)		
Common Name	**Scientific Name**	**Quantities**
Luna Pubescent Wheatgrass	*Thinopyrum intermedium 'Luna'*	1.00
Bozoisky Russian Wildrye	*Psathyrostachys juncea*	2.00
Trailhead Great Basin Wildrye	*Leymus cinereus'Trailhead'*	1.50
Sand Dropseed	*Sporobolus cryptandrus*	0.50
Alkali Sacaton	*Sporobolus airoides*	0.50
Covar Sheep Fescue	*Festuca ovina 'Covar'*	1.50
Northern Sweetvetch	*Hedysarum boreale*	1.50
White Sweetclover	*Melilotus albus*	0.50
Small Flower Globemallow	*Sphaeralcea parvifolia*	0.50
Showy Blanketflower	*Gaillardia aristita*	0.50
Cedar Palmer Penstemon	*Penstemon palmeri*	0.50
Appar Lewis Flax	*Linum lewisii (L. perenne)*	1.50
Common Sunflower	*Helianthus annuus*	2.00
Yellow Beeplant	*Cleome lutea*	0.50
Sagebrush (whichever species is dominant)	*Artemisia sp.*	0.50
Forage Kochia	*Kochia sp.*	1.00
	TOTAL	**16.00**
NOTE: Application rates in pounds per acre of pure live seed		

TABLE 3 REVEGETATION SEED MIXTURE 1B – RICHFIELD FIELD OFFICE (Pinyon-Juniper, Big Sagebrush Steppe, Mountain Browse – Precipitation Eight Inches or More)		
Common Name	**Scientific Name**	**Quantities**
Sandberg Bluegrass (High Plains Variety)	*Poa secunda* J. Presl.	1.00
Luna Pubescent Wheatgrass	*Thinopyrum intermedium 'Luna'*	1.00
Bozoisky Russian Wildrye	*Psathyrostachys juncea*	2.00
Magnar Great Basin Wildrye	Leymus cinereus 'Magnar'	1.50
Covar Sheep Fescue	*Festuca ovina 'Covar'*	1.50
Gooseberry Leaf Globemallow	*Sphaeralcea grossulariifolia*	0.50
Yellow Sweetclover	*Melilotus officinalis*	0.50
Delar Small Burnet	*Sanguisorba minor 'delar'*	1.00
Richfield Firecracker Penstemon	*Penstemon eatonii*	0.50
Palmer Penstemon	*Penstemon palmeri*	0.50
Rocky Mountain Beeplant	*Cleome serrulata*	0.50
Appar Lewis Flax	*Linum lewisii (L. perenne)*	1.00
Common Sunflower	*Helianthus annuus*	2.00
Sagebrush (whichever species if dominant)	*Artemisia sp.*	0.50
Forage Kochia	*Kochia sp.*	1.00
Fourwing Saltbush	*Atriplex canescens*	1.00
	TOTAL	**16.00**
Note: Application rates in pounds per acre of pure live seed		

TABLE 4 REVEGETATION SEED MIXTURE 2A – CEDAR CITY FIELD OFFICE (Sagebrush Shrub and Pinyon-Juniper Woodland Communities – Lower Elevations <6,000 feet)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass – Ephraim	*Agropyron cristatum 'Ephraim'*	1.0
Intermediate Wheatgrass	*Thinopyrum intermedium*	2.0
Lincoln Smooth Brome	*Bromus inermis 'Lincoln'*	2.0
Pubescent Wheatgrass	*Thinopyrum intermedium*	1.0
Needle-and-Thread	*Hesperostipa comata*	2.0
Indian Ricegrass – Nezpar	*Achnatherum hymenoides 'Nezpar'*	2.0
Alfalfa-Ladak	*Medicago sativa 'Ladak'*	1.00
Small Burnet	*Sanguisorba minor*	1.00
Utah Sweetvetch	*Hedysarum boreale*	1.00
Western Yarrow	*Achillea millefolium var. occidentalis*	0.50
Yellow Sweetclover	*Melilotus officinalis*	1.00
Lewis Flax	*Linum lewisii*	1.00
Globemallow	*Sphaeralcea sp.*	1.00
Palmer Penstemon	*Penstemon palmeri*	1.00
Four-wing Saltbush	*Atriplex canescens*	1.00
Wyoming Sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	0.50
	TOTAL	**20.00**

NOTES:

- Mixture 2A provides the recommended seeding mixture and rate for the re-vegetation of sagebrush shrub. The exact seeding mixture may differ depending on seed availability. Sagebrush was included to mitigate visual and wildlife habitat impacts, although this species may invade the right-of-way from adjacent habitats rapidly. Any other changes should first be cleared with the appropriate Utah BLM field office.

TABLE 5 REVEGETATION SEED MIXTURE 2B – CEDAR CITY FIELD OFFICE (Sagebrush Shrub and Pinyon-Juniper Woodland Communities – Upper Elevations >6,000 feet)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass – Ephraim	*Agropyron cristatum 'Ephraim'*	1.00
Intermediate Wheatgrass	*Thinopyrum intermedium*	1.00
Lincoln Smooth Brome	*Bromus inermis 'Lincoln'*	2.00
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	2.00
Needle-and-Thread	*Hesperostipa comata*	2.00
Indian Ricegrass – Nezpar	*Achnatherum hymenoides 'Nezpar'*	2.00
Alfalfa-Ladak	*Medicago sativa 'Ladak'*	1.00
Small Burnet	*Sanguisorba minor*	1.00
Yellow Sweetclover	*Melilotus officinalis*	1.00
Utah Sweetvetch	*Hedysarum boreale*	1.00
Lewis Flax	*Linum lewisii*	1.00
Globemallow	*Sphaeralcea sp.*	1.00
Palmer Penstemon	*Penstemon palmeri*	1.00
Antelope Bitterbrush	*Purshia tridentata*	1.00
Wyoming Sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	0.50
Mountain Sagebrush	*Artemisia tridentata*	0.50
	TOTAL	**20.00**

NOTES:

- Mixture 2B provides the recommended seeding mixture and rate for the re-vegetation of sagebrush shrub. The exact seeding mixture may differ depending on seed availability. Sagebrush was included to mitigate visual and wildlife habitat impacts, although this species may invade the right-of-way from adjacent habitats rapidly. Any other changes should first be cleared with the appropriate Utah BLM field office.

TABLE 6
REVEGETATION SEED MIXTURE 2C – CEDAR CITY FIELD OFFICE
(Non-Saline/Alkaline Wetland and Riparian Woodland Communities)

Common Name	Scientific Name	Quantities
Timothy	*Phleum pratense*	2.00
Basin Wildrye	*Leymus cinereus*	2.00
Reed Canarygrass	*Phalaris arundinacea*	1.00
Willow (cuttings)	*Salix sp.*	Avg. of 10-foot centers
Narrowleaf cottonwood	*Populus angustifolia*	Avg. of 10-foot centers
	TOTAL	**5.00**

NOTES:

- Mixture 2C provides the recommended seed mix for the revegetation of non-saline/alkaline wetlands and riparian areas. Revegetation within these areas will use grass species sown at low rates. The riparian zones will require the same grass seed mix, with cuttings, rootings, or shrubs added to the revegetation treatment. The emphasis on wetlands revegetation is to provide a rapid stand establishment, but encourage and enhance regeneration of the natural revegetation.
- Ninebark, chokecherry, snowberry, elderberry, and serviceberry can be added to the mix to mitigate visual impacts.

TABLE 7
REVEGETATION SEED MIXTURE 2D – CEDAR CITY FIELD OFFICE
(Saline/Alkaline Wetland Communities)

Common Name	Scientific Name	Quantities
Shadscale Saltbrush	*Atriplex confertifolia*	3.00
Gardner Saltbush	*Atriplex gardneri*	3.00
Greasewood	*Sarcobatus vermiculatus*	4.00
Alkali Sacaton	*Sporobolus airoides*	2.00
Inland Saltgrass	*Distichlis spicata*	2.00
Forage Kochia	*Kochia sp.*	2.00
Tall Wheatgrass – Jose	*Thinopyrum ponticum'Jose'*	2.00
	TOTAL	**18.00**

NOTES:

- For wetland areas where the soils are considered saline and/or alkaline, the seeding mixture and rate listed in Mixture 2D will be used. Because of the potential high soil salinity/alkalinity in these areas, only plants that are tolerant of such conditions will be used for revegetation. During reclamation, soils that occur above the water table should be salvaged and used for the seedbed. The soils should be worked as little as possible after replacement to reduce compaction. However, seed and fertilizer should be raked or harrowed into the top 2 to 3 inches of the soil.
- Shrub species that are appropriate for transplanting to mitigate visual impacts of this vegetation type include rabbitbrush, shadscale, greasewood, and iodine bush. Rhizomes of inland saltgrass also can be transplanted to minimize visual concerns.

TABLE 8 REVEGETATION SEED MIXTURE 2E – CEDAR CITY FIELD OFFICE (Desert Scrub and Blackbush Scrub Communities)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass	*Agropyron cristatum*	2.00
Indian Ricegrass–Nezpar	*Achnatherum hymenoides 'Nezpar'*	2.00
Galleta Grass	*Pleuraphis sp.*	1.00
Bottlebrush Squirreltail	*Elymus elymoides*	1.00
Sand Dropseed	*Sporobolus cryptandrus*	0.25
Lewis Flax	*Linum lewisii*	1.00
Gooseberry Leaf Globemallow	*Sphaeralcea grossulariifolia*	1.00
Palmer Penstemon	*Penstemon palmeri*	1.00
Western Yarrow	*Achillea millefolium* var. *occidentalis*	0.50
Alfalfa	*Medicago sativa*	0.50
Small Burnett	*Sanguisorba minor*	1.00
Forage Kochia	*Kochia sp.*	1.00
Four-wing Saltbush	*Atriplex canescens*	2.00
Winterfat	*Krascheninnikovia lanata*	1.00
	TOTAL	**15.25**

NOTES:

- Mixture 2E provides the seeding mixture and rate for the revegetation of desert scrub and blackbush scrub. The exact mix to be used may differ from the proposed mixture, depending on seed availability.
- Shrub species that are appropriate for transplanting to mitigate visual impacts of this vegetation type include bud sagebrush, fourwing saltbrush, big sagebrush, winterfat and greasewood.

TABLE 9 REVEGETATION SEED MIXTURE 2F – CEDAR CITY FIELD OFFICE (Utah Greasewood Shrub Communities)		
Common Name	**Scientific Name**	**Quantities**
Tall Wheatgrass – Jose	*Thinopyrum ponticum'Jose'*	3.00
Crested Wheatgrass – Ephraim	*Agropyron cristatum 'Ephraim'*	1.00
Intermediate Wheatgrass – Oache	*Thinopyrum intermedium 'Oache'*	1.00
Thickspike Wheatgrass – Critana	*Elymus lanceolatus 'Critana'*	1.00
Red Fescue	*Festuca rubra*	1.00
Russian Wildrye – Vinall	*Psathyrostachys juncea 'Vinall'*	2.00
Fourwing Saltbush	*Atriplex canescens*	3.00
Forage Kochia	*Kochia sp.*	2.00
	TOTAL	**14.00**

- NOTE: The recommended revegetation seeding mixture and rate along the greasewood scrub vegetation type are listed in Mixture 2F. As discussed above, the exact seeding mixture to be used in this vegetation type may differ from the proposed mix, depending on the availability of the seed. Possible substitutions or additions include rabbitbrush, Gardner saltbrush, alkali sacaton, and basin wildrye.

TABLE 10 REVEGETATION SEED MIXTURE 2G – CEDAR CITY FIELD OFFICE (Non-Native Seeding Communities)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass – Ephraim	*Agropyron cristatum 'Ephraim'*	2.00
Intermediate Wheatgrass	*Thinopyrum intermedium*	2.00
Smooth Brome	*Bromus inermis*	2.00
Forage Kochia	*Kochia sp.*	0.50
Indian Ricegrass	*Achnatherum hymenoides*	2.00
Russian Wildrye – Vinall	*Psathyrostachys juncea 'Vinall'*	2.00
Galleta Grass	*Pleuraphis sp.*	1.00
Winterfat	*Krascheninnikovia lanata*	2.00
Small Burnett	*Sanguisorba minor*	1.00
Lewis Flax	*Linum lewisii*	1.00
Globemallow	*Sphaeralcea sp.*	1.00
Yellow Sweetclover	*Melilotus officinalis*	1.00
Alfalfa – Dryland	*Medicago sativa*	1.00
	TOTAL	**18.50**
NOTE: Mixture 2G shows the recommended seeding mixture and rate for the revegetation of the Utah grassland vegetation type. Winterfat or yellow sweetclover may be substituted or added to the mixture. This seeding mixture also is appropriate for use in mitigating visual impacts.		

TABLE 11 REVEGETATION SEED MIXTURE 2H – CEDAR CITY FIELD OFFICE (Oak Woodland Communities)		
Common Name	**Scientific Name**	**Quantities**
Intermediate Wheatgrass – Oache	*Thinopyrum intermedium 'Oache'*	3.00
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	2.00
Sandberg Bluegrass	*Poa secunda*	1.00
Smooth Brome – Lincoln	*Bromus inermis 'Lincoln'*	3.00
Meadow Brome – Regar	*Bromus biebersteinii 'Regar'*	3.00
Orchardgrass – Potomac	*Dactylis glomerata 'Potomac'*	2.00
Antelope Bitterbrush	*Purshia tridentata*	1.00
Alfalfa	*Medicago sativa*	1.00
	TOTAL	**16.00**
NOTE: The recommended seeding mixture and rate for the re-vegetation of the oak woodland vegetation type is presented in Mixture 2H. Yellow sweetclover or milkvetch may be substituted for alfalfa. Other possible substitutions or additions include western wheatgrass, bluebunch wheatgrass, and serviceberry. Shrub species that are appropriate for transplanting or mitigating visual impacts of this vegetation type include gamble oak (planted as root masses or acorns), serviceberry, and bitterbrush.		

TABLE 12 REVEGETATION SEED MIXTURE 3A – Dixie National Forest – PINE VALLEY RANGER DISTRICT (Powerline Corridor)		
Common Name	**Scientific Name**	**Quantities**
Grasses		
Western Wheatgrass	*Pascopyrum smithii*	1.50
Sand Dropseed	*Sporobolus cryptandrus*	0.25
Prairie Junegrass	*Koeleria macrantha*	1.00
Indian Ricegrass	*Achnatherum hymenoides*	1.00
Needle-and-Thread Grass	*Hesperostipa comata*	1.00
Great Basin Wildrye	*Elymus cinereus*	1.50
Forbs		
Gooseberryleaf Globemallow	*Sphaeralcea grossulariifolia*	0.50
Pacific Aster	*Aster ascendens*	0.25
Showy Goldeneye	*Heliomeris multiflora*	1.00
Palmer's Penstemon	*Penstemon palmeri*	0.50
Arrowleaf Balsamroot	*Balsamorhiza sagittata*	1.00
Northern Sweetvetch	*Hedysarum boreale*	1.00
Shrubs		
Utah Serviceberry	*Amelanchier utahensis*	0.25
Winterfat	*Krascheninnikovia lanata*	1.00
Viscid Rabbitbrush	*Chrysothamnus viscidiflorus*	0.50
Wild Crab Apple	*Peraphyllum ramosissimum*	1.00
Cliffrose	*Purshia mexicana*	1.00
Green Mormon-tea	*Ephedra viridis*	1.00
Fourwing Saltbush	*Atriplex canescens*	2.00
	TOTAL	**17.25**

TABLE 13 REVEGETATION SEED MIXTURE 4A – FISHLAKE NATIONAL FOREST (Locations having 8-12 inches of annual precipitation)		
Common Name	**Scientific Name**	**Quantities**
Grasses		
Western Wheatgrass	*Pascopyrum smithii*	4.00
Indian Ricegrass	*Achnatherum hymenoides*	3.50
Thickspike Wheatgrass	*Elymus lanceolatus*	3.00
Great Basin Wildrye	*Elymus cinereus*	2.00
Snake River Wheatgrass	*Elymus wawawaiensis*	2.00
Bottlebrush Squirreltail	*Elymus elymoides*	1.00
Sand Dropseed	*Sporobolus cryptandrus*	0.50
Forbs		
Lewis Flax	*Linum lewisii*	0.50
Palmer's Penstemon	*Penstemon palmeri*	0.50
Shrubs		
Wyoming Big Sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	1.00
	TOTAL	**18.00**

NOTES:

- The suggested application rates would be as follows: 1) use about 18 pounds/acre for broadcast seeding and 2) about 14 to 16 pounds/acre for a rangeland drill.
- In saline - alkali areas, include and/or substitute Alkali Sacaton, Great Basin Wildrye, Sand Dropseed, Winterfat, Globe Mallow and Small Burnet in the mix.

TABLE 14 REVEGETATION SEED MIXTURE 4B – FISHLAKE NATIONAL FOREST (Locations having 12-18 inches of annual precipitation)		
Common Name	**Scientific Name**	**Quantities[a]**
Grasses		
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	3.00
Slender Wheatgrass	*Elymus trachycaulus*	4.00
Thickspike Wheatgrass	*Elymus lanceola*	3.00
Big Bluegrass	*Poa ampla*	3.00
Sandberg Bluegrass	*Poa secunda*	2.00
Mountain Brome	*Bromus marginatus*	1.00
Forbs		
Lewis Flax	*Linum lewisii*	0.50
Palmer's Penstemon	*Penstemon palmeri*	0.50
Shrubs		
Mountain Big Sagebrush	*Artemisia tridentata spp. vaseyana*	0.50
Antelope Bitterbrush	*Purshia tridentata*	0.50
Utah Serviceberry	*Amelanchier utahensis*	0.25
	TOTAL	**18.25**

NOTES:

- In high elevation areas, include and/or substitute Mountain Brome, Sheep Fescue and Alfalfa in the mix. Once again, the suggested application rates would be as follows: 1) use about 18 pounds/acre for broadcast seeding treatments and 2) about 12 to 14 pounds/acre for a rangeland drill.
- Do not use Smooth Brome or Intermediate Wheatgrass in the seed mix applied to USFS lands unless there is an Extreme Hazard for Soil Erosion because these grasses are very aggressive on the landscape and commonly promote a monoculture thriving in disturbed areas once these fragile sites have been seeded.

TABLE 15 REVEGETATION SEED MIXTURE 5A – FILLMORE FIELD OFFICE (Areas East of Antelope Point)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass – Hycrest	*Agropyron cristatum 'Hycrest'*	2.00
Four-wing Saltbush	*Atriplex canescens*	1.00
Indian Ricegrass – Nezpar	*Achnatherum hymenoides 'Nezpar'*	2.00
Russian Wildrye – Bozoisky	*Psathyrostachys juncea 'Bozoisky'*	1.00
Intermediate Wheatgrass – Oahe	*Thinopyrum intermedium*	2.00
Pubescent Wheatgrass – Luna	*Thinopyrum intermedium*	2.00
Small Burnet – Delar	*Sanguisorba minor*	1.00
Alfalfa-Ladak or Ladak 65	*Medicago sativa 'Ladak'*	1.00
Snake River Wheatgrass – Secar	*Elymus wawawaiensis*	2.00
Forage Kochia – Immigrant	*Kochia sp.*	1.00
Wyoming Sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	0.25
	TOTAL	**15.25**

TABLE 16 REVEGETATION SEED MIXTURE 5B – FILLMORE FIELD OFFICE (Areas West of Antelope Point)		
Common Name	**Scientific Name**	**Quantities**
Crested Wheatgrass – Hycrest	*Agropyron cristatum 'Hycrest'*	3.00
Four-wing Saltbush	*Atriplex canescens*	2.00
Indian Ricegrass – Nezpar	*Achnatherum hymenoides 'Nezpar'*	3.00
Russian Wildrye – Bozoisky	*Psathyrostachys juncea 'Bozoisky'*	2.00
Tall Wheatgrass – Alkar	*Thinopyrum ponticum'Alkar'*	1.00
Globemallow – Gooseberryleaf	*Sphaeralcea grossulariifolia*	0.50
Small Burnet – Delar	*Sanguisorba minor*	1.00
Forage Kochia – Immigrant	*Kochia sp.*	2.00
Shadscale	*Atriplex confertifolia*	1.00
	TOTAL	**15.50**

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Appendix C – PacifiCorp's Transmission Construction and Vegetation Management Standards

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C1 PacifiCorp's Transmission Construction Standards

C2 PacifiCorp's Vegetation Management Standards

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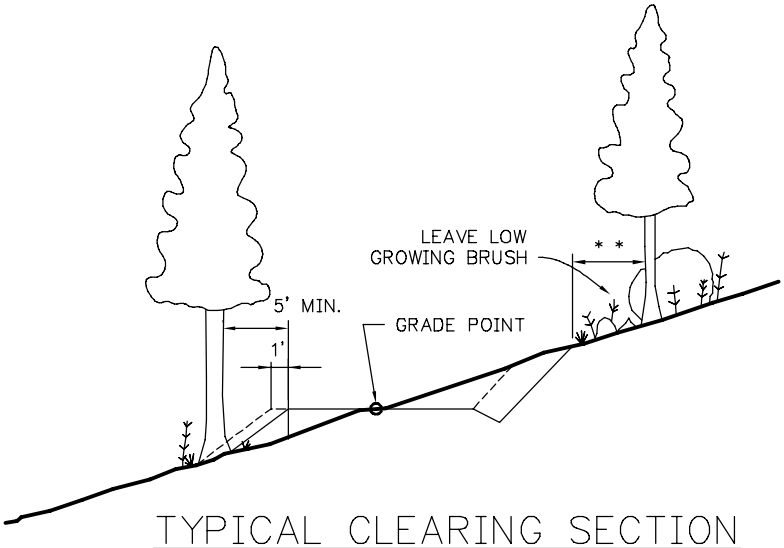
Appendix C1 – PacifiCorp's Transmission Construction Standards

Roads—Vegetation Clearing

A. Scope

This standard supplies information about clearing of trees, shurbs and underbrush along transmission line access and right-of-way roads. Clearings for the construction of new roads or maintenance of existing roads shall be 5′ beyond the edge of the roadway on level ground. On hillside cuts or fills, clearings shall be sufficient width to install the cut or fill without interference. (See Figure 1.)



TYPICAL CLEARING SECTION

CLEARING DIAGRAM					
SIDE SLOPE	CUT * SLOPE	CLEARING WIDTH FOR TURNOUTS		CLEARING WIDTH	CLEARING WIDTH
		W/O DITCH	W/DITCH	W/O DITCH	W/DITCH
0%		30'	33'	24'	27'
10%	1:1	32'	35'	26'	30'
20%	1:1	33'	37'	27'	31'
30%	1:1	36'	40'	29'	32'
40%	1:1	39'	43'	31'	35'
50%	1:1	44'	49'	34'	39'
60%	3/4:1±	48'	55'	37'	44'
70%	3/4:1±	55'	62	45'	52'
80%	1/2:1±	47'	53'	37'	43'

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON CLEARING AND GRUBBING.
2. ± FULL BENCH.
3. ** 1/3 VERTICAL CUT, BUT NOT LESS THAN 5'.
4. * FOR CLEARING PURPOSES ONLY.

Figure 1—Road Clearing Cross Section

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Standards Manager (G. Lyons): GS

TA 500

Where it is necessary to fell trees in streamside areas, fell trees away from streams, retaining all non-hazardous vegetation. Do not skid trees in, through, or across streams. No trees shall be cut or removed before they are marked for removal.

All operations on federal government property shall comply with applicable statutes and regulations, including stipulations contained in right-of-way permits.

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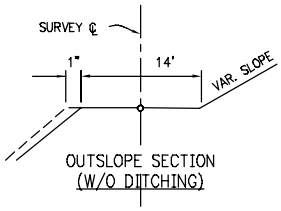
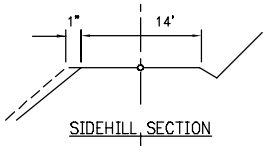
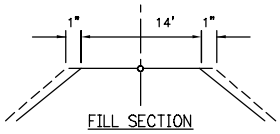
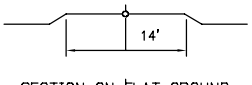
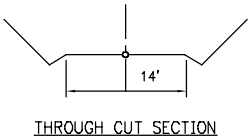
Roads—Construction

A. Scope

This standard provides information about constructing transmission line access. All road construction/improvements, fords, structure/equipment landings, and lay-down yards shall be held to a minimum. On level terrain, road construction may only require back-dragging a blade to remove brush to facilitate construction. In undulating or mountainous terrain the following standards shall apply.

B. Index

The index below provides a quick reference to detailed figures contained in this standard for road construction with varying slopes and conditions.

Referenced Road Cross Section	ACCESS ROAD SECTION
Figure 2	
Figure 3 Figure 4 Figure 5	
Figure 2	
Figure 2	
Figure 2	

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C. Planning

Before construction can take place. the road system must be planned and located properly. Poor planning or road location is associated with the following most common causes of road failure (Furniss et al. 1991):

- Improper placement and construction of road fills.
- Insufficient culvert sizes.
- Very steep road grades.
- Improper placement or sidecast of excess materials.
- Removal of slope support by undercutting.
- Altering drainage by interception and concentration of surface and subsurface flows.

A plan showing existing and new road locations shall be developed and shall be shown on the company's access road charts, plan maps, and transportation plan map. Road locations shall be marked on the ground by survey stakes and blue-and-white, striped flagging. GPS coordinates shall be obtained to define the road center–line. These coordinates shall be used to create the transportation plan map. Road information shall also be placed on transmission line plan maps.

In the event of conflict between the drawings and the staked locations, the latter shall take precedence and transportation plan maps and the transmission line plan maps shall be revised accordingly. Any culverts and gates listed in access road charts are required. Fords, drainage improvements, rip-rap fills and crushed rock requirements listed in the access road charts are anticipated; however, requirements will be determined based on actual site conditions encountered. If changes are made in the field, the maps shall be revised to show these changes.

Because roads are long-term features, their location must be carefully chosen to provide safe access, avoid long-term maintenance problems, reduce potential for degrading water quality, and minimize costs over the short and long term. For more information see the references in Section H.

D. Road Construction

Roads shall be constructed in a manner that will support equipment for construction of the transmission line and to provide access roads for line inspection and maintenance equipment after the line has been constructed.

All construction access roads on federally managed public lands are subject to approval prior to construction. Other federal, state, and local landowners may require approvals before road construction commences on their property. Where side slopes exceed 60 percent, a full bench cut will be reburied. No side-casting of material will be allowed in these areas; end-haul of material will be required to a designated location approved by the federal agency or other property owner. Close coordination with the federal agency will be required.

The detail drawings provided in this standard for completing cuts and fills, providing drainage, and installing culverts are furnished as guidelines for the road construction. Actual road construction cut slopes, fill slopes, drainage requirements, rip-rap, and

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crushed rock needs will be determined during construction based on site conditions. Cut and fill quantities shall balance when possible, reducing the material removed or brought in for road completion.

During road construction, consideration shall be given to restoration required after construction completion, including re-vegetation, rock cover, and other drainage and erosion control factors. Clearing and grading shall be minimized to reduce the restoration requirements for disturbed areas. The visual impact of roads on the surrounding areas shall be considered at all times during construction.

Crushed rock shall be sound, hard, durable, angular, or sub-angular rock, suitable for road base courses. Crushed rock shall be well graded 2″ to 1/4″ size (3″ to minus-size skip-graded is a minimum acceptable substitute).

Rip Rap shall be sound, hard, durable, rock ranging in size from 2″ to 8″ as specified on drawings and as required by conditions.

Any improvements made, including spur roads, fords, bridges, equipment landings and lay-down areas, shall be held to a minimum. Following completion of the work, the removal of these improvements shall be at the discretion of company or its representative.

Roads shall be sufficiently wide, but not less than 14′ in width. The construction shall provide bench cuts, grading, filling, compaction, and ditches necessary to accommodate heavy construction equipment and other heavily loaded vehicles. Roads shall be installed in accordance with the figures in this standard.

All roads shall be constructed with a smooth, uniform surface and shall be outsloped where practical to provide drainage and minimum erosion. Avoid outsloped roads where they will direct runoff onto erodible fill, embankments, or where they would cause off-camber curves. Where outsloping is not practical, sufficient water dips, water bars, or ditching, shall be installed as shown in the Section E of this standard. See standards TA 503, *Roads—Water Bars and Water Dips* and TA 504, *Roads—Culvert Installation* for further detail on proper drainage.

Outsloping a road means building the road surface so that it is tilted outward 2-3 percent so water can run off the road surface (see Figure 1). Outsloping works well under the right conditions. The following conditions are favorable for use of outsloped roads with no ditch:

- Short back slopes.
- Terrain slope less than 20 percent.
- Road grades steeper than 3 percent.
- Seasonal road use.
- Light traffic.
- Fast re-vegetation of cut and fill slopes.

Outslopes become a problem if roads are not maintained when ruts begin to form. The ruts will then act as channels.

The following conditions are unfavorable for outsloping:

- Long back slopes.

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- Terrain steeper than 20 percent.
- Steep, continuous road grade.
- Where ruts occur and allow water to concentrate and run along the road.
- Where winter hauling is required.

To minimize rutting and erosion of the right-of-way, road construction shall be completed during predominantly dry conditions. Fills, which will essentially consist of native soils, shall not be made when the moisture content of the soils will not permit adequate compaction.

As a minimum level of compaction, common fill shall be placed in 12″-thick, loose lifts and each lift compacted by walking or tracking in with a heavy dozer or rubber-tired (pneumatic) equipment. Each lift shall be compacted by at least four passes with the equipment.

In areas of dense vegetation, the surface organic material shall be stripped from the ground within the roadway and cut and fill areas. Stripping to a maximum depth of 6″ will be adequate unless otherwise directed by the company or its representative. Stripped and disturbed areas shall be compacted as specified above or as shown in the drawings or access road charts.

Personnel constructing the access road system shall be aware of the definition of a wetland such that potential wetlands may be identified before work is begun. In some cases where wetlands have been identified, road construction personnel shall comply with requirements as directed by the company or its representative.

Ditches, installed culverts, and/or installed surface drains to drain wet areas resulting from springs, seeps, or poor surface drainage may be required to construct the road. Drainage ditches shall be shallow, not to exceed 18″ in depth. The ditch bottom shall have a width of approximately 1′ and side slopes shall not exceed 1.5 to 1 (see Figure 5).

All earthwork and grading, cut and fill slopes, and other disturbed areas shall be re-vegetated with seed. Unless otherwise specified, the seed mix shall consist of 45 percent rye grass, 45 percent orchard or fescue grass, and 10 percent clover. The seed shall be applied at a minimum of 60 pounds per acre. At locations where the ground slope is greater than 10 percent, the seeds shall be covered with straw- or wood-fiber mulch applied at a rate of one ton of mulch per acre. The seed shall be spread in early fall when weather permits.

All phases of operation, including the construction of truck and tractor roads, shall be conducted to minimize as much as practical the damage to the soil and to prevent gullies and creation of other conditions conducive to soil erosion. Repair of all erosion damage shall be accomplished as soon as it occurs to prevent further loss of material into existing drainages. Cut slopes shall be stabilized. Care shall be taken to avoid creation of wet land conditions.

Crew movement on the right-of-way, including access routes, shall be limited so as to minimize damage to land or property. Crews shall endeavor to avoid marring the lands. Ruts and scars shall be obliterated, damage to ditches, terraces, roads and other features of the land shall be corrected, and the disturbed land beyond the access roads and structure landings shall be restored, as nearly as practical, to its original condition before final acceptance of the work.

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Erosion control measures shall be installed to minimize the transport of eroded sediments to streams and other waterways. Erosion control measures may include, but are not necessarily limited to, straw bales and silt fences.

E. Road Cross Sections

This section provides road cross sections, including required dimensions, cleared right-of-way width, and other information. See general road construction notes in Section G and references in Section H.

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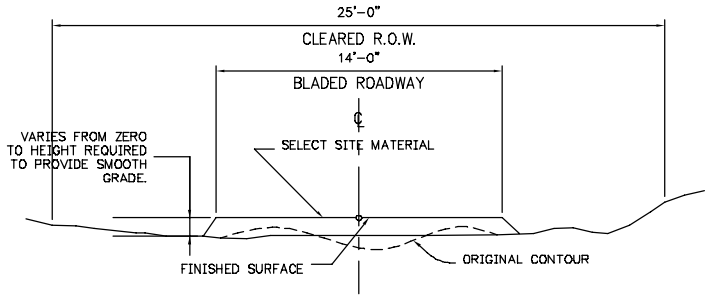
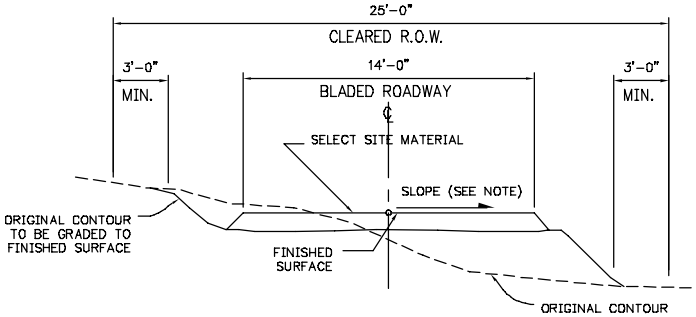
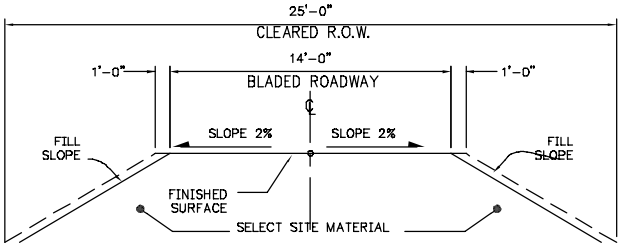


TYPICAL SECTION ON FLAT GROUND

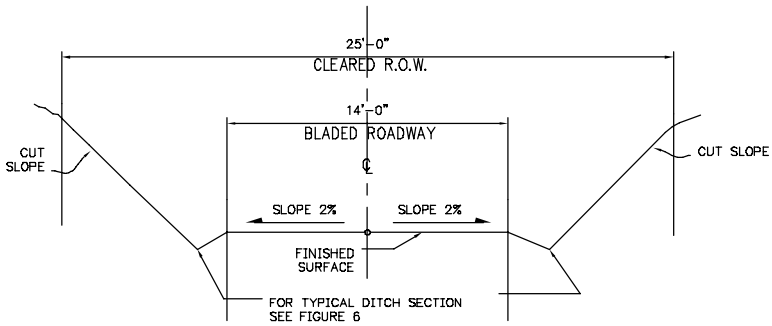


NOTE:
PROVIDE "OUTSLOPED" ROAD CROSS-SECTION, BY GRADING ROADS TO SLOPE IN THE SAME DIRECTION AS THE SURROUNDING TOPOGRAPHY. SO THAT THE UPHILL EDGE OF THE ROAD IS HIGHER THAN THE DOWNHILL EDGE. BESIDES ALLOWING RUNOFF TO EXIT THE ROADWAY IN AS SHORT A DISTANCE AS POSSIBLE. THIS ELIMINATES THE NEED FOR ROADSIDE DITCHES. PROVIDE A MINIMUM 2% OUTSLOPE ON ROADS WITH GRADES AS STEEP AS 15% ON STEEPER ROADS. PROVIDE 4% OUTSLOPE. AVOID OUTSLOPED ROADS WHERE THEY WOULD DIRECT RUNOFF ONTO ERODIBLE FILL, EMBANKMENTS OR WHERE THEY WOULD CAUSE OFF-CAMBER CURVES.

TYPICAL "OUTSLOPE" SECTION



TYPICAL FILL SECTION



TYPICAL THROUGH CUT SECTION

Figure 1—Typical Road Sections for Different Terrains

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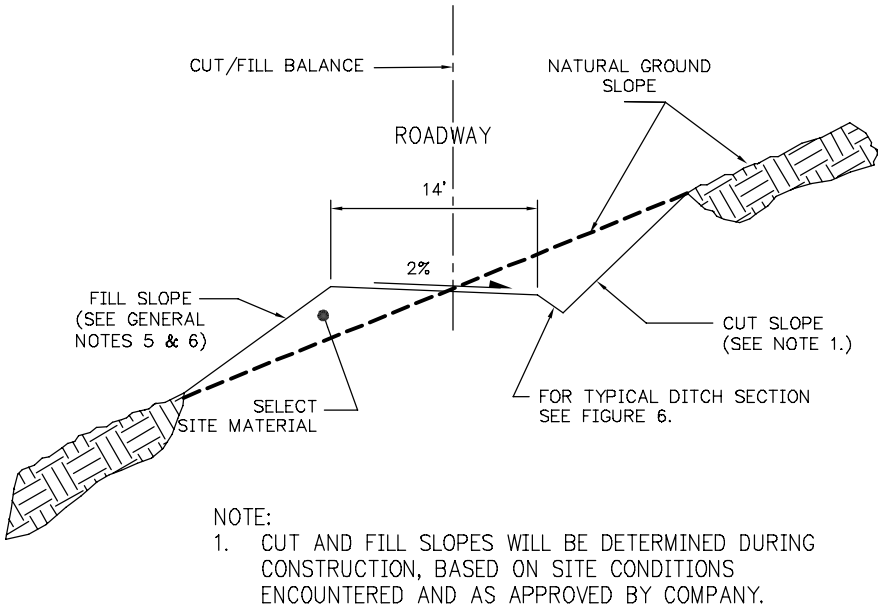

Figure 2—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Less Than 30 Percent (15□)

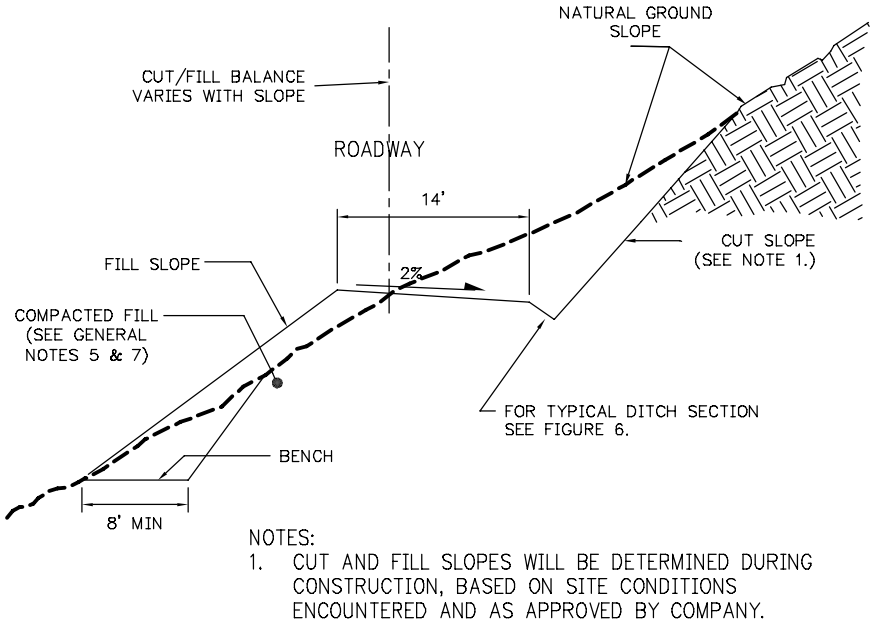

Figure 3—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Greater Than 30 Percent (15□) and Less Than 60 Percent (30□).

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Roads—Construction

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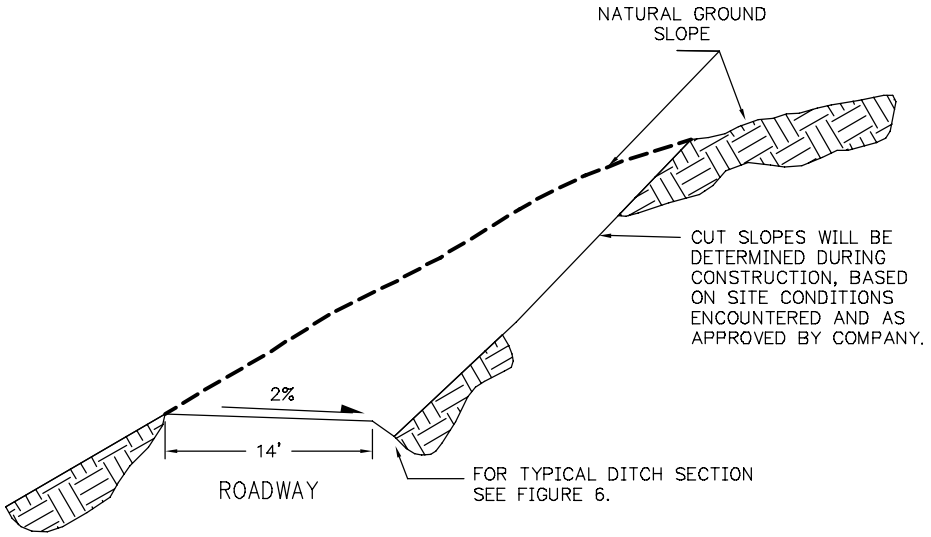

Figure 4—Typical Cut and Fill Section
for Natural Side Slopes Greater than 60 Percent (30□).

F. Typical Ditch Section

Typical ditch construction is depicted in Figure 6. Many of the road cross sections shown above use this ditch construction.

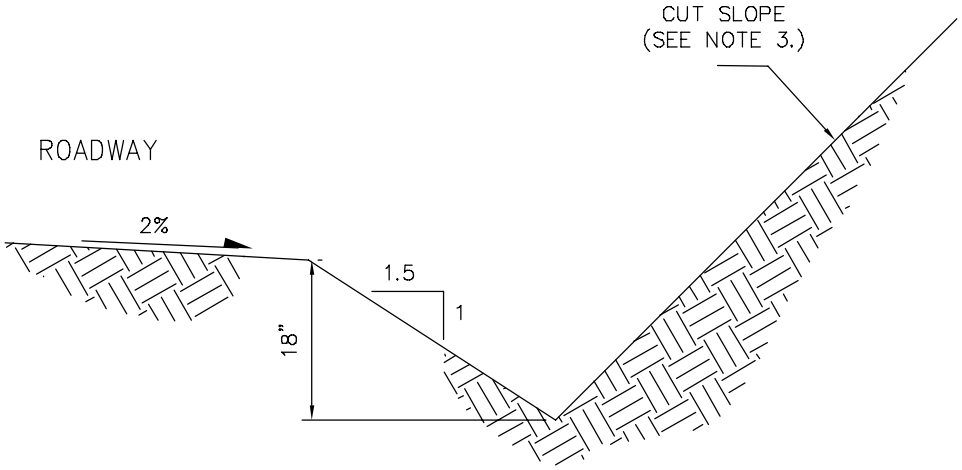

Figure 5—Ditch Section

Notes:

1. Slope the ditch so that it will drain; ditch shall have a minimum slope of 1 percent and not to exceed 3 percent.
2. Remove all soil, rock, and other material loosened by grading from ditch.
3. Cut slopes will be determined during construction based on site conditions and as approved by the company representative.

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G. General Road Construction Notes

1. Roads shall follow natural contours as much as practical.
2. Maximum grade for roads shall be 10 percent. Grades up to 20 percent will be allowed for a distance of 1000 feet where unavoidable and approved by the company.
3. Radius of curves shall be 200 feet, with a minimum of 80 feet when approved by company. When curves are less than 200 feet, roadbed shall be widened as shown in Table 1.
4. Cut and fill slopes will be determined during construction based on site conditions encountered and as approved by the company.
5. Unless specified otherwise by the company, fill material shall consist of site material excavated from RG-1 cuts. Fill material shall have a maximum particle size of 12″.
6. Fills placed on side slopes of 30 percent or less shall be placed in nominal 9″ lifts and compacted by walking in with at least four passes of earthwork equipment.
7. Fills placed on side slopes greater than 30 percent shall be placed in nominal 12″-thick lifts and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D 696 method of compaction.
8. Allow 1′ additional road width on fill slopes for sloughing. When fills are over 6′ high at shoulder, allow 2′ additional road width.
9. Road construction across wetland areas may require placement of fragmented 6″ minus rock. Rock shall be placed in 8″-thick lifts and compacted by a heavy dozer or vibratory roller until well keyed. RB-(1) rock will be provided and installed by the contractor. Proper construction shall be use in wetlands so conditions as shown in Figure 7 do not develop.
10. Geotextile fabric material shall consist of MIRAF1212 OHP or equivalent, as approved by the company.

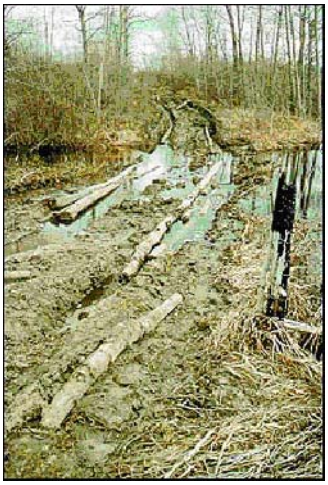

Figure 6—Poor Road Construction in Wetland Area

Table 1—Road Width for Different Road Curves

Curve Radius (feet)	Roadbed Width (feet)
200 or >	14
150 to 200	16
100 to 150	18
80 to 100	20

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H. References

1. *Handbook for Forest and Ranch Roads*, William E. Weaver, PHD. and Danny K. Hagans, 1994.

2 *A Landowner's Guide to Building Forest Access Roads,* United States Department of Agriculture, Forest Service, Northeastern Area State and Private Forestry, July 1998.

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Roads—Water Bars and Water Dips

A. Scope

This standard describes drainage methods, including water bars, water dips, ditches, and outsloping, which can be used where intermittent or permanent streams cross roadways. Depending on the method used, drainage structures should be installed during or after basic road construction. For information on ditches and culverts see TA 504, *Roads—Culvert Installation*.

B. Water Bars and Dips

Water bars are narrow structures which can be constructed at various depths depending on the need. Deep bars are generally used on roads closed to vehicle traffic. Figure 1 shows a typical shallow water bar constructed across a road.

Figure 1—Water Bar

Water bars can be constructed with hand tools, but bulldozers are most commonly used. It is best to start at the end of the road and work outward so the bars are not damaged with frequent crossing by heavy machinery.

Water bars should be installed at an approximate 30° angle downslope. Figure 2 shows dimensions for construction of water bars and water dips with and without drainage ditches to be used on access and right-of-way roads. The outflow end of the water bar should prevent water from accumulating and should not flow directly into a stream. This will allow sediment to settle out of the water, preventing erosion. As a supplement to water bars on closed roads, logging slash can be lopped and scattered, grass can be planted, or both. Table 1 shows recommended spacing between water bars for various road grades.

Table 1—Distance Needed Between Water Bars

Road grade (percent)	Distance (feet)
2	250
5	135
10	80
15	60
20	45
25	40
30	35

Source: Kochenderfer 1970, p. 28

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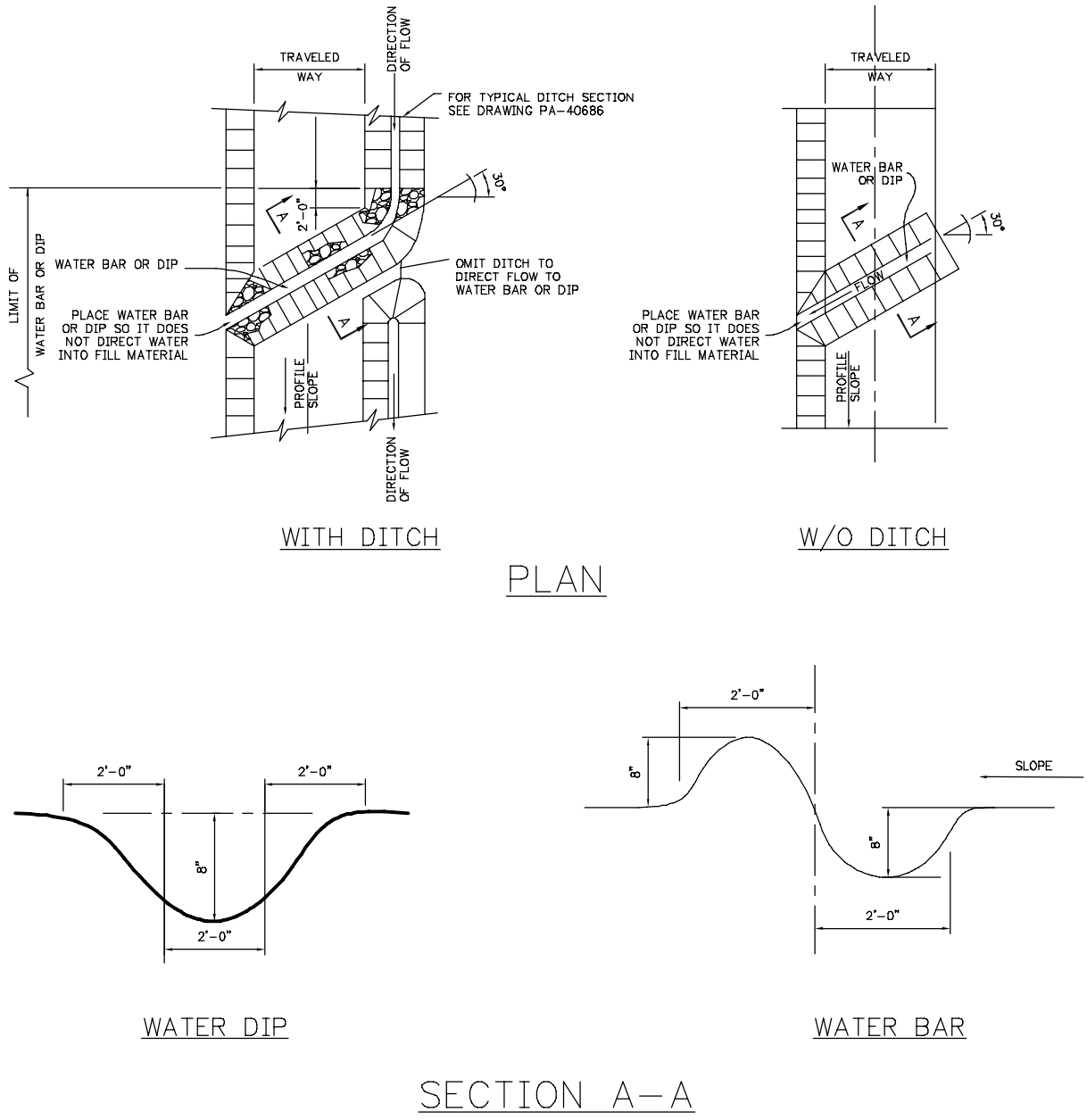

Figure 2—Water Bar and Dip Construction Plan and Profile

C. Broad-Based Drainage Dips

Broad-based drainage dips are easily maintained and do not increase wear on vehicles or reduce hauling speed when properly installed. Because of construction characteristics, these dips should not be used on roads graded in excess of 10 percent. (See Figure 3.)

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Table 2—Minimum Distance Needed Between Water Bars

Road grade (percent)	Distance (feet)
2 – 4	300 – 200
5 – 7	180 – 160
8 – 10	150 – 140

Source: Kochenderfer 1970, p. 19, 25

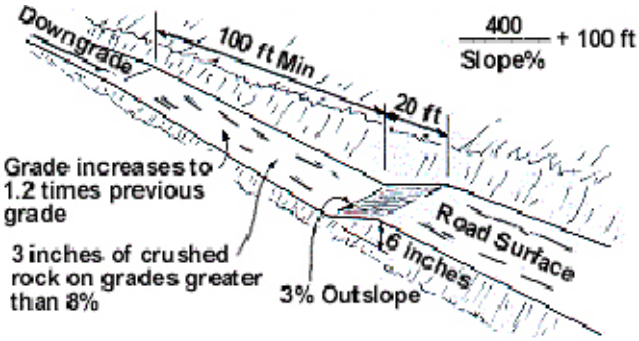

Figure 3—Typical Spacing Between Drainage Dips

As with a water bar, care should be taken to ensure adequate drainage at the outflow of a dip. Water dips should never be designed to discharge directly into a stream. The discharge area should be protected with stone, grass, sod, heavy litter cover, brush, logs, or other natural material which will reduce the velocity of the water. Natural litter may be adequate in many cases if the terrain is not too steep.

Table 2 presents the spacing of broad-based dips as computed with the formula shown in the figure.

Close attention should be paid to construction of broad-based dips, as they are often made too small. Figure 3 shows minimum dimensions. Dips should be armored with crushed rock or gravel. Figure 4 shows a practical example of how a broad-based drainage dip can be used.

Figure 4—Drainage Dip

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Roads—Culvert Installation

A. Scope

This standard provides information about the construction of surface drainage and the installation of culverts. It is impossible to over-emphasize the importance of drainage in maintaining stable roads and protecting water quality. Roads should be designed and constructed to cause minimal disruption of natural drainage patterns. Provisions for two components of road drainage should be included in every road project: 1) road-surface drainage (including drainage which *originates* from the cutbank, road surface, and fill-slope), and 2) hill-slope drainage (including drainage from large springs, gullies, and streams which *cross* the road alignment).

B. Determining Culvert Diameter

Use pipe no smaller than 24″ in diameter. A drainage table provides help in determining the proper size culvert (see Table 1 and Table 2). The following example illustrates how to choose pipe size (Table 1) using the drainage table (Table 2). To use this method, you will need information on slope, soils, and cover.

Example: The area to be drained is 70 acres on steep slopes with heavy soils and moderate cover. In Table 2 under C opposite 70, find area required: 10.3 square feet. Under the area table for round pipe (Table 1), the pipe size should fall between 42″ and 48″. Use 42″ pipe with an area of 9.6 square feet. If a wood or other type of box culvert is planned, one 3′ by 3.5′ pipe would furnish the required area.

Table 1—Size of Round Pipe Needed for Area of Waterway

Area (square feet)	Pipe diameter (inches)
1.25	24
1.80	24
3.10	24
4.90	30
7.10	36
9.60	42
12.60	48
15.90	54
19.60	60
23.80	66
28.30	72
33.20	78
38.50	84
44.20	90

Source: Figure 45, Haussman and Pruett 1978, p. 36

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Table 2—Drainage Table Based on Talbot's Formula for Rainfall 1-1/4″ per Hour

Acres	Impervious 100% runoff †C=1.00	Steep slopes Heavy soils Moderate cover C=0.80	C=0.70	Moderate slopes Heavy to light soils Dense cover C=0.60	C=0.50	Gentle slopes Agricultural soil & cover C=0.40	C=0.30	Flatland Previous soils C=0.20
	Area required for waterway Square Feet							
2	0.5	0.4	0.4	0.3				
4	0.9	0.7	0.6	0.5				
6	1.2	1.0	0.8	0.7	0.6	0.5		
8	1.5	1.2	1.0	0.9	0.7	0.6		
10	1.7	1.4	1.2	1.0	0.9	0.7	0.3	
20	2.9	2.3	2.0	1.8	1.5	1.2	0.5	
30	4.0	3.2	2.7	2.4	2.0	1.6	0.5	0.3
40	4.9	3.9	3.4	3.0	2.5	2.0	0.9	0.4
50	5.8	4.7	4.0	3.5	2.9	2.3	1.2	0.6
60	6.7	5.4	4.6	4.0	3.4	2.7	1.5	0.8
70	7.5	6.0	5.2	4.5	3.8	3.0	1.8	1.0
80	8.3	6.7	5.8	5.0	4.2	3.3	2.0	1.2
90	9.1	7.3	6.3	5.5	4.6	3.6	2.3	1.4
100	9.9	7.9	6.8	5.9	4.9	3.9	2.5	1.5
150	13.5	10.6	9.3	8.0	6.7	5.4	2.7	1.7
200	16.6	13.4	11.5	10.0	8.4	6.7	2.9	1.8
250	19.8	15.8	13.6	11.9	9.9	7.9	4.0	2.0
300	22.9	18.1	15.5	13.6	13.5	9.0	5.0	2.7
350	25.5	20.3	17.5	15.3	12.7	10.1	5.9	3.3
400	28.0	22.5	19.5	17.0	14.0	11.1	6.8	4.0
450	30.9	24.9	21.0	18.5	15.3	12.1	7.5	5.1
500	33.4	26.4	23.0	20.0	16.6	13.3	8.4	5.6
600	38.5	30.8	26.3	23.0	19.0	15.2	9.0	6.2
700	43.0	34.2	29.8	26.0	21.5	17.0	9.9	6.6
800	48.0	38.1	32.9	28.5	23.8	19.0	11.4	7.7
900	52.0	41.5	35.9	31.1	26.0	20.8	12.9	8.6
1000	56.5	45.0	38.9	34.0	28.3	22.5	14.3	9.5

* See Table 1 for size of pipe needed.

† C is the constant factor based on a combination of how much water the soil can hold, slope, and cover. C = .70 is adequate for most conditions prevailing in the Northeast. C = 1.00 represents complete runoff of precipitation (e.g., rock surfaces).

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Table 3 provides a simplified method for determining culvert size. To use this table, determine the size of the drainage area (in acres) above the stream crossing as well as the expected life of the culvert. A private consultant may provide assistance determining the size of a culvert. Make sure they do not size the culverts for a 50- or 100-year storm, unless that is what is required. For low-traffic or temporary roads, a flood frequency of 20 years can be used.

Table 3—Culvert Sizes by Drainage Area

	Recurrence interval (years)		
	10	20	50
Area (acres)	**Culvert diameter (inches)**		
10	24	24	18
20	24	24	20
30	24	24	24
40	24	24	26
50	24	24	28
60	24	24	28
70	24	26	30
80	24	26	30
90	24	28	32
100	26	28	34
125	28	30	36
150	28	32	38
175	30	34	40
200	32	36	42

Source: Table 3, Helvey and Kochenderfer 1988, p. 125

C. Determining Culvert Lengths

The following simplified procedure can be used to determine culvert lengths needed for new stream crossings or ditch-relief drains. Refer to Figure 1 for specific locations and distances described in the step-by-step procedure. A complete example follows these instructions.

1. Estimate the depth of the fill (F) at the running surface on the inside of the road above the culvert inlet (point “a”).
2. Additional width (C) due to fill is then estimated as 1.5 times the fill depth (F) (that is, all fill slopes are assumed to be 1.5:1 in steepness).
3. Add half the road width (1/2 W) and the fill width (C). Measure this distance horizontally upstream from the center line of the road, and place stake at location A. The horizontal

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distance must be converted to slope distance before you can tape it off on the ground. Use Table 4 to convert horizontal distance to slope distance (on-the-ground distance).

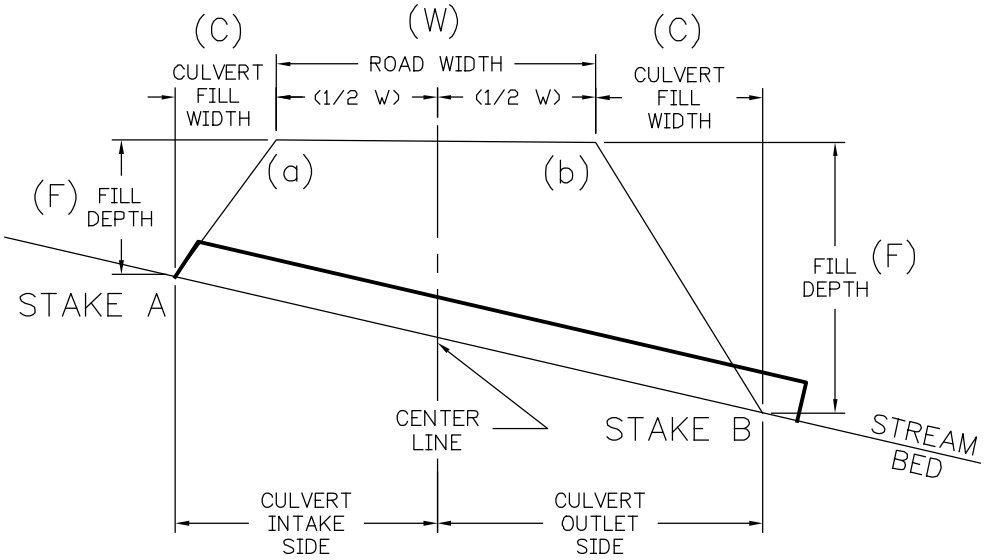

Figure 1—Culvert Length

4. Repeat steps 1 through 3 for the culvert outlet side of the crossing and place stake at location B.
5. Measure the slope length between stakes A and B. This measurement, plus two to four extra feet, is the length of culvert needed for the installation. The extra several feet are added to extend the inlet and outlet beyond the edge of the fill.

   Forty-four feet horizontal distance equals 52.4 feet slope distance on a 65 percent slope.

   horizontal distance × correction factor = slope distance

   (44ft) × (1.19) = 52.4′

   Example: What culvert length is needed for a 14′ wide road crossing a stream with a 55 percent gradient? The estimated inside fill-depth, above the culvert inlet, will be 6′ and the fill-depth above the outlet will be 13′.

   Step 1: Estimated depth of fill (F) at culvert inlet = 6′

   Step 2: (C) = 1.5 × 6′ = 9′

   Step 3: 14′ wide road (W), so 1/2 × 14′ = 7′

   Stake A (the location of the culvert inlet) should be placed on the ground a distance of (9′ + 7′) = 16 horizontal feet up the stream channel from the flagged centerline of the road. According to the correction table, 16 feet horizontally on a 55 percent slope is 18.2′ slope distance (16′ × 1.14 = 18.2′).

   Place the inlet stake (A) 18.2′ up the channel from the centerline of the road.

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Step 4: Estimated depth of fill (F) at culvert outlet =13′

Step 5: (C) = 1.5 ×13′ = 20′

Step 6: 14′ wide road (W), so 1/2 × 14 = 7′

Stake B (the location of the culvert outlet) should be placed on the ground a distance of (13′ + 20′) = 33 horizontal feet down the stream channel from the flagged centerline of the road. According to the correction table, 33 feet horizontally on a 55 percent slope is 37.6′ slope distance (33′ × 1.14 = 37.6′0.

Place the outlet stake (B) 37.6 ′down the channel from the centerline of the road.

Step 7: Length of culvert needed = 18.2′ + 37.6′ = 55.8′ or about 56′.

Approximately 2′–4′ should be added to this length to make sure the culvert inlet and outlet extend sufficiently beyond the base of the fill.

Final culvert length to be ordered and delivered to the site = 56 ′+ 4 ′= 60 ′.

Table 4—Slope Correction Factors to (C) on Vertical-Horizontal Distance to Slope Distance

Hill slope or stream channel gradient (%)	Correction factor (multiplier)	Hill slope or stream channel gradient (%)	Correction factor (multiplier)
10	1.00[1]	45	1.10
15	1.01	50	1.12
20	1.02	55	1.14
25	1.03	60	1.17
30	1.04	65	1.19
35	1.06	70	1.22
40	1.08	75	1.25

[1] For a slope of 10 percent or less, no correction factor is needed.

D. Culvert Installation for Ditch Relief

Insloped roads should be constructed: 1) where road-surface drainage discharged over the fillslope would cause unacceptable erosion or discharge directly into stream channels, 2) where fillslopes are unstable, or 3) where outsloping would create unsafe conditions for use. It is generally preferable to outslope road surfaces in order to disperse road-surface runoff before it has a chance to concentrate.

Insloped roads should be built with an inside drainage ditch to collect and remove road surface runoff (TA 501, *Roads—Construction*). Roads steeper than about 8 percent may be too steep for an inside ditch because of the potential for gullying in the ditch. Inside ditches should also be drained at intervals sufficient to prevent ditch erosion or

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outlet gullying, and at locations where water and sediment can be filtered before entering a watercourse. Filtering can be accomplished with thick vegetation, gentle slopes, settling basins, or filter windrows of woody debris and mulches secured to the slope.

As with outsloped roads, steep insloped road surfaces may be difficult to drain. Rolling dips (for permanent, surfaced roads and seasonal roads) or waterbars (for seasonal or temporary, unsurfaced roads) should be constructed at intervals sufficient to disperse road surface runoff from steep road segments. See TA 503, *Roads—Water Bars and Water Dips* for more information.

Ditches and culverts need occasional maintenance to maintain proper flow. Annual and storm-period inspection can prevent small problems from growing into large failures. When ditches become blocked by cutbank slumps, they need to be cleaned and the spoil deposited in a stable location. However, excessive maintenance (i.e., grading) can cause continuing and persistent erosion, sediment transport, and sediment pollution to local streams. It may also remove rock surfacing.

Ditch relief culverts should be designed and installed along the road at intervals close enough to prevent erosion of the ditch and at the culvert outfall, and at locations where collected water and sediment is not discharged directly into watercourses (Table 5).

Table 5—Maximum Suggested Spacing for Ditch Relief Culverts (ft)

Road grade	**Soil Credibility**				
(%)	**Very High**	**High**	**Moderate**	**Slight**	**Very Low**
2	600–800				
4	530	600–800			
6	355	585	600–800		
8	265	425	525	600–800	
10	160	340	420	555	
12	180	285	350	460	600–800
14	155	245	300	365	560
16	135	215	270	345	490
18	118	190	240	310	435

On new roads, ditch flow should be directed into a culvert and discharged into buffer areas and filter strips before it reaches a watercourse crossing. Ditches should neither be discharged directly into the inlet of a watercourse crossing culvert, nor should ditch relief culverts discharge into a watercourse without first directing flow through an adequate filter strip. In addition to installing ditch relief culverts on either approach to watercourse crossings, it is advisable to consider installing ditch drains before curves, above and below through-cut road sections, and before and after steep sections of the road.

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If a ditch is capable of transporting and delivering sediment to a Class I or Class II watercourse during a flood event, it can be said to function the same as a Class III watercourse. It has a bed and a bank, and it can transport sediment. Ditches which drain directly into watercourse-crossing culverts should be treated and protected from disturbance and erosion, just as is a Class III watercourse. Ditch relief culverts should be installed across ditched roads before water course crossings so that water and sediment can be filtered before reaching the stream.

Ditch relief culverts do not need to be large, since they carry flow only from the cutbank, springs, and a limited length of road surface. In areas of high erosion and/or storm runoff, nominal ditch relief culvert sizes should be 18″, but ditch relief culverts should never be less than 15″ diameter. Smaller culverts are too easily blocked (Figure 2). Generally, culverts should have a grade at least 2 percent greater than the ditch which feeds it to prevent sediment buildup and blockage. Where possible, ditch relief culverts should be installed at the gradient of the original ground slope, so it will emerge on the ground surface beyond the base of the fill. If this is not possible, the fill below the culvert outlet should be armored with rock or the culvert fitted with an anchored downspout to carry erosive flow past the base of the fill. Culverts should never be “shot-gunned” out of the fill, thereby creating highly erosive road drainage waterfalls (Figure 3).

Figure 2—Undersized Culvert

Figure 3—Culvert Not Installed at the Existing Stream Gradient

A 10 percent grade to the culvert will usually be self-cleaning. The culvert should be placed at a 30° angle to the ditch to improve inlet efficiency and prevent plugging and erosion at the inlet. The pipe should be covered by a minimum of 18″ of compacted soil, or to a depth of 1.5 times the culvert diameter, whichever is greater. Finally, inlet protection such as rock armoring or drop structures can be used to help minimize erosion, slow flow velocity, and settle sediment before it is discharged through the pipe.

E. Culvert Installation for Stream Crossings

The importance of proper planning for stream crossings cannot be overstated. If stream crossings are not planned and located before road construction begins, serious problems may arise, including unintended damage to natural resources. Requirements for stream crossings vary from state to state. Often, a permit is required; check with the water division of the local natural resources agency.

Culverts can be considered dams that are designed to fail. The risk of culvert failure is substantial for most crossings, so *how* they fail is critical. In the upper sketch in

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Figure 4, the crossing has failed and the road grade has diverted the stream down the road, resulting in severe erosion and downstream sedimentation. Such damage to aquatic habitats can persist for many years. Stream diversions are easy to prevent, as illustrated by the lower sketch, in which the road grade was such that a failed crossing caused only some loss of road fill.

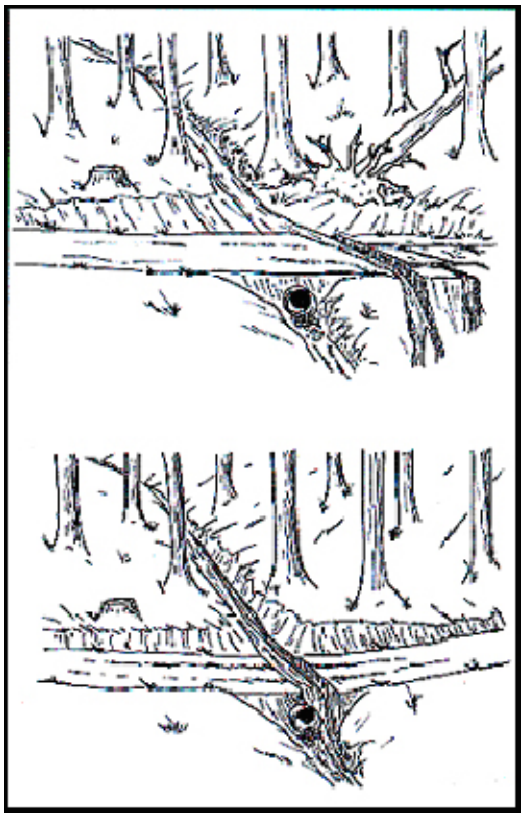

Figure 4—Stream Crossing Failures

Culverts should be installed as road work progresses. The culvert and its related drainage features should be installed via the following steps:

1. Place debris and slash to be used as a filter system, if needed.
2. Construct sediment ponds, if needed.
3. Complete downstream work first, such as energy dissipating devices and large rock riprap.
4. Route stream around work area until pipe is installed.
5. Construct pipe inlet structure.
6. Install culvert pipe.

A culvert inlet should be placed on the same level as the stream bottom. Where the culvert inlet has to be lower than the drainage gradient, a drop box can be constructed. The box provides a place for sediment to settle before water enters the culvert. Drop boxes require frequent maintenance.

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Install culvert pipes as near as possible to the gradient of the natural channel and so there is no change in the stream bottom elevation (Figure 5). Culverts should not cause damming or pooling. Seat the culvert on firm ground and compact the earth at least halfway up the side of the pipe to prevent water from leaking. Pipe culverts must be adequately covered with fill; the rule is a minimum of 30″ or 1.5 times the culvert diameter, whichever is greater.

Figure 5—Culvert Installed at Channel Gradient

If adequate cover cannot be achieved, an arch pipe or two small culverts should be installed. The cover must also be compacted to prevent settling in the road. Debris-laden material should not be used to cover pipe culverts.

The following are additional guidelines for installing culverts in streams:

- Limit construction activity in the water to periods of low or normal flow.
- Minimize use of equipment in streams.
- Use soil stabilization practices on exposed soil at stream crossings. Seed/mulch and install temporary sediment control structures, such as silt fences made of straw bales or geotextiles, immediately after road construction. Maintain these practices until the soil is permanently stabilized.
- Use materials that are clean, non-toxic, and which do not erode.

To prevent erosion and under-cutting of the inlet end of the culvert, provide a headwall. Sandbags containing some cement mixed with the sand, durable logs, concrete, or hand-placed riprap are suitable.

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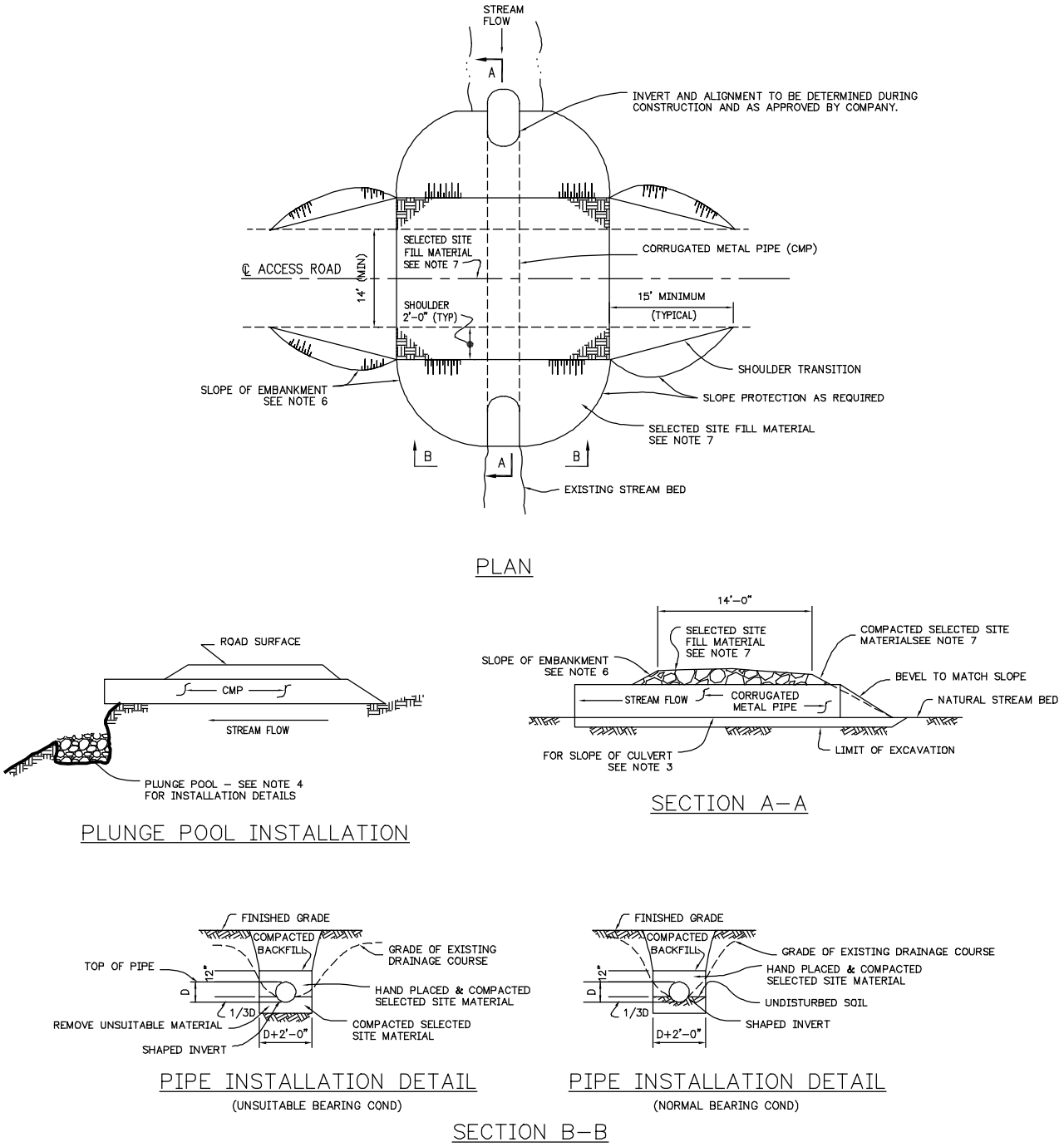

Figure 6—Stream Crossing Culverts

Installation Notes for Figure 6:

1. Culverts for existing drainage shall be aligned with the drainage.

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2. Culverts for roadway and ditch drainage shall be oriented at an angle of 30° to 45° to the roadway. See TA 503, *Roads—Water Bars and Water Dips*, for installation instructions.
3. Culverts shall be sloped a minimum of 1 percent or at least 1 percent steeper than the existing drainage.
4. When the culvert outlet is above grade, a plunge pool shall be constructed with length and width equal to two pipe diameters and a depth of one pipe diameter. Line plunge pool with geotextile fabric filled with 2″ to 8″ rock.
5. Culvert clogging debris located within 50′ of a culvert inlet shall be removed.
6. Cut and fill slopes will be determined during construction based on site conditions and as approved by the company.
7. See TA 501, *Roads—Construction*, for general road construction information.
8. Cover over culverts shall be 18″ or 1.5 times the culvert diameter, whichever is greater. To minimize damage from culvert failure, height of fill over culverts shall be as close to minimum as practical.
9. Outlets on culverts with pipe slopes greater than 3 percent shall be protected with a 30′ × 10′ strip of geotextile fabric fastened to culvert as a bib. Fabric shall be weighted down with 6″to 8″ rock to slow runoff.
10. Bottom of culvert shall be cushioned with fine-grain site material when installed over large rocks.

F. Fords

A ford is an alternative way to cross a water course where the streambed has a firm rock or coarse gravel bottom; the approaches are low and stable enough to support traffic; the stream is small to medium-sized, with water depth less than three feet and stream flows not exceeding 6 fps; and vehicle traffic is light. Dry fords can often be installed and used with minimal impact to the channel system.

The following standards apply when constructing a ford:

1. Install wing ditches, water-bars, dips, and level spreaders before the crossing. These structures should disperse runoff into an established and stable stream buffer.
2. If corduroy, coarse gravel, or gabion is used to create a driving surface, it should be installed flush with the streambed to minimize erosion and to allow fish passage.
3. Crossings should be at right angles to the stream.
4. Stabilize the approaches by using non-erodible material. The material should extend at least 50 feet on both sides of the crossing.
5. Requirements for stream crossings vary from state to state. Often a permit is required; check with the water division of the local natural resources agency.
6. Fords shall be designed for a low-maintenance long-term life. Rock size and grading, depth of rock, fabric underlayment, etc. and approaches shall be designed for the equipment expected to use the road.

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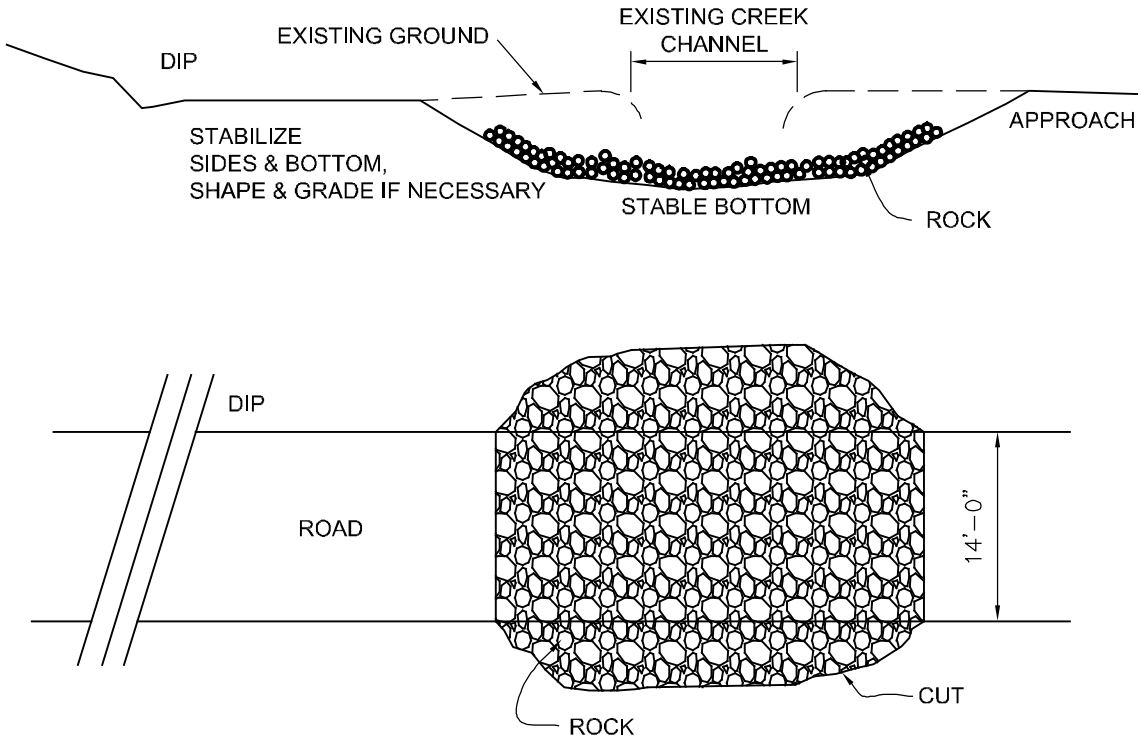

Figure 7 – Ford Stream Crossing

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Gates, Access

A. Scope

This standard provides information for obtaining or constructing three different types of access gates.

B. Pipe-Frame Gate

These gates can be obtained in 12′, 14′, or 16′ lengths and are constructed of 16-gauge, 1.66″ diameter steel tubing. The hinges shall be constructed of 3/4″ diameter by 12″ long rod. The latch shall be a 36″ chain with a keeper. A 36″ chain shall also be supplied to secure the hinge end of the gate. The gate may either be galvanized or painted with good quality paint.

Table 1—Pipe-Frame Gate Specifications

Length (ft)	Weight (lbs)*
12	97
14	116
16	129

* Weights are for Powder River Gates.

The gate shall be installed between two 8″ × 8″ × 10″ treated posts buried 4.5′ to 5′ in the ground. See Figure 1 below. Use manufacturer's instruction for installation of gate on posts.

Figure 1—Installed Gate

Gates may be supplied by any of the following companies: HW Brand, Powder River, Dry Creek Fencing System, and Pacific Steel & Recycling. Gates may be purchased through local granges or farm supply stores.

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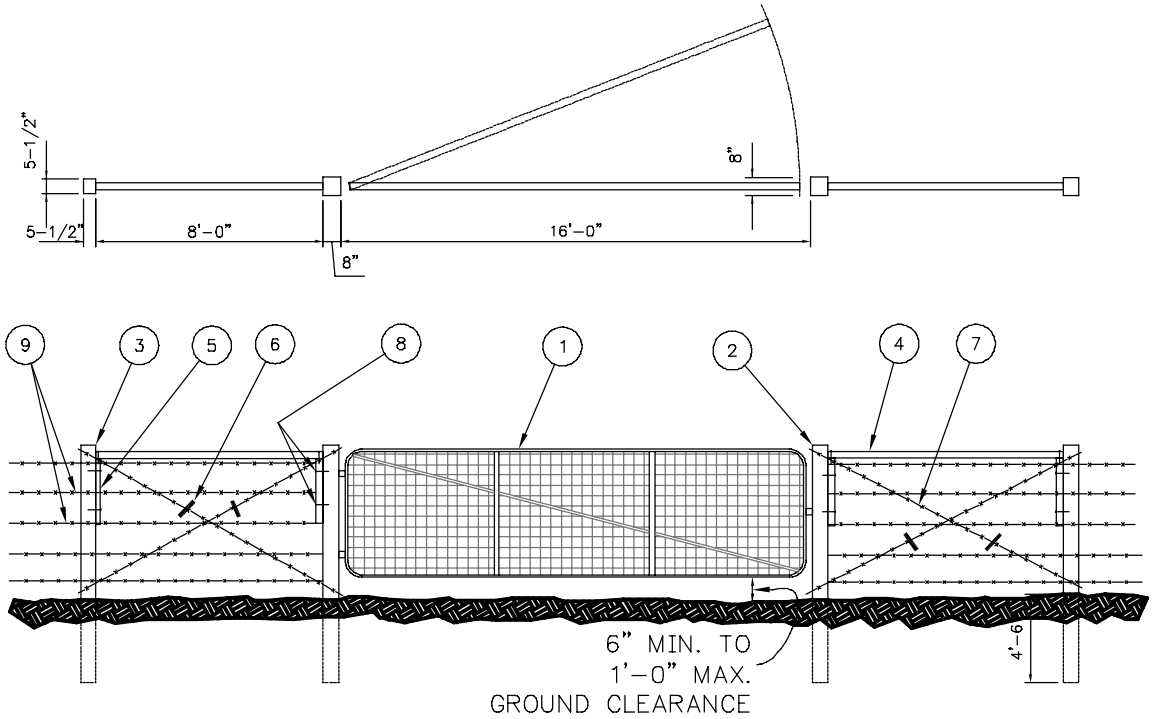
C. Pipe & Wire Mesh Gate



NOTES:
GATES WILL BE 54" HT, 16 FT. HEAVY WEIGHT GALVANIZED STEEL, 11 GA. FILLER, 1-3/8" O.D. TUBULAR STEEL FRAME, WITH DIAGONAL TENSION WIRE.

Figure 2—Mesh Gate Installation Details

The 16′ gate shown in Figure 1 can be substituted for the wire mesh gate diagrammed in Figure 2.

Table 2—Components

Item	Quantity	Description
1	1	Gate, Galv., 54″ × 16′-0″, See Notes
2	2	Post, Treated, 8″ × 8″ × 10′-0″
3	2	Post, Cedar, 5-1/2″ × 5-1/2″ × 10′-0″
4	2	Post, Cedar, 3-5/8″ × 3-5/8″ × 8′-0″
5	4	Fir Strip, 1-5/8″ × 3-5/8″ × 2′-0″
6	4	Fir Hub, 2″ × 2″ × 1′-6″
7	100′	Iron Wire No. 8 (Annealed)
8	1 lb.	Nail, Galv., 20 D. Common
9	1 lb.	Staples, Galv., 1-1/2″ Long

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D. Wire Access Gate

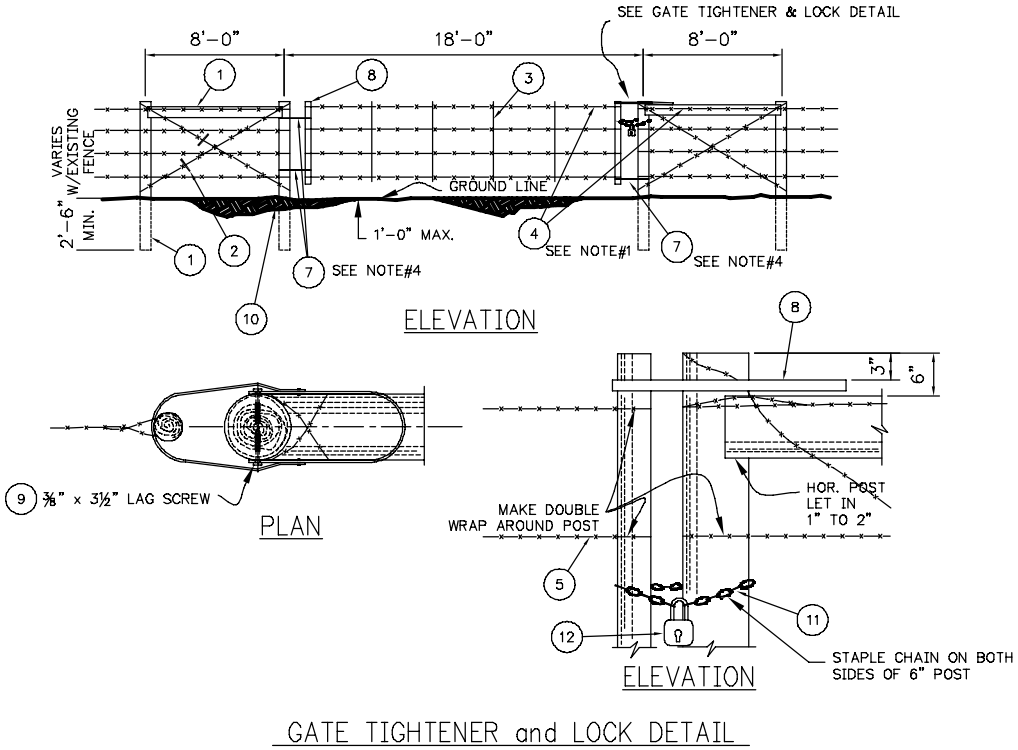

Figure 3—Barbed Wire Gate

Table 3—Components for Wire Access Gate

Item	Quantity	Description
1	6	Post, Cedar, Butt Treated, 6″ Dia. × 8′-0″
2	4	Douglas Fir Hub, 2″ × 2″ ×1′-6″
3	4	Wire Stays
4	150′	Barbed Wire Min. #14 Ga., 2 Point
*5	23	Copper Crimpit, Burndy #YC4C4 Or Equal
6	2	POST, CEDAR, 3″ DIA × 5′-0″
*7		#9 Wire, Galv.
8	1	Gate Tightener, Figure 4 TA 520
9	2	Lag Screw, Galv., 3/8″ × 3″
10		Staples
*11	1	Wire Chain, Size #2 10-Ga, Galv.
*12	1	Lock

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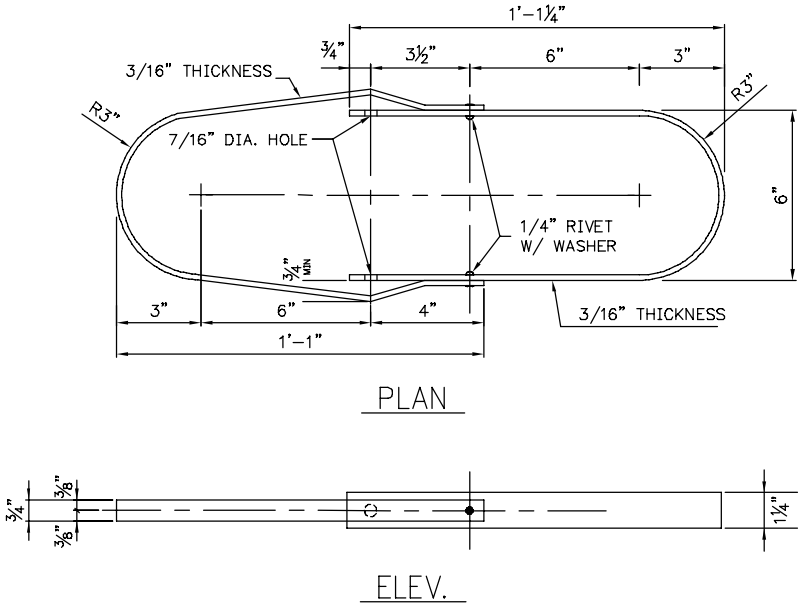
TA 520

Notes:

1. Construction displayed in Figure 3 is intended as the minimum standard gate. If the fence has more rows of wire or contains woven wire, the gate shall be constructed accordingly.
2. All wire splices shall be constructed of copper crimpits (item 5).
3. Galvanized, #9 wire (item 7) shall be triple-looped and stapled to both sides of post.
4. Omit wire chain and lock (items 11 and 12) if not required by property owner.



NOTES:
1. STEEL SHALL BE IN ACCORDANCE WITH A.S.T.M. A–36, LATEST REVISION.
2. USE TWO COATS OF ZINC RICH PAINT (Z.R.C.–MFG. BY SEALUBE CO.) OR EQUAL.

Figure 4—Gate Tightener (SI# 647808)

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Gates, Road Closure

A. Scope

This standard provides specifications the construction of a road closure gate suitable for use on Bureau of Land Management or Forest Service lands. All material shall be supplied by the installer crew.

B. Construction Notes

1. Pipe sizes shown are for standard weight steel pipe.
2. Road closure sign shall be “FR11-2” centered on the gate as shown in Figure 1.
3. Gate posts shall be marked with reflective yellow Type 2, 6″ × 12″ panel object markers on both sides of the locked closed post and one side of the locked open post. Markers should be placed as show in Figure 1 and Figure 2. On the hinge post, the marker shall be mounted to face traffic when the gate is locked open.
4. Weld two bolt studs to the post for attaching signs and markers. See Figure 2 for details
5. Barricade markers shall be fabricated using 1′-0″ by 3′-0″ panels, white with 3″-wide, red, diagonal stripes.
6. Road closure sign, gate post object marker, and barricade markers shall be furnished by gate fabricator or installer.
7. After fabrication, all gate components shall be cleaned and galvanized. After galvanizing, washer and nuts for sign attachment shall be put on all stud bolts. Nuts shall be installed using fingers till tight against the sign. All underground parts shall be painted with coal tar “bitumastic” or equivalent.

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Table 1—Gate Components

Item	Qty	Unit	Description
1	1	EA	Tube, steel, 3/16″ × 2-1/2″ × 2-1/2″ x 10′
2	1	EA	Tube, steel, 3/16″ × 2″ × 2″ × 10′
3	1	EA	Tube, steel, 1/8″ × 2-1/2″ × 2-1/2″ × 10′
4	1	EA	Pipe, standard, 3″ diameter by 6′-6″ long, thread top to install pipe cap (item 8)
5	1	EA	Tube, steel, 3/16″ × 3″ × 3″ × 6′-1-3/4″
6	8	EA	Angle, steel, 3/16″ × 1-3/4″ × 1-3/4″ × 40″
7	1	EA	Tube, steel, 3/16″ × 4″ × 4″ × 2′-9″
8	1	EA	Cap, pipe, treaded, to fit 3" diameter pipe.
9	1	EA	Ring, cut from 3-1/2″ diameter standard pipe
10	2	EA	Plate, steel, 1/4″ × 24″ × 24″
11	1	EA	Plate, steel, 1/4″ thick, lock close top plate
12	2	EA	Tube, steel, 3/16″ × 6″ × 6″, 6″ length
13	1	EA	Plate, steel, 1/8″ × 2″ × 2″ end cap
14	4	EA	Marker, barricade, (BM-R-36), 12″ × 36″ white with 3″ red, diagonal stripes
15	2	EA	Sign, Road Closure, “FR11-2”, 12″ × 24″ white with black letters.
16	5	EA	Marker, Object, Type 2 , Reflective Orange.
17	22	EA	Bolt, Stud, for Marker Attachment, 3/8″ × 1-1/4″, /w nut & washer
18	1	EA	Plate, steel, 1/4″ thick, lock open top plate
19	2	EA	Link, oblong, weld together per Figure 2, from Carson Steel
20	1	EA	Plate, steel, 1/4″ × 12″ × 12″

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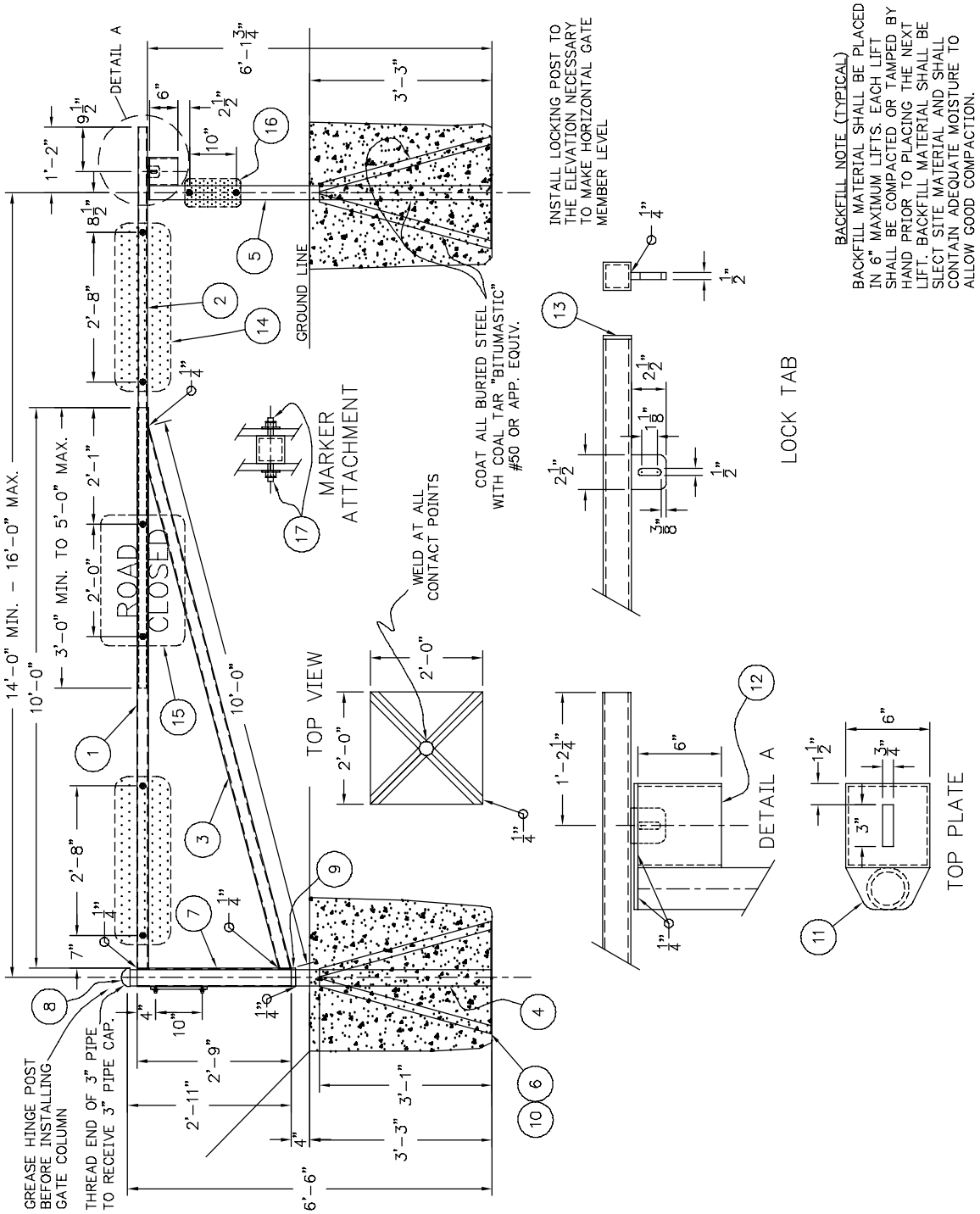

Figure 1—Gate Construction Details

Transmission Construction Standard

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Engineer (C. Wright): CLW

Standards Manager (G. Lyons): GS

Gates, Road Closure

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7 Apr 08

TA 521

TA 521

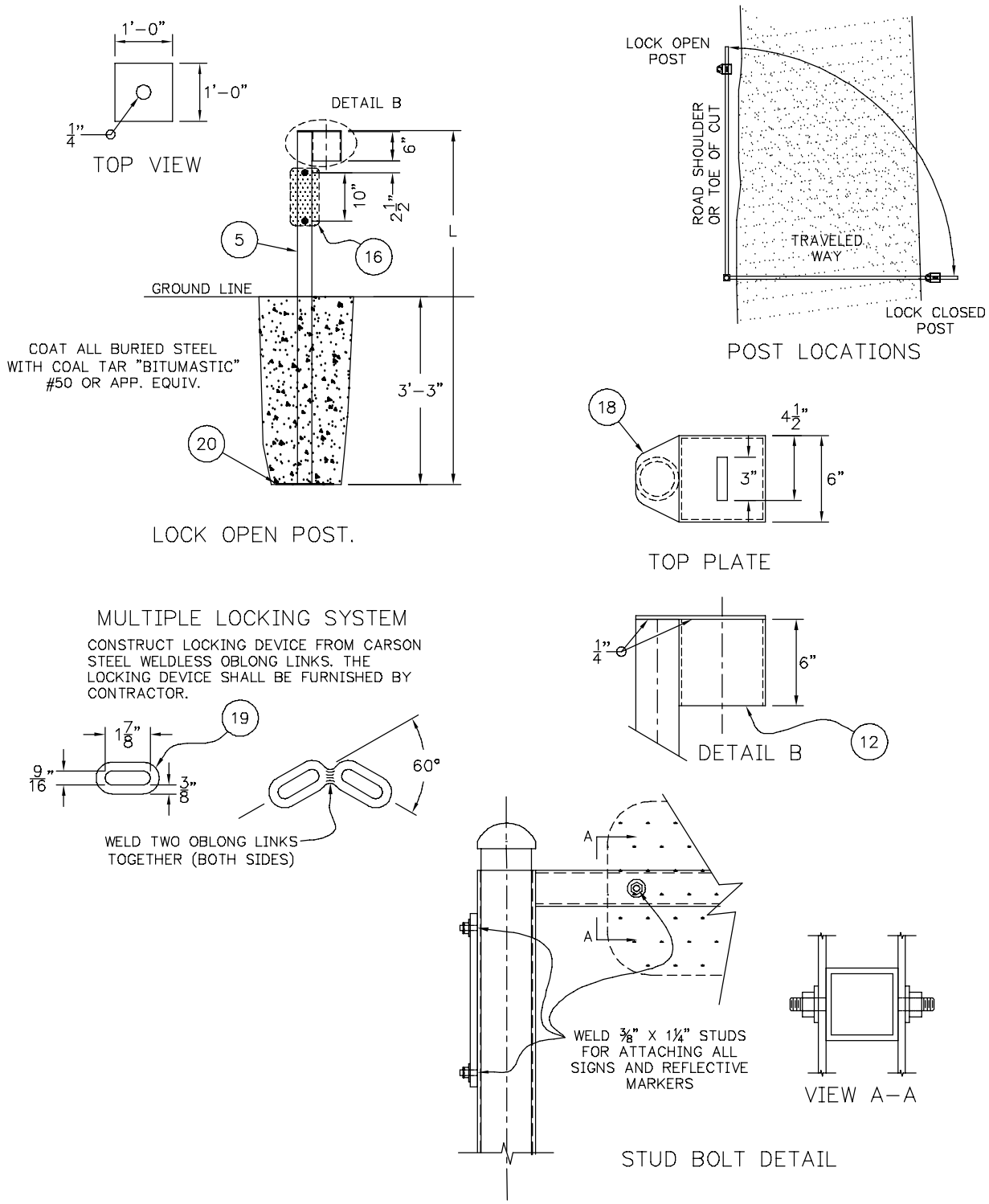

Figure 2—Lock Open Post, Locking Mechanisms and Stud Bolt Detail

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Appendix C2 – PacifiCorp's Vegetation Management Standards

PACIFICORP

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Transmission & Distribution Vegetation Management Program

Specification Manual

Rev	Status	Date	Author	Change Tracking
00	Issued for implementation	12/15/2008	R. H. Miller	Manual created
01	Reviewed/Updated	06/15/2012	R. H. Miller	1. Clarified language throughout 2. Revised Chapter 4 to reflect a process checklist used for project management. 3. Modified Clearance 2 to strictly reflect table 5 in IEEE 516-2003 Table 5. 4. Section 6.4.1 that if contract forest techs identify an imminent threat, that they contact the appropriate line patrolmen so they initiate the imminent threat procedure.

Approval Curtis Mansfield 07/02/2012

Printed Name of Approver Date

Managing Director, T&D Support Services

Title of Approver

Transmission & Distribution Vegetation Management Program

Specification Manual

June 15, 2012

PacifiCorp, Director, Vegetation Management
1407 West North Temple, Room 230
Salt Lake City, Utah 84116
801.220.2271

Transmission & Distribution
Vegetation Management Program

Specification Manual

Mission Statement:

Manage trees and vegetation around PacifiCorp's transmission and distribution facilities in a professional, cost effective and environmentally conscientious manner to provide safe, reliable and outstanding service to our customers.

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1. PROGRAM OVERVIEW

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Trees growing into or near power lines are a constant concern for PacifiCorp because they can create safety and service reliability risks. Close growing branches can provide access for children and others to high-voltage lines, exposing them to the potential danger of serious injury or death due to electric contact. Branches touching power lines can spark and start fires and cause interruptions in electric supply. Trees whipped by winds or weighed down by rain or snow often interrupt power, disrupting business and home life, as well as compromising critical community infrastructure, such as hospitals and emergency services.

Three major electric grid failures, including the catastrophic blackout on August 14, 2003, were initiated by tree-caused outages on transmission lines (U.S.-Canada Power System Outage Task Force 2003).

For these reasons and others, the National Electrical Safety Code (ANSI 2011) Section 2l8-A-l, states:

Trees which may damage ungrounded supply conductors should be pruned or removed. Note: Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated temperatures are among the factors to be considered in determining the extent of pruning required.

PacifiCorp's distribution system averages over a 100 trees for every mile of line, any of which could potentially create problems. With that level of exposure, it is impossible to secure the system completely. Electric utilities, such as PacifiCorp, manage their systems to reduce electric supply and service reliability risks by clearing trees from power lines.

Often, particularly in the case of transmission lines, the best solution is to remove tall-growing trees and replace them with low-growing species that will never interfere with the high-voltage lines. However, it is not always possible to remove conflicting trees. Trees that cannot be removed must be pruned to clear the utility space using modern, arboriculturally-sound pruning practices.

PacifiCorp's specification manual covers the vegetation management program for both distribution and transmission. It includes program descriptions, specifications and protocols for customer relations. Its intent is to provide direction for foresters as well as contract GF/supervisors, forest techs and utility tree workers on PacifiCorp's system, and help inform PacifiCorp employees about vegetation management.

1.2 Professionalism

PacifiCorp employs a staff of professional foresters to manage its vegetation program and communicate effectively the community service it provides. Contractor front line managers, supervisors or general foreman (GFs) must be Society of Arboriculture (ISA) Certified Arborists and ISA Certified Utility Specialists. Forest techs must be Certified Arborists within 6 months of their appointment and be Certified Utility Specialists to receive the top pay grade.

In addition, the program is founded on the industry's best practices, including systematic maintenance, scientifically-based pruning, tree removal, tree replacement, cover type conversion, herbicide use and tree growth regulator applications; as well as specialized tools and equipment. Practices should follow those outlined in ANSI A 300 Part 1-pruning (ANSI 2008) and Part 7-Integreated Vegetation Management (ANSI 2006a) as well as International Society of Arboriculture Best Management Practices: Utility Pruning of Trees (Kempter 2004) and Integrated Vegetation Management (Miller 2007). PacifiCorp is progressive in trying innovative methods, products and equipment in order to improve safety and productivity.

1.3 Tree Line USA

PacifiCorp has been a Tree Line USA recipient utility every year since 2002. Tree Line USA is an award from the National Arbor Day Foundation, which recognizes utilities for utilizing practices that protect America's urban forests. To qualify, utilities must apply scientifically-based tree care, conduct annual worker training, plant trees, and conduct public education, including participating in Arbor Day celebrations. Contract employees should participate in annual worker training to cooperate with and help PacifiCorp continue to merit this award.

2. GENERAL SPECIFICATIONS

2.1 Safety

Federal and state OSHA requirements governing vegetation management activities shall be followed at all times. ANSI Z133.1 (ANSI 2006) and OSHA 1910.269, are examples of these requirements. Activities shall be conducted in a manner that minimizes both tree crew and public safety risks. Crews shall have functional radio or telephone communication on the job site at all times.

2.1.1 Holds and Clearances

Minimum approach clearances for qualified line clearance arborists specified in ANSI Z133 or PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003 [Table 2.1]), should not be compromised. If there is a difference in the distances required in the two standards, the greater of the two is operative. If work requires violating minimum approach distances, or if a crew leader determines conditions to be unsafe, crew leaders should contact their supervisor/GF before proceeding. The GF/supervisor should determine whether or not a clearance or hold is necessary at that work site.

A hold means deactivating automatic line reclosers on a circuit. It is intended to protect PacifiCorp facilities and should not be considered a safety measure. If, in the judgment of the crew leader, an energized line cannot be worked safely, the GF/supervisor should arrange a clearance. A clearance is de-energizing a line.

PacifiCorp does not issue holds or clearances to tree crews. Rather, the Company will issue holds or clearances to a journeyman lineman, who shall be present at the site during work. Holds require at least 48 hours notice to dispatch, vegetation management and the district operations manager. In some cases, a clearance on transmission lines must be requested weeks or even months in advance. Customers do not need to be notified if a clearance is necessary to safely work trees from lines in an emergency.

Customers who will be affected by planned power outages associated with clearances must also receive 48 hours notice, except during emergency situations such as storm restoration work. However, if a clearance is necessary to clear trees from lines in an emergency, customer notification is not necessary.

De-energized lines; whether due to a planned outage, wind or storm damage, or some other reason; must be worked as if they are energized. If a line cannot be worked safely assuming it is energized, it must be grounded. Linemen must set the grounds and be present during work, and give approval prior to tree crew members breaching minimum approach distances to ensure safety.

2.1.2 Emergencies

An emergency is major storm (as declared by PacifiCorp), or situation where vegetation has caused or presents a clear, imminent threat of causing an outage, fire or public electric contact.

2.1.2.1 Whistles

Every crew member, supervisor/GF and forester shall carry a whistle at all times while on work sites. A whistle shall be used as an alarm, indicating danger, commanding all crew members to immediately stop work and

Figure 2.1. Emergency procedure for a tree on line incident.

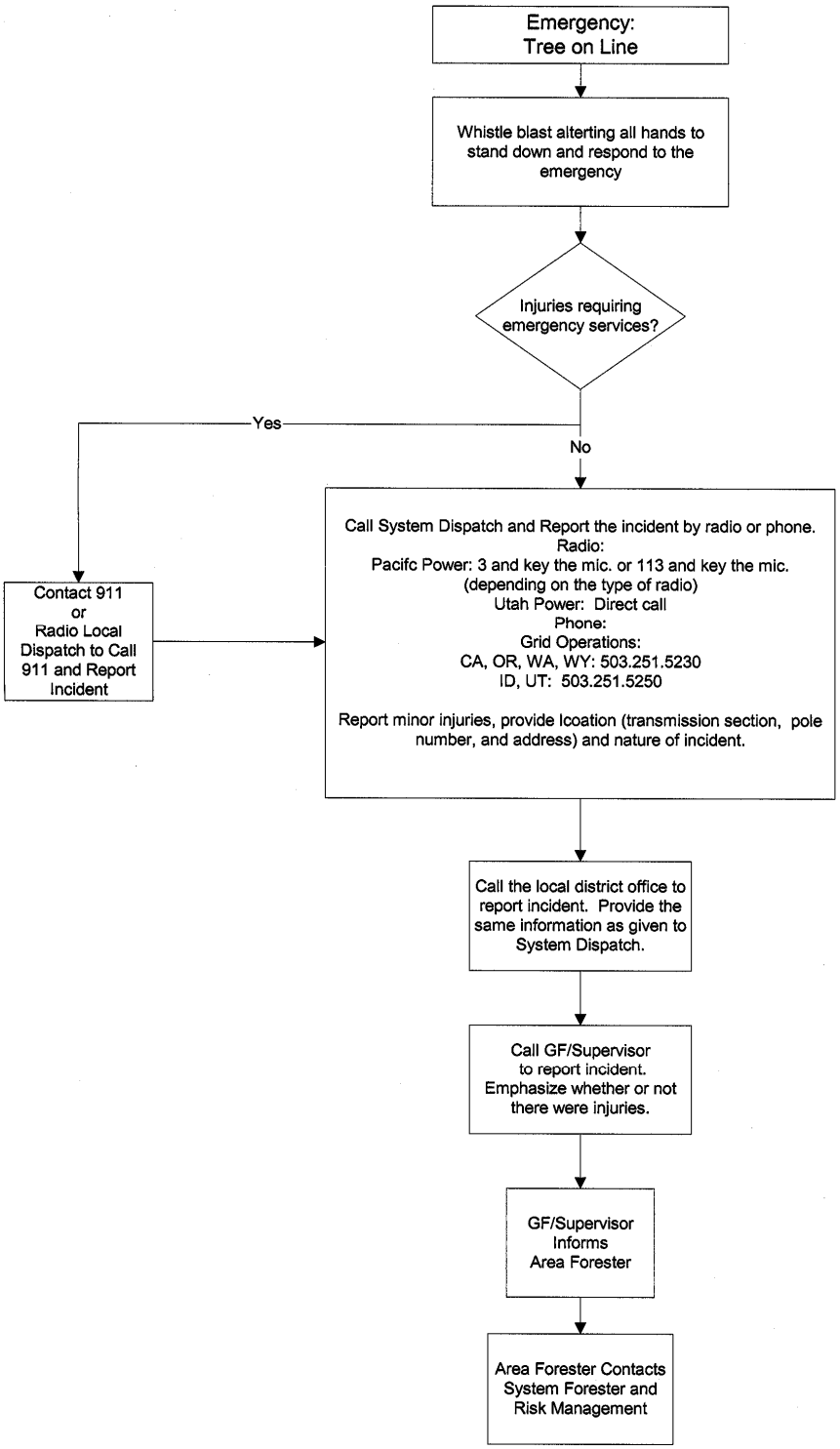

Table 2.1 Minimum approach distances for qualified line-clearance arborists and line-clearance arborist trainees.

Voltage Phase-to-Phase	Minimum Approach Dist.	Source
50-300 v	Avoid contact	APM/Z133
301-750 v	1 foot	APM/Z133
301 v-15 kV	2 feet, six inches	APM
15-46 kV	3 feet	APM/Z133
46-72 kV	4 feet, 2 inches	Z133
72-121 kV	4 feet, 6 inches	Z133
138-145 kV	5 feet, 2 inches	Z133
161-169 kV	6 feet	Z133
230-242 kV	7 feet 11 inches	Z133
345-362 kV	13 feet 2 inches	Z133
500-550 kV	19 feet	Z133

Note: APM is PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003). Z133 is the *American National Standard for Tree Care Operations* (ANSI 2006). Z133 distances are for sea level up to 5,000. Distances increase for elevations above 5,000 feet (ANSI 200).

respond to the emergency. Whistle blasts should also be used to initiate aerial rescue drills. Whistles are not to be used for non-emergency situations, such as getting another crew member's attention.

2.1.2.2 Tree on Line

If a tree or tree part accidentally falls onto an energized line, work should stop Immediately, and procedures outlined in Figure 2.1 followed.

2.1.3 Readily Climbable

Readily climbable trees have low limbs that are accessible from the ground and sufficiently close together and strong enough to support a child or average person so that the tree can be climbed by a child or average person without using a ladder or special equipment. Access into a tree by a vehicle does not render a tree climbable.

Readily climbable trees pose a hazard when a main stem would allow a child or average person to climb either within arm's reach of an uninsulated energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

If readily climbable trees are identified, within two weeks steps shall be taken to reduce the safety risk by removing the tree, or else by pruning to specification clearances, and if possible, removing branches to at least 8 feet from the ground or altering line construction.

2.1.4 Tree Houses

Tree houses built in trees growing near high voltage lines present possible electric safety risks. Safety risks in these

cases could materialize if a tree house is sufficiently close to the conductors so that children or others may contact the line either directly or indirectly. Indirect contact may occur through any conductive object, including a tree as tree parts contacting power lines can conduct electricity.

Tree houses built in trees growing in proximity to power lines must meet two criteria in order to remain where they are located. First, no part of the structure may be any closer than twice the minimum approach distances for persons other than qualified line-clearance arborists as specified in Table 2 of ANSI Z133 (Table 2.1) and second, the tree must be pruned so that it grows no closer than ANSI Z133 Table 2 (Table 2.1) distances, at least until the next scheduled work. Maximum sag and sway should be taken into consideration. Tree houses that do not meet these conditions shall be removed within two weeks of their identification.

Tree house safety risks may be managed by changing facility construction so tree house clearances can be maintained. Facility reconfiguration for this purpose may be done at a property owner's request, provided they cover the expense of the facility modification.

2.1.5 Fire Protection

Federal, state and local fire protection laws and regulations shall be followed, and the contractor performing the work must obtain necessary work permits. Crews shall have all fire fighting tools and equipment required by the responsible state or federal agency. Contractors shall also adhere to fire restrictions concerning work hours, fire watch following work and other policies of the pertinent jurisdiction.

2.2 Environment

Environmental respect is a MidAmerican Energy Holding Company core value.

2.2.1 Species of Concern

Tree work should not disturb or harm any rare, threatened, endangered, or protected plant or animal species. Nesting season work restrictions are examples of important scheduling considerations necessary to accommodate threatened and endangered species. Prior to beginning projects on federal and state lands, PacifiCorp foresters shall contact the responsible agency to determine whether or not such species are present on the right-of-way. If there are, foresters should contact PacifiCorp environmental services for support.

All tree and brushwork shall conform to guidelines of the responsible governing agency. Field data inventories of threatened or endangered species may be on file in PacifiCorp district offices. Moreover, PacifiCorp environmental services should be contacted whenever threatened and endangered species are identified.

2.2.2 Wetlands

Wetlands are lands where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities living in and on the soil (EPA 2004). Wetlands shall be worked by hand. Federal, State and local laws and regulations concerning wetlands shall be followed.

2.2.3 Stream Protection

Work shall be planned to prevent water pollution. Trees shall not be felled into streams or drainage ditches in a way that could obstruct or impair the flow of

water, unless instructed otherwise by the responsible governing agency. Machine work shall not be performed within fifty feet of a stream. Soil or debris shall not be placed below the high water mark of streams, unless instructed otherwise by a responsible authority. Equipment shall use existing or designated stream crossings. State forestry or fish and wildlife agencies shall be contacted if tree removal in and around streams could cause erosion or if resulting exposure could increase water temperature. Federal and state laws and regulations shall be followed concerning stream protection.

2.2.4 Bird Protection

Vegetation management activities may affect migratory birds. Migratory birds are protected by the *Migratory Bird Treaty Act of 1918* (16 USC 703-712). The act was most recently amended in 1998. All but a handful of bird species are protected under the act. However, vegetation management's policy is that all bird species should be considered subject to the law's provisions. Foresters should provide annual training on bird protection to every tree crew.

The Migratory Bird Treaty Act prohibits removal of bird nests that have eggs or chicks and killing protected species. Active nests may be disturbed in rare cases of urgent fire or electrical safety risk (in the judgment of the responsible forester). If tree crews identify a possible immediate risk, they should contact the forester for authorization. The forester may approve work if the line can be cleared within an hour. If the forester approves work, he or she shall notify environmental services within 24 hours. In all other cases work should be postponed until after young have left the nest.

Eagle and colonial water bird nests (such as those of cormorants and herons) may not be disturbed regardless of whether or not they are active. Eagles are subject to additional protection insofar as it is illegal to disturb them near their nests or winter roosting sites.

Raptors (birds of prey) and herons require buffers around active nests to prevent them from being disturbed (Table 2.2). In general, if a bird leaves a nest and does not return within an hour, it is being disturbed, and the buffer should be increased. In these cases, environmental services should be contacted within 24 hours to monitor the nest and respond appropriately if the adults fail to return to the nest.

2.2.4.1 Reporting

Active bird nests and inactive eagle nests should be reported to the appropriate forester and environmental services following the procedure outlines in Figure 2.2. Anyone working in vegetation management encountering a dead bird should report it to environmental services.

2.3 Archaeological Sites

Vegetation management activities shall not disturb known archaeological sites (Figure 2.3). If a forest tech or tree crew identifies something that might have archeological significance, they should move off site and contact the appropriate forester. The forester should contact environmental services for advice on whether or not to continue. Work should not proceed without environmental service's authorization.

Prior to beginning work on federal and state lands, PacifiCorp vegetation management shall contact the appropriate agency to determine whether or not such sites are present on or near the right-of-

Figure 2.2. Bird nest procedure.

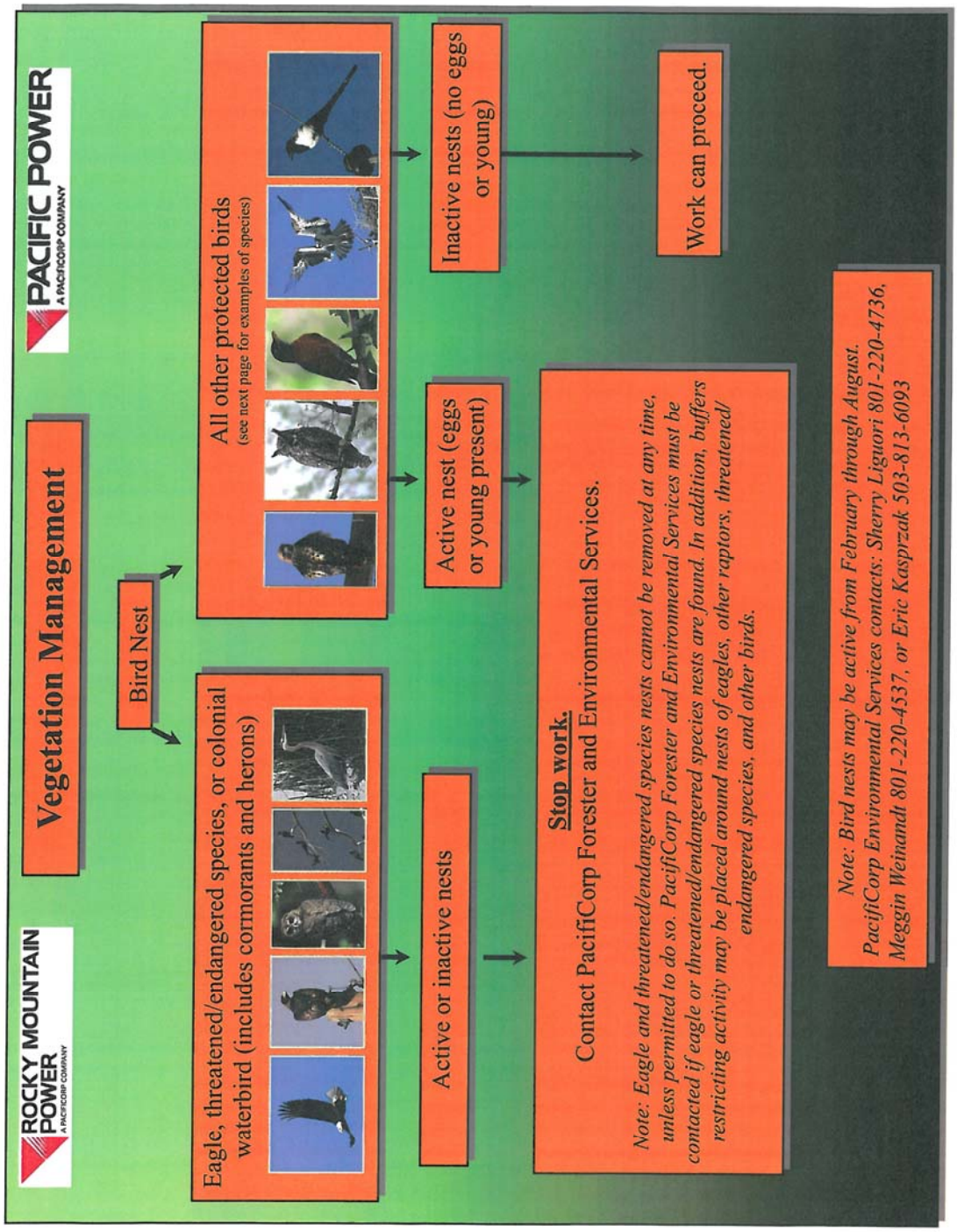

Table 2.2. Tree house clearances. Tree houses may only be allowed in a tree if they are more than minimum distances from conductors and the tree can be pruned to kept to clearances specified in this table at all times. Specified tree clearances are those for persons other than qualified line-clearance arborists specified in Table 2 of ANSI Z133. Minimum tree house distances are twice ANSI Z133 Table 2 distances.

Voltage (kV phase to phase)	**Minimum Tree House Distance From Conductors (ft-in)**	**Tree Clearance** (If tree house is built in a tree more than minimum distance from conductors)
0.31-0.75	20-00	10-00
0.751-15	20-00	10-00
15.1-36.0	20-00	10-00
36.1-50.0	20-00	10-00
50.1-72.5	21-06	10-09
72.6-121.0	24-08	12-04
138.0-145.0	26-04	13-02
161.0-196	28-00	14-00
230.0-242.0	32-10	16-05
345.0-362.0	40-10	20-05
500.0-550.0	53-04	26-08

Table 2.3. Work buffers around active nests of eagles and herons.

Species	**Work Buffer**
Herons	1000 feet
Owls	¼-mile
Hawks, ospreys, golden eagles	½-mile
Bald eagles	1 mile

Figure 2.3. An ancient food storage structure along the Camp Williams-Four Corners 345 kV right-of-way in Southern Utah. This is an example of the type of valuable archeological site that needs to be identified and protected during vegetation management work.

Rich Buelte photo

way. PacifriCorp district offices may have field data inventories of known sites to assist in the determination. If present, foresters should secure the assistance of PacifiCorp environmental services.

Archeological sites shall be located and marked. Work must conform to guidelines of the responsible governing agency. If archaeological artifacts are located on private lands, the finding shall be reported to PacifiCorp environmental services. Field data inventories of known sites could be on file in PacifiCorp district offices

2.4 Communication

Communication should be open and interactive. It should include everyone involved: management, planners, vegetation management crews, property owners, public land managers, appropriate governmental officials, members of organizations dedicated to related causes and others.

2.4.1 Internal Communication

Communication within a utility's vegetation management department needs to be clear and concise to ensure everyone involved understands the desired results. Specifications and performance goals should delegate decision-making authority throughout the

organization, as appropriate. Communication between vegetation managers and workers ought to be both written and verbal. Written instruction should include PacifiCorp Vegetation Management Specifications. It should also include details regarding concerned customers and locations of environmentally sensitive or archeological areas. Written instruction should be reviewed verbally. Appropriate communication also involves post work debriefings to review challenges and prevent problems from recurring.

Communication between utility vegetation management staff and other internal employees, such as engineers and operations managers, includes why, where, when and how vegetation management projects will be conducted. This is important because people within an organization but outside vegetation management can help set priorities, anticipate and prevent potential problems, and provide historical perspectives. Communicating with operations staff during work can also add a margin of safety. By knowing there is a vegetation management job underway, operations staff may be able to provide a timelier and more appropriate incident response than they would if they were unaware of the project. At the beginning of every week, districts in which vegetation management work is being conducted shall be emailed a spreadsheet with the approximate tree crew work locations for the coming week.

2.4.1.1 Communication of Imminent Threats

Members of the vegetation management team must comply with *Transmission Grid Operations Operating Procedure PCC-215,* which institutes the *NERC Transmission Vegetation Management Program* standard Requirement R1.5 standard. The R1.5 standard requires notification of vegetation conditions that present an imminent threat of a regional transmission outrage. PacifiCorp may implement temporary action, such as rating reductions or taking transmission lines out of service until vegetation can be cleared. Inspectors should report the exact location of the subject trees (providing longitude and latitude if possible) as part of the process.

2.4.2 Communication with External Stakeholders

Public land managers, property owners, regulators, and civic organizations have interests in utility vegetation management activities. Educating potentially affected parties about the need for, benefits of and science behind vegetation management can clarify expectations. Members of the vegetation management team, including crewmembers, should know the facts about the program, be prepared to answer basic questions and refer more complex issues through to their GF/Supervisor.

Communication should begin well in advance of work and involve listening to and understanding people's concerns. Work on governmentally-managed property can involve administrative procedures that take months of advance work, including navigating through permit processes and the concerns of specialists who have responsibility for stewardship over public lands. It is not always clear to lands specialists how vegetation management helps balance their (the land manager's) responsibilities against the public's need for a safe and reliable electric grid. A memorandum of understanding among Edison Electric

Institute (EEI) member utilities and federal land management agencies (EEI 2006) establishes a framework for developing cooperative rights-of-way integrated vegetation management (IVM) practices among EEI shareholder-owned electric companies, federal land management agencies and the Environmental protection agencies.

2.5 Miscellaneous Items

2.5.1. Hydroelectric Facilities

PacifiCorp hydroelectric facilities and adjacent rights-of-way could have restrictions on vegetation management activities. PacifiCorp's hydro operations and implementation (compliance Group), PacifiCorp right-of-way services, or PacifiCorp environmental services shall be contacted before activities on or adjacent to hydroelectric facilities begin.

Herbicide use on or adjacent to PacifiCorp hydroelectric facilities shall be reported to the plant manager weekly. Tree crews working on property that is part of a hydroelectric project site should check in with the plant office before beginning work and check out after work each day.

2.5.2 Fences and Gates

Gates should be left open or closed as they were found, or as the property owner instructs. Damage to fences or gates shall be reported to the property owner and the appropriate supervisor/GF, and repaired as soon as possible.

2.5.3 Climbing Spurs

Climbing spurs shall not be used when climbing to prune trees.

Exceptions:

- when limbs are more than throw line distance apart and there is no other safe means of climbing the tree
- when the bark is thick enough to prevent damage to the cambium
- when working hazard trees that are to be reduced in height and left for wildlife.

2.5.4 Winching Vehicles.

Winch cables or ropes should not be wrapped directly around anchor trees. Doing so damages a tree's bark and cambium and can not only reduce its health and value, but also create hazards to overhead lines. If the need arises to winch a vehicle (including an all-terrain vehicle), a nylon strap (or equivalent) at least 2-inches wide shall be used around the tree, and cables or ropes attached to the strap. Utility poles or towers shall never be used as winch anchors.

2.6 Tree Removal

Tree removal is an important component of PacifiCorp's vegetation management program. Tree removal can reduce safety risks, improve access to facilities, clear lines of sight and moderate future workloads. Tree conditions are site and tree specific.

Tree removal on distribution facilities requires either written notification to or signed permission from the property owner, unless there is a right-of-way, easement or permit that expressly authorizes tree removal. If such an easement or permit exists, notification to the property owner may be verbal, provided it is documented. Signed permission may be obtained on the removal door hanger (see Section 8.2.1.3) or *Property Owner Permission Form* (see Section 8.2.2).

Stumps shall be cut to within six inches of the ground or as close to the ground as practical (for example, at the top wire of a barbwire fence with wire that has become imbedded in the trunk). Stumps of all deciduous trees, brush and vines that are removed shall be treated with an approved herbicide, where permitted (see Section 7.2.3.1).

PacifiCorp prefers to remove the entire tree in the following situations:

- Transmission rights-of-way where the conductors are less than 50 feet off the ground, or between 50 and 100 feet off the ground depending on the size of the tree (see Table 6.1 and Figure 6.3).
- Hazard trees (dead, dying, clearly diseased, deformed, or unstable trees which have a high probability of falling and contacting transmission or distribution conductors). Note that every tree is potentially hazardous. With millions of trees under management, it is impossible to identify and correct every potentially hazardous tree. Nevertheless, PacifiCorp has a responsibility to maintain its system by making a reasonable effort to identify trees that are clearly hazardous, and correct the problems they could cause in a timely manner.
- Trees that will take no more than twice the time to remove than to prune during distribution cycle work, with the exception of hazard or cycle-buster trees.
- Trees that take no more time to remove than to prune during interim and ticket work. Hazard trees excepted.
- Readily climbable trees.
- Trees with tree houses not meeting the clearance to transmission or distribution conductors shown in (Table 2.3)
- Fast-growing trees that could interfere with distribution conductors or violate specific state regulatory clearances before the next scheduled maintenance work (cycle-busters).
- Volunteer trees less than six-inches in diameter (DBH), which could eventually interfere with distribution conductors.

2.6.1 Equipment Mowing

Mowing is often more cost effective than manual methods of tree removal and should be pursued wherever practical (Figure 2.4). Mowing should be limited to fifteen feet either side of distribution primary wires and within transmission rights-of-way.

2.7 Mechanical "Trimmers"

Mechanical "trimmers" may improve productivity in rural, densely vegetated areas (Figure 2.5).

2.8 Slash Disposal

Slash is brush and limbs less than six-inches in diameter removed during tree operations.

2.8.1 Developed Areas

In developed areas, slash should be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash may be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the customer's reasonable satisfaction within two business days. Tree stems greater than six-inches in diameter should be left on site, and work locations left in a safe and orderly condition.

Figure 2.4. Side mower used on distribution rights-of-way.

Figure 2.5. Jarraff mechanical “trimmer” that may improve productivity in remote areas.

Figure 2.6. Cracked pole – an example of the type of conditions tree crews should report.

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Figure 2.7. PacifiCorp Vegetation Management Maintenance inspection report form.

Maintenance Conditions Found by Crews			
Week Of			
Location - closest address, meter number if available and facility point number.			
Address (city and state)			
Meter #		Facility Point #	
Description of Problem:			
Employee Name:			

2.8.2 Rural Areas

In rural areas, slash should be disposed of on-site whenever possible.

For off-road, wooded areas, brush should be lopped into three-foot maximum lengths, and scattered in piles no more than two-feet high. Stems larger than six- inches in diameter should. They may be cut in firewood sized length at the customer's request.

Limbs and slash should be piled separately. Limbs and slash should be disposed of at the sides of distribution rights-of-way, and outside the wire zone of transmission rights-of-way, unless specified otherwise by the area forester. If brush is chipped, it should be broadcast on site wherever possible. Resulting chip piles should be no higher than two-feet. Debris piles should not limit or block access to the right-of-way, or create fire risk.

2.9 Storm Work

Storm work is done under the authority of the district operations managers. Tree crews and forest techs assigned to storms should work under the direction of circuit captains. Tree crews should report their progress at least daily to both the circuit captain and their GF/supervisor. The supervisor should report crew progress to the appropriate forester.

All storm work must be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized it must be grounded in accordance with section 2.1.1. In general, PacifiCorp does not dispose of slash or debris resulting from storm damage. Trees that fall during storms would do so regardless of whether or not the lines are present. It should not be the utility's responsibility to clear the debris simply because the tree or trees from which it origionated damaged Company facilities

on the way down. However, if an outage is preventable, slash may be cleaned-up and removed from a property at the forester's discretion.

2.10 Facility Inspection

While tree crew members are not facility inspectors, they can be helpful in identifying pronounced conditions, such as cracked poles (Figure 2.6) broken cross arms or insulators, loose guy wires, and other problems. Tree crew members should report the condition on the *Maintenance Condition Report Form* (Figure 2.7).

2.11 Freelance Work

Tree crew members shall not solicit or perform arboricultural-consulting or tree work (pruning, removal, insect or disease control, fertilization etc.) for interests outside of officially authorized PacifiCorp projects during work hours, at any time on property served by feeders or grids subject to an open work release or on property adjacent to or within 220 yards of transmission lines subject to an open work release. Outside projects may include side jobs for cash, work for private arboricultural firms (whether or not they are owned by the tree crew members doing the work), consulting or any other arboriculturally related enterprise.

3. TREE BIOLOGY AND PRUNING

Pruning is primarily on distribution facilities, although it can have application to transmission lines in some cases. The primary purpose of utility line clearance work is to minimize safety and service reliability risks caused by tree-power line conflicts.

Pruning to clear conductors shall adhere to the principles of modern arboriculture. The *American National Standard for Tree Care Operations* A300 (ANSI 2007), International Society of Arboriculture (ISA) *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002), *Best Management Practices: Utility Pruning of Trees* (Kempter 2004), and *An Illustrated Guide to Pruning* (Gilman 2002), among other references, convey those principles.

While proper utility line clearance work should be consistent with practices that promote tree health, utilities cannot place tree health over public welfare. Sometimes, there is no way to obtain proper clearance in a manner that ensures the health of a tree (Lilly 2010). This is particularly true regarding foliage retention. In cases were the tree cannot be pruned without harming its health, tree removal is often best for the tree, tree owner and utility. If tree removal is not permissible, the tree should be pruned to specification clearances, even if that work is against a customer's wishes or could harm the tree.

3.1 Utility (Directional) Pruning

Directional pruning is natural target pruning applied to routing tree growth away from utility lines (Miller 1998). ANSI A300 (2007) and ISA's *Best Management Practices* (Kempter 2004) instruct that pruning to clear the utility space involves thinning cuts: removing at natural targets entire branches that are growing toward (or once cut will produce sprouts that will grow toward) the power lines.

While heading cuts produce sprouts that grow quickly back into the power lines, branch removal and reduction promotes growth away from conductors. Since the point of utility pruning is to train trees around power lines wherever practical, branches growing away from the electric facility should not be pruned. Instead, these stems should be allowed to develop to their natural height or length, provided that growth does not create unreasonable safety risks. This cannot be accomplished with strongly excurrent trees trapped directly beneath conductors.

Topping, round-overs, flush cuts, branch tipping and rip cuts are improper because they damage trees. Directional pruning is consistent with natural tree structure. Remaining branches retain their taper, strong attachments, growth regulators and spacing. They continue to grow and function normally, allowing the tree to reach to its natural height.

"V" shapes often result on properly pruned trees growing under power lines, particularly on decurrent, deciduous trees (Miller 1998, Shigo 1990, Gilman 2002, Kempter 2004) [Figure 3.1]). Limbs growing upward and toward the facility should be cut back to the trunk or to limbs growing away from the conductors.

Remaining branches should have sufficient clearance so they do not contact the conductors in inclement weather common for the locality (high wind, freezing rain, snow or other conditions). Excurrent trees (such as many conifers) are more problematic, but should be reduced to appropriate laterals or whorls.

"L" or one-sided shapes often result on properly pruned trees to the side of conductors. (Shigo 1990, Gilman 2002 [Figures 3.2]). Limbs on the wire side of trees located adjacent to facilities should be cut back to the trunk; or to limbs growing vertically, sideways or downward; depending on the distance to the line or available natural target.

3.2 Tree Biology

Understanding fundamental tree biology is essential to applying proper pruning to utility line clearance (Miller 1998).

3.2.1 Leaves

Leaves are the tree's food source. Tree survival depends on the leaves' ability to manufacture carbohydrates from the sun's energy, carbon dioxide and water. Current thinking among scientists is that if a tree abruptly looses a large portion of its foliage, as can happen with over-pruning, it could lack the energy resources to meet its needs. Trees with insufficient foliage could be weakened to the point where they become subject to attack by opportunistic insect and disease pests. Damage can extend to the roots as well as to above ground portions of the tree (Shigo, 1986). Trees can suffer sun injury after sudden excessive foliage loss (Miller 1998).

3.2.2 Stem Anatomy

Trunks and branches are tree stems. Their function is support, energy storage, and water, mineral, carbohydrate and growth regulator transport. The point of origin of a branch or limb is a node. A lead is an upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem. Some leads can also be laterals.

3.2.3 Xylem

Xylem is wood tissue. Sapwood is young, living xylem that stores carbohydrates, provides support, and conducts water and essential elements. Heartwood is old, dead xylem that provides support, and often contains anti-microbial compounds.

Long, hollow conducting cells (trachieds or vessels) predominate xylem structure. While trees need this vascular structure to conduct water and essential elements, it can be exploited by pathogens to spread up and down the stem. Trees attempt to block or "wall" off disease spread by plugging conducting cells in various ways, but pathogens can use food energy stored in the trunk or branch to breach these walls (Shigo1986).

Authorities disagree over how much foliage removal trees can tolerate in a given year. ANSI A300 (2007) recommends no more than 25%, while Gilman (2002) suggests less than 10 to 15 percent. Often, much more than 25% of foliage must be removed from the tree in order to appropriately maintain electric facilities. The ANSI committee did not intend the 25% provision to impede utilities from achieving appropriate clearances (Smith 2002). Utility arborists faced with the choice of maintaining public welfare by clearing the tree to specifications on one hand, or promoting tree health on the other, have no alternative but to safeguard the civic good.

Figure 3.1. ”V"-shapes can develop from crown reduction on deciduous trees (left). The ultimate objective is to train trees up and around the wire wherever possible, so the facility is clear and the tree is healthy. These two photos are of the same tree, in 1992 (left) and 2007 (right).

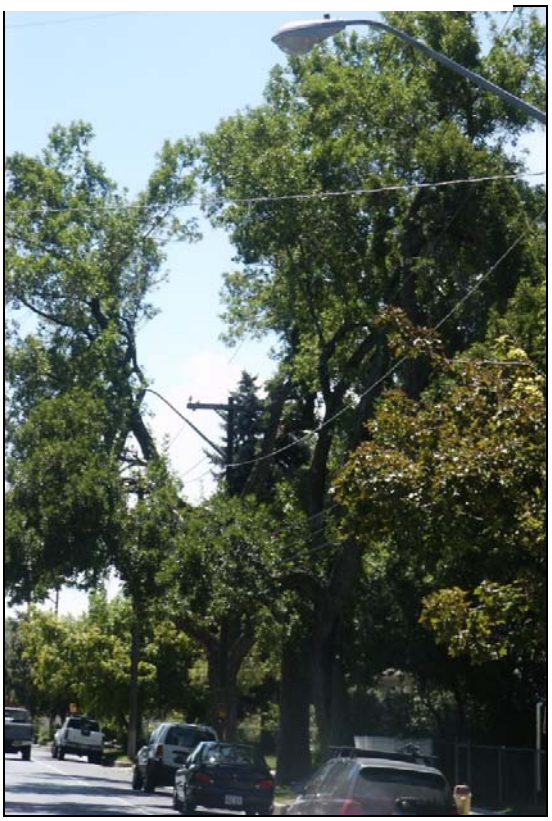
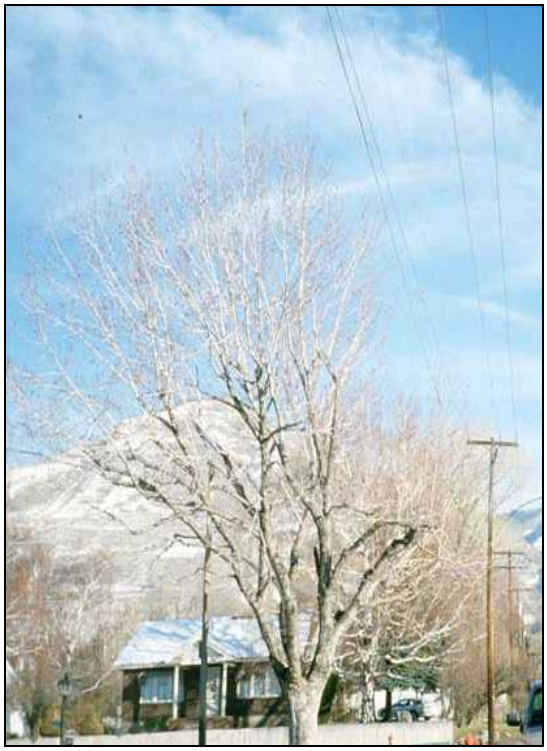
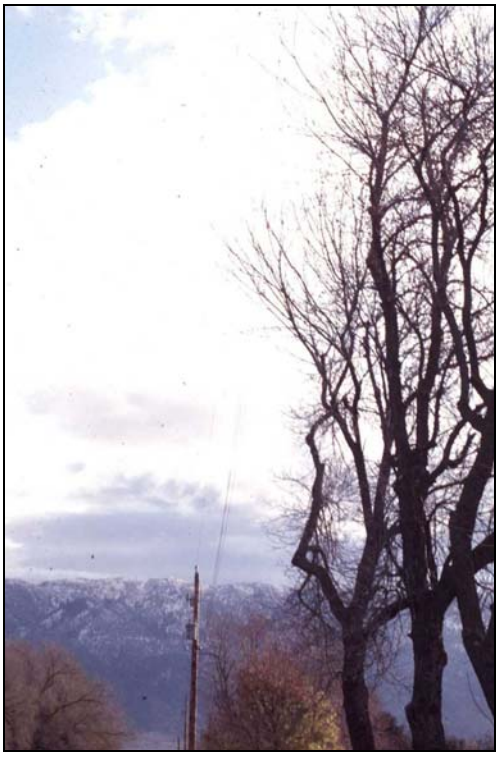


Figure 3.2 "L" or one-sided shapes often result on properly pruned trees growing to the side of conductors. Pruning may be mechanical in rural areas, below right.





3.2.4 Cambium

The tree's cambium is a thin layer of rapidly dividing cells around the outside of the sapwood. One of the functions of the cambium is to produce wood to its inside, creating diameter growth. This is the only source of wood production in the tree system, and the tree has no ability to replace damaged or decayed wood.

Pathogens gain access to wood through wounds. In response to wounding, the cambium generates a "barrier zone" containing antimicrobial compounds (Figure 3.3). It protects new wood by separating it from potentially infected wood that existed at the time of wounding. Following infection, a "race" develops between the cambium and wood-rotting microorganisms, with the structural integrity of the tree at stake. The cambium must produce new wood faster than pathogens can digest the former stem if the tree is to remain viable (Figure 3.3).

While the barrier zone contains strong antimicrobials, it is weak structurally. This structural weakness can be problematic, as cracks may develop along the barrier zone when the stem twists and flexes due to wind, ice or other stress loads. These cracks allow pathogens to breach the barrier zone and enter new wood, further threatening the tree (Figure 3.3 [Shigo 1986]).

3.2.5 Branch Collars

Branch collars are a combination of parent stem and branch tissue generated through coordinated growth around the branch attachment (Figure 3.4). In the spring of the year, diameter growth begins at branch tips, and works toward the base. When new wood meets the branch base, it turns at 90°, and wraps around the juncture. Later in the growing season, wood from the parent stem envelops branch wood laid down earlier. As a result, two layers of wood secure the branch every year, and the attachment increases in strength as the branch grows (Shigo1986).

3.2.6 Branch Bark Ridge.

An important structure associated with branch attachment is the branch bark ridge. The branch bark ridge is a line of raised bark, formed as the branch and parent stem grow together. It marks where branch wood meets stem wood Figure 3.5). A raised branch bark ridge is often a sign of a strong attachment.

3.2.7 Branch Protection Zone

Branch protection zones are areas of antimicrobial compounds that form internally at the base of diseased or injured branches (Shigo 1986). They inhibit pathogens in the branch from passing to the parent stem. While protection zones are effective, pathogens can overcome them using energy stored in the branch.

3.2.8 Taper

Tree stems taper from their bases, where they are widest, to twig tips, where they narrow to buds or apical meristems. Taper provides flexibility and strength that disperses loads from branch weight and from wind, snow or ice loads. The adaptation reduces the likelihood of failure under stress.

Figure 3.3 The cambium creates a barrier zone that contains discoloration and decay in old wood, protecting new wood. Note on the right, a ring shake formed along the old barrier zone. This is a structural flaw.

Figure 3.4. Branch collars form at branch bases.

Figure 3.5. A raised branch bark ridge is often a sign of a strong attachment. It marks where the branch meets the parent stem.

Figure 3.6. Codominant stems are at least 50% of the diameter of their parent stem. They have no branch collars or branch protection zones. Codominant stems can grow together and have bark included (embedded) between the stems in the attachment.

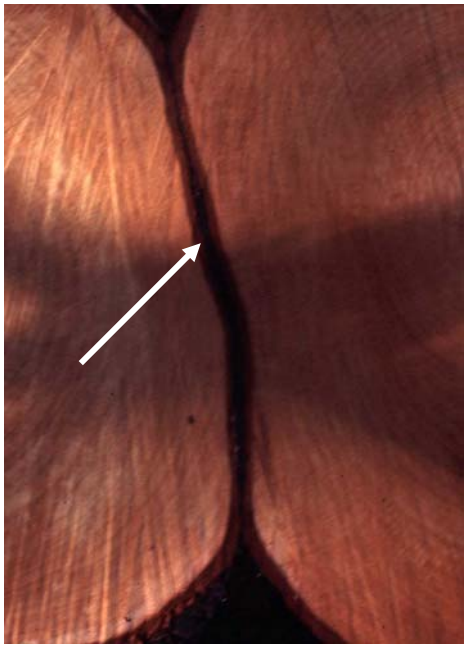


Figure 3.7. A before and after collar cut.

3.2.9 Codominant Stems

Codominant stems are stems that are at least half the diameter of their parent stem, and compete for dominance in the tree crown (Gilman 2002). They are similar to branches, but have no branch collars or branch protection zones. Disease moves from one codominant stem to another as readily as it moves through ordinary stems. Codominant stems can have a branch bark ridge. However, they are structurally flawed because they do not have room to develop (Figure 3.6). As crowded branches grow in diameter, they can press together, creating wounds and squeezing bark in between the two stems (Figure 3.6).

The resulting wounds allow disease entry and weaken branch attachments. Moreover, stems with included bark often pry one another apart as they grow, further weakening their attachments. Attachments with included bark often fail, and can be recognized by a crease between stems near their juncture (Figure 3.6).

3.2.10 Growth Regulators

Growth regulators are chemicals that coordinate plant growth. A growth regulator can have confusing, even contradictory roles depending on its concentration, the concentration of other growth regulators, environmental conditions the species of tree, and other factors. Nevertheless, scientists understand that growth regulators are responsible for orderly plant growth and development.

For example, auxin is a growth regulator produced in apical meristems, while cytokinin is another type synthesized in root tips. In response to environmental factors, roots grow and make cytokinens that stimulate shoot growth, which can result in auxin production that promotes root development. The resulting cycle is one way the tree system “communicates” to stay in balance as it grows. Auxin also functions in apical dominance. Auxin produced in apical meristems inhibits lateral growth, and helps to account for orderly branch development and spacing. Conversely, removing an apical bud or

meristem promotes lateral growth, which alters the tree's normal growth habit, and can lead to codominant stems, poor spacing, and included bark.

Gibberellins are another class of growth regulators. Among other functions, gibberellins promote cell elongation. Marketed chemicals commonly known as "Tree Growth Regulators" (TGRs) are actually gibberellin inhibitors. By inhibiting gibberellins synthesis, TGRs reduce cell elongation, which in turn slows growth

3.3 Natural Target Pruning

Natural targets are proper final pruning cut locations at strong points in the tree's disease defense system. Removing branches at natural targets rarely damages the joining trunk or limb (Miller 1998). The ISA *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002) and *A300* (ANSI 2007) describe the technique. Targets vary depending on whether a branch is removed or reduced.

3.3.1 Collar Cuts

Branches should be removed at the collar (Figure 3.7). Cutting into the collar, known as flush cutting, is inappropriate because it creates a direct port of disease entry into the parent stem.

Disease can weaken stems, potentially creating safety risks. On the other hand, proper branch removal does not leave stubs that pathogens can use as an energy source to overcome the tree's defense system and spread into the trunk. If the branch is removed correctly, only the branch protection zone is exposed, giving an advantage to trees in keeping out disease. As a result, collar cuts virtually prevent decay from entering the parent stem (Figure 3.7 [Miller 1998]).

3.3.2 Approximating the Collar

Occasionally, branch collars are not readily evident and the collar must be approximated using the branch bark ridge (Figure 3.8). Start the cut in the branch crotch, just outside the branch bark ridge, and follow an outward angle that mirrors the inward angle the branch bark ridge makes with the trunk or parent stem. The cut should end roughly opposite the bottom of the branch bark ridge (Figure 3.8).

3.3.3 Reduction Cuts

Reduction cuts shorten leads to appropriate laterals. An appropriate lateral is no less than one-third the diameter of the original limb and retains at least three-quarters of the lead's foliage (ANSI 2007 [Figure 3.9]). The reason for these requirements is that branches are autonomous in their energy requirements. Removing too much foliage from a limb could deprive it of sufficient energy to establish apical dominance, maintain its taper, close the wound, and compartmentalize and "out-race" disease which will enter the wound.

As a result, the lateral will not develop into a structurally viable leader. Moreover, shortening a lead removes apical meristems and other points of growth regulator production, which can disrupt orderly growth. If, for example, auxin concentrations are insufficient, on some species a crowded mass of upright, rapidly growing, poorly attached shoots can sprout from the cut and grow directly back into the lines.

Therefore, removing more than 25% of foliage from a limb has the same damaging result as a random topping cut (Figure 3.10), regardless of whether or not the cut is made to a proper-sized lateral. Even under the best circumstances, reduction cuts are

potentially harmful, acting more like a heading than a thinning cut (Gilman 2002). Consequently, if a lead cannot be shortened to a limb at least one-third the diameter of the original lead, or if a cut removes more than 25% of the foliage, that limb should be either targeted for removal, or not pruned. Removal may be gradual over the course of several cycles.

3.3.4 Large Branches

Large branches (those 3-inches in diameter or greater) can seldom, if ever, be removed without harming the tree, particularly if they are codominant stems. Yet, large branches must be prevented from growing toward the utility space, and that nearly always means heading or removing them entirely. Either option can be harmful, but heading large branches not only injures the tree, but fails to effectively clear the conductors (Figure 3.10).

Removal may take a measured approach. For example, one or two large limbs might be removed out of three that are growing toward the conductors, and the remaining limb(s) targeted for removal on subsequent cycles.

Large branches selected for later removal can be subordinated, or removed gradually over subsequent cycles (either interim or cycle). Subordination thins a portion of a limb's foliage. Reducing a fraction of the foliage in this way suppresses the stem's growth, and allows the remaining tree parts to adjust and develop. In some cases, subordination can allow a codominant stem to develop into a branch over time, enabling ing a branch protection zone to form so a limb can be removed without unnecessarily subjecting a tree to disease (Gilman 2002). Using subordination over multiple cycles to remove large branches can reduce the effect of structural limb removal on tree health, while ultimately circumventing the permanent problems heading cuts can cause, even if that means temporarily heading the branch.

3.3.5 Old Heading Cuts

Removing large stems that have been headed often leaves wide gaps in the tree, because shoots that proliferate from the old heading cuts often dominate the crown (Figure 3.10), and gaps result when branches containing these shoot clusters are removed. Moreover, previously headed branches usually lack natural targets. When such branches are growing toward the conductors, there is often no alternative but to remove them entirely.

Headed branches growing away from the facility space should not be pruned as a matter of standard practice. However, shoots growing from the old heading cuts should be inspected for structural integrity during subsequent visits. Corrective action, such as crown restoration (ANSI 2007), could be necessary if these sprouts are found to be structurally weak. However, in some cases, structural defects resulting from heading cuts are so severe that they cannot be corrected (Dahle et al. 2005). In these cases, the customer should be contacted about removing the entire tree, or at least the subject branch or branches. If tree or branch removal is not possible, there could be no choice but to remove the weak growth with a new heading cut. This should be done only when extensive decay or hollow exists in the remaining branch, with the approval of the forester or GF/supervisor, for safety (not "aesthetic") purposes.

Figure 3.8 Approximated collar cut.

Figure 3.9. Crown reduction cut.

Figure 3.10. Old heading cut. Shoots that proliferate from these cuts often dominate the tree's crown, and gaps result when branches containing these shoot clusters are removed.

3.3.6 Reduction

Reduction is selective pruning applied to reduce the top or side of a tree or individual limb (ANSI 2007). In a utility context, the goal of reduction is to promote future tree growth away from the conductors, at least on decurrent trees (Figure 3.1)

3.3.6.1 Deciduous Trees

The "V" in many crown reduced deciduous trees quickly fills in with shoots. These shoots eventually require pruning to be kept from interfering with the lines (Figure 3.1) In subsequent cycles, it is important not to strip all these sprouts away, since that causes lion's tailing and can stimulate resurgent growth in many species. Rather, about half of the shoots should be removed, and the other half retained (Figure 3.11).

Shoots selected for removal should be the largest and most vigorous, leaving smaller sprouts behind. Growth selected for retention should be pencil-thin at the point of attachment. If need be, these remaining shoots may be headed back to obtain specification clearances. In this way, a rotation can be established where the largest, most vigorous shoots are removed each cycle, but smaller, suppressed shoots are left to soften the negative visual effect that many customers find objectionable.

Moreover, leaving shoots in the interior of a "V" provides shade and retains auxin production, both of which suppress vigorous sprouting, and helps the trees hold (Figure 3.11). Eventually the sides of the tree will overtop the wires, resulting in more of a "U," and shade the interior of the tree, suppressing shoot growth even more. In time, this top growth decreases the proportion of the crown occupied by the cleared utility space, and softens the negative aesthetics.

3.3.6.2 Conifers

Many conifers; such as pine (*Pinus spp.*), spruce (*Picea spp.*) and Douglas-fir (*Pseudotsuga menziesii*); have strong central leaders (excurrent form). When these types of trees grow directly under the lines, they should be reduced to the whorl or largest available lateral that provides specification clearance. Cuts made to conifer whorls are typically flat-topped in order not to damage any branches in the whorl (Figure 3.12). Laterals should be tipped on a conifers, which prevents them from forming compression wood and bending up toward the conductor.

3.4 Helicopter and Mechanical "Trimming"

Helicopter and mechanical "trimming" can be cost effective in rural areas. However, it can be difficult or impossible to hit natural targets with a mechanical saw. Consequently, decay and sprouts may develop that can cause problems in the long run. Therefore, care should be taken where to employ machines, and in subsequent years work needs to be monitored as hazard trees may develop.

Figure 3.11 On return visits to "V-Outs", under pruning should leave the smaller, suppressed shoots to retain foliage and soften the visual effect of crown reduction.

Figure 3.12. Crown reduction.

4. SCHEDULING AND REPORTING WORK

4.1. Scheduling Work

Scheduled work involves systematic cycle or interim projects on both distribution and transmission lines. Schedules should be based on the time elapsed since the last scheduled work, compliance, voltage (particularly for transmission lines), the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other facilities), tree conditions, the number of customer complaints, the growth rate of predominant tree species, geography, whether the area is rural or urban, rainfall and other environmental factors.

4.2 Process Checklist

Scheduled distribution and transmission work should follow the *PacifiCorp Vegetation Management Process Checklist* (Figure 4.1). The purpose of the process checklist is to facilitate systematic project management. The project should be identified along with the start date on the top of the process checklist.

4.2.1 Authorize Project Work

PacifiCorp foresters are responsible for work authorization. No work should begin on a project until foresters have authorized it to proceed as outlined.

4.2.1.1 Contractor Work Release

Before beginning a scheduled project, the forester shall open a *Work Release* (Figure 4.2). The *Work Release* authorizes a contractor to proceed with a specific maintenance project, and provides written instructions for the work. Contractors will not get compensated for work performed on projects that have not been authorized through a work release.

The *Work Release* specifies the project type (distribution cycle or interim, transmission cycle or interim, TGR or chemical), and other systematic work. It provides instructions on tree removals, tree replacement, tree growth regulators (TGRs) and other particulars. It also assigns desired starting and ending dates. Before work begins, the GF/supervisor shall distribute copies of the *Work Release* to each crew assigned to the project, and review instructions for proceeding.

After the project is finished, the supervisor/GF shall sign the *Work Release* to certify the project is completed and closed. The contractor shall provide the actual starting and completion dates, as well as any pertinent comments. Comments should note work that is either incomplete (due to refusals, for example) or does not meet specifications at the time the *Work Release* is closed. By signing off on a project, the contractor guarantees that the work has been completed to PacifiCorp's specifications, and assumes responsibility for any failures to meet Company requirements, outside of exceptions noted in the comments.

4.2.1.2 Set Labor-hour Goals

The forester should set goals for labor-hours a tree and mile for distribution lines. These goals should be based on production data drawn from the last work on the feeder or grid, with a stretch goal of 10% improvement. Goals should also be established for transmission facilities at labor-hours an acre from previous or similar projects.

Figure 4.1 Process Checklist

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Vegetation Management Process Checklist

Work ID: _____

Date: _____

Authorize Project Work - Utility Forester

- ☐ Open Work Release and Set Goals. Distribute and Discuss with Vegetation Contract Supervisor
- ☐ Labor-hour Goals Set for Trees, Miles or acre (for transmission lines)
- ☐ Work Release Sent to Consultant LD/SR, Service Coordinator and System Forester
- ☐ ☐ N/A Notify Operations Managers, Community Relations Managers, Communications

Project Plan - Forester, Contract Supervisor and Forest Technician

- ☐ ☐ N/A Identify Overbuilt Transmission and Open Transmission Work Release
- ☐ ☐ N/A Research and Identify Governmental, Tribal, and Environmentally sensitive areas
- ☐ ☐ N/A Identify External Agencies and Notify if Necessary (Federal, State County, City and pertinent NGOs
- ☐ ☐ N/A Conduct Pre-job Meetings With Government Agencies
- ☐ ☐ N/A Contract Expert to Delineate Sensitive Sites or Areas and Identify On Maps
- ☐ Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

Project Plan Developed - Contract Supervisor and Forest Technician

- ☐ Pre Job Meeting With Forester, Supervisor and Forest Tech — Date: _____
- ☐ Identify Concerned/Dangerous Customers
- ☐ ☐ N/A Identify and Obtain Federal Special Use Permits:
- ☐ ☐ N/A Identify and Obtain Federal, State, and Local Herbicide Use Permit(s)
- ☐ ☐ N/A Identify and Obtain Other Required Permits: Specify:
- ☐ ☐ N/A Identify Outstanding Ticket Work
- ☐ ☐ N/A Identify Flagging Work
- ☐ ☐ N/A Distribution Configuration ☐ Wye ☐ Delta

Work Identification - Contract Forest Technician

- ☐ ☐ N/A Review of Special Precautions: (list)
- ☐ ☐ N/A Follow-up: Personal Contact Requirements, Special Access, Time Sensitive Instructions
- ☐ ☐ N/A Verify Facility Point Inspections Locations
- ☐ ☐ N/A Verify Aerial Waypoint Locations
- ☐ ☐ N/A Review Environmental and Cultural Requirements:
- ☐ Inspect, Prioritize Work Areas
- ☐ Notify Private Landowners and Public Land Managers

Work Assigned to Project Crews - Contract Forest Technician and Supervisor

- ☐ Activity Reports And Other Pertinent Feeder/grid Information Issued to Crews
- ☐ ☐ N/A Required Permits Issued to Crew
- ☐ Work Release and Project Specifics Communicated and Issued To Crews
- ☐ ☐ N/A Sensitive Sites or Areas Reviewed With Crews — Date: _____
- ☐ ☐ N/A Special Instructions: (list below in comments section)

Figure 4.1. Continued

Project Closure - Contract Supervisor and Forest Technician

☐ Post Inspection of Work to Verify Completion Date: _____

☐ Inventory and Check In Maps

☐ Maps and Documentation Submitted

☐ ☐ N/A Concerned Customer Forms Submitted

☐ ☐ N/A Refusal Information Submitted

☐ ☐ N/A Dangerous Customer Information Submitted

☐ ☐ N/A Tree Replacement Voucher Copies Submitted

☐ ☐ N/A Hazard Forms - Copy in File and Copy to Utility General Foreman

☐ Daily Logs for Project Sent to Utility Area Forester

Project Closure - Forester

☐ Verify Receipt of All Maps, Daily Logs, Activity Reports, Tree Replacement Vouchers, and Hazard Forms

☐ Verify Receipt of Refusal and Concerned/Dangerous Customer Information

☐ Verify Receipt of Signed Work Release

☐ Close Work Release (Send to Consultant LD/SR, Service Coordinator and System Forester)

X_____ X_____

Contract Supervisor / Date Area Forester/ Date

Comments:

Figure 4.2.

PacifiCorp Vegetation Management

Contractor Work Release

This work release authorizes *Contractor* to proceed with the specified maintenance project. All work shall conform to PacifiCorp's Vegetation Management Specifications. Following project completion, a *Contractor* representative shall sign this work release, and return it to PacifiCorp. Refusals or any work performed that does not conform to PacifiCorp Specifications shall be noted.

District: **Project #:**

Contractor: **Supervisor/GF:**

_____ **Distribution Cycle Maintenance** **Feeder/Grid #:**
Work according to PacifiCorp *Specifications*. Identify and correct all climbable tree and tree house hazards, and remove danger trees.

_____ **Tree Removals:** Limit removals to cases where removal time equals twice pruning time. Forester approval is required for removals outside of this constraint.

_____ **Tree Replacement:** Use coupons to pursue removals as needed.

_____ **Tree Growth Regulators:** Pursue TGRs on cycle busters.

_____ **Bulk Transmission:** Work bulk transmission with distribution.

_____ **Other:** _____

Desired Starting Date: _____ **Completion Date:** _____

Area Forester Approval: _____ **Date:** _____

To be completed by the Contractor:

Starting Date: _____ **Completion Date:** _____

Comments: _____

Supervisor/GF Signature: _____

4.2.1.3 Work Release Forwarded to Senior Business Specialist and Director of Vegetation Management

The forester should forward the work release and goals to the PacifiCorp senior business specialist and director of vegetation management. The consultant will authorize payment for work on the project.

4.2.1.4 Notify Appropriate Company Personnel

The forester should notify internal stakeholders in the project. Before beginning work in a new area, always notify the operations manager, and customer-community manager for that area. In addition, notify line patrolmen when working on transmission lines and site managers when working on hydro or other operations sites. Notify the PacifiCorp tariff policy department if work will be conducted in a location where either past or current state public utility commission complaints have been received. Notify the PacifiCorp communications department if work will be conducted in the vicinity where public relations issues have surfaced in the past.

4.2.2 Project Plan

The project plans section addresses foresters, contract supervisors and forest technicians.

4.2.2.1 ID Overbuilt Transmission and Open Transmission Work Release

Transmission overbuilt on distribution lines should be worked in conjunction with distribution feeder or grid projects. All work should be billed to the highest voltage lines. Consequently, if overbuilt transmission exists on an open feeder or grid, foresters need to open a second work release covering the transmission work.

4.2.2.2 Research and Identify Governmental, Tribal and Environmentally Sensitive Areas.

Governmental, tribal and environmentally sensitive lands present particular demands. Lands under governmental or tribal management and environmentally sensitive areas should be identified early to allow time to work through the required processes.

4.2.2.3. Identify External Agencies and Notify if Necessary.

Identify federal, state, county, city and pertinent non-governmental organizations potentially affected by the project. The appropriate entity should be notified of the impending project, to determine whether or not they have any concerns.

4.2.2.4 Conduct Pre-job Meetings with Governmental Agencies

Before any field work begins, a meeting shall be conducted with any governmental agency at any level with interest in the project. This is especially important for federal and tribal agencies. In particular, no work may begin on Bureau of Land Management or Forest Service managed lands without a pre-work meeting among federal officials and vegetation management. Multiple projects and multiple agencies may be covered by a single meeting.

The meeting(s) must be organized by the forester and PacifiCorp's environmental services must be notified and invited to attend. The meeting may be held either in person or through a conference call. Work shall not begin until vegetation management receives

written notice to proceed from the appropriate agency.

4.2.2.5 Contract Expert to Delineate Sensitive Areas

If environmentally or culturally sensitive areas are identified on governmentally-managed lands, a contractor with appropriate expertise should be retained to delineate subject sites or areas. Target locations should be marked on maps and on site. Care should be taken with field marking to ensure it is sufficiently clear to alert crews, while at the same time being sufficiently discreet to avoid casual detection.

4.2.2.6. Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

It is critical for foresters to be gatekeepers over company maps in order to ensure there is only a single master version of each. The forester will check out copies of the master version, which should include sensitive environmental or cultural sites. Effort should be made to work off of digitized maps wherever possible.

4.2.3. Project Plan Developed

The contract supervisor and forest technician are responsible for developing the project plan.

4.2.3.1. Pre-Job Meeting

The contract supervisor and forest tech must have a pre-job meeting to discuss the upcoming project. They should discuss elements of the project plan and focus on solving problem issues that arose during the initial stages of the planning process.

4.2.3.2. Identify Concerned or Dangerous Customers

Forest techs should research the feeder or grid file to identify customers with a history of concerns. Forest techs should be proactive in working with these customers.

4.2.3.3. Identify and Obtain Federal Special Use Permits

PacifiCorp facilities that cross federally-managed lands are in place under the authority of special use permits. Forest techs and supervisors should study and ensure the conditions in the pertinent special use permits are satisfied.

4.2.3.4. Identify and Obtain Federal, State and Local Herbicide Use Permits.

Herbicide or pesticide use permits are required in certain jurisdictions, particularly on federally-managed land. If a permit is required, foresters must ensure that forest techs or supervisors/GFs have obtained it before herbicide application may proceed.

4.2.3.5. Identify and Obtain Other Required Permits.

There are locations where permits may be required for work. Examples may include state road rights-of-way, some communities, county or state forests or riparian areas. All required permits shall be obtained before work may proceed.

4.2.3.6. Identify Outstanding Ticket Work.

From time to time, customers who have called in work requests have been told that their request did not present an immediate threat to safety or electric service, and would wait until we arrived on cycle. Forest techs should research tickets associated with a feeder or grid,

ensure contact is made with those customers, assign the work to a tree crew if it is necessary, or if not, explain the reasons to the customer.

4.2.3.7. Identify Flagging Work.

Many areas require flaggers and traffic control. Forest techs should identify areas where flagging support is necessary. Those locations should be identified on both the *Activity Report* and a map.

4.2.7.8. Distribution Configuration

The overwhelming majority of PacifiCorp distribution circuits have wye configuration, which includes a neutral wire. However, delta construction, which does not have a neutral wire, is found in some areas.

The difference is of little consequence on wires attached to cross arms, as all cross arm mounted wires should be cleared to primary specifications (see section 5.5.5). However, there is a difference on lines without cross arms. Wye construction has a low neutral, while the low wire on delta carries primary voltage. This could lead to safety and clearance risks if the low primary is mistakenly identified. In noting that a circuit is delta construction, forest techs should alert tree crew leaders of the potential of a low-mounted primary, so proper safe work practices can be conducted and clearances obtained.

4.2.4 Work Identification

Forest techs are responsible for work identification.

4.2.4.1 Review Special Precautions

Before beginning field work on a project, forest techs should review special precautions. These might include areas where difficulties have arisen in the past, such as a particularly sensitive community or neighborhood, areas where the media has been called to help oppose line clearance work, locations where there is a concentration of people who object to herbicide application, environmentally or culturally sensitive areas, places that present particular challenges to tree crews or other considerations.

4.2.4.2 Follow-up With Items of Concern

Forest techs should follow-up with customers who requested personal contact in the past, note special access (property owners who have requested tree crews not use a gate or drive, for example), or time sensitive instructions. Time sensitive instructions might include advisories not to work prior to hay harvest, not to drive in a field during the raining season in the Pacific Northwest, or some other matter.

4.2.4.3 Verify Facility Point Locations

Forest techs should print outstanding facility points for the feeder, grid or transmission lines on which they are working. They should ensure to inspect outstanding conditions and assign work where necessary.

4.2.4.4 Verify Aerial Waypoint Locations

For transmission projects, forest techs should print outstanding locations from recent aerial patrols and ensure they are inspected and worked if necessary.

4.2.4.5 Review Environmental and Cultural Requirements

For work crossing governmentally managed land, forest techs should review any existing environmental and cultural

requirements. These can include threatened and endangered species, riparian areas or areas in which culturally sensitive sites exist.

4.2.4.6 Inspect, Prioritize Work Areas

Forest Techs shall document their contact with property owners or land managers, and organize work for tree crews on an *Activity Report* (Figure 4.3).

The *Activity Report* should identify the district in which work is to be conducted, the project number (the discrete number assigned to the district), the contractor assigned to the job and the feeder or grid number for distribution or plant locality number for transmission.

For each work location, the forest tech should note the date they inspected the site, a detailed location, the identity of the tenant or property owner (if known), the type of contact (door hanger, letter, personal visit, telephone or no contact), the crew type required to perform the work (lift, climb, flagging, mowing or other), a description of the work, and if necessary comments. Comments could include special considerations such as how to access the work, whether or not there is a dog on site, a sensitive area of the yard such as flower beds, cultural or environmental sites, or other matters.

4.2.4.7 Notify Private Landowners and Public Land Managers

Prior to any tree crew work, forest techs should attempt to contact the property owner or tenant on whose property the work will occur. Customer contact shall follow procedures outlined in Section 8.2.

Public land managers should have been consulted before this stage (see section 4.2.2.4). However, during the notification process, forest techs should followup with appropriate land managers to inform them that work is proceeding as planned, and provide an update on when crews are expected to begin work.

4.2.5 Work Assigned to Project Crews

Work assignments are the responsibility of both forest techs and supervisors/GFs.

4.2.5.1 Activity Reports and Other Pertinent Information Issued to Tree Crews.

Forest techs or supervisors/GFs should distribute completed *Activity Reports* to the tree crews.

4.2.5.2 Required Permits Issued to Tree Crews.

Appropriate permits shall be issued to tree crews. Tree crew members should have them available to produce to the appropriate authorities on demand.

4.2.5.3. Work Release and Project Specifics Communicated and Issued to Crews.

Before beginning work on a project, the tree crew should be issued the pertinent work release. Tree crews should be able to produce the work release to foresters during audits.

4.2.5.4 Sensitive Site or Area Review With Crews.

Any sensitive site locations should be communicated to tree crews.

4.2.5.5 Special Instructions

If there are any special instructions, such as working in sensitive areas, forest techs should communicate this to their tree crews in writing and ensure that tree crews have read and understand the special instructions.

Figure 4.3. PacifiCorp Vegetation Management Activity Report.

District : _____	**Cycle Maintenance**	**Interim Maintenance**	**Ticket Maintenance**	**Work Order**
Project #: _____	Trans. PL#: _____	Trans. PL#: _____	Trans. Ticket _____	W.O. #: _____ &
Inspected By: _____	Dist. F/G#: _____	Dist. F/G#: _____	Dist. Ticket _____	District CC #: _____

Date Inspect.	Detailed Location	Property Owner	Phone Number	Type of *Contact	^TGR s	Crew Type	Description of Work / Comments	Date Comp.	^Cst. Survey	Crew ID No.	Forem. Initials

*Type of Contact Legend: D-Door Hanger, L-Letter, N-None, P-Personal, T-Telephone

^TGRs and Customer Surveys: Check = yes, Blank = no

4.2.6 Project Completion

After completing work, the crew leader shall note the date it was performed and initial the location entry.

4.2.6.1 Post Inspection to Verify Completion.

Supervisors are ultimately responsible for ensuring that all work on a project is completed to PacifiCorp specifications. They should either inspect the work themselves, or delegate that inspection to the forest techs. If the work is delegated to the forest techs, supervisors/GFs still have the responsibility for ensuring the project is completed to specifications. Any exceptions to specifications for any reason must be noted on the work release (see section 4.2.1.1).

4.2.6.2 Inventory and Check in Maps

Supervisors/GFs and forest techs should collect all maps that have been distributed to tree crews and return them to the forester from whom they were initially issued. Foresters shall account for all maps originally issued, and file them appropriately.

4.2.6.3 Maps and Documentation Submitted.

Supervisors should submit maps, completed activity reports and other pertinent documentation to foresters.

4.2.6.4 Concerned Customer and Refusal Information and Dangerous Customer Forms and Information Submitted.

Forest techs and supervisors should gather information on customers that might need follow-up the next time the project is worked. Examples are customers who refuse to allow access or work, customers who express concerns about work or customers or property owners who threaten vegetation management employees. Information should be presented to the forester in writing on the customer refusal form and appropriately filed, preferably digitally.

4.2.6.5 Tree Replacement Voucher Copies Submitted.

Forest techs and supervisors should submit digitized copies of tree replacement coupons to the forester.

4.2.6.6 Hazard Forms Copied, Filed and Submitted to the Utility General Foreman.

Forms documenting facility points (Figure 2.7) that need to be corrected (broken cross arms, broken insulators, leaning or unstable poles, for example) should be submitted to the PacifiCorp district general foreman or operations manager.

4.2.6.7 Daily Logs for Project Submitted to Area Forester.

Supervisors should collect *Daily Logs* from each crew member under their direction. These should be digitized and emailed to the forester, as well as filed by the forester.

4.2.6.8 Sign Work Release.

Once they have determined that all work on a project is completed to specification, GF/supervisor should sign and date the work release. Any locations that have not been worked to specifications should be documented on the work release with an explanation of the circumstances (see section 4.2.1.1)

4.2.7 Project Closure.

Foresters are responsible for closing projects by completing the tasks in 4.2.7.1-4.2.7.3.

4.2.7.1 Verify Receipt of Maps and Other Pertinent Information.

Foresters should inventory maps and collect daily logs, tree replacement vouchers, hazard forms as well as concerned customer, dangerous customer and refusal information from the supervisor. Foresters should file this information digitally so it can be retrieved when work is conducted the next time through.

4.2.7.2 Verify Receipt of Signed Work Release.

Foresters should ensure they have received and filed a copy of the signed work release from the contractor. They should examine the comment section for any work that was not completed to specification, and if necessary, make provisions to correct those outstanding conditions.

4.2.7.3 Close Work Release

The forester should close the work release and inform the lead/senior consultant and director of vegetation management of the closure by electronic mail.

4.3 Reporting Work

After completing work, the crew leader shall document tree work on *Weekly and Daily Reports*. Note the date the work was performed, the crew ID number and the crew leader's initials.

4.3.1 Weekly Vegetation Report

Tree work shall be reported on the *Weekly Time & Vegetation Report* (Figure 4.4). The report is a combination contractor time sheet and PacifiCorp weekly production report. The back of the report provides instructions and definitions for each cell (Figure 4.5).

Most of the items on the *Weekly Report* are self explanatory. A few cells warrant clarification, (reference Figures 4.4 and 4.5).

- Item 23. General Work Location: The general location should be the approximate address. For example, the 4000 block of Dead Elm Memorial Road. Note that for audit purposes, crew leaders will be responsible to find and identify all the trees they worked over the course of a week. Consequently, more detailed information should be kept in the *Daily Report* (covered in Section 4.3.2 [Figure 4.6]).
- Items 31 and 32. Woody plants (including vines) less than 4-inches in diameter at breast height are classified as saplings. The actual square footage occupied by the above ground portion of the plant should be measured and recorded, with a 10 ft^2 maximum per plant for both pruned and removed vegetation. Note that multi-stemmed woody plants where no single stem is over 4-inches in diameter are classified as saplings, with a maximum of 10 ft^2 per plant.
- Item 37. Stump Spraying: Document the time spent treating stumps of trees that have been removed during the day. Use quarter-hour increments.
- Item 39. Side Pruning: Document trees worked that were located 10 feet or more from the center distribution line or that were outside the transmission right-of-way.
- Item 40. Crown Reductions: Document trees worked that were within 10 feet of the center

distribution line, or inside the transmission right-of-way (in the cases where trees in transmission rights-of-way are pruned).

- Item 41. Overhang Pruning: Usually trees that were off to the side of the right-of-way with limbs overhanging the distribution conductors.
- Items 43-45. To obtain the diameters of multi-stemmed trees, add the diameters at breast height of individual stems. For example, if a tree has 3 stems of 8, 4 and 3 inches in diameter, the tree would be 15 inches in diameter and reported as a 12-24 inch removal. An exception would be if no stems on the plant are over 4-inches in diameter at breast height, in which case the plant should be classified as a sapling (see items 31 and 32). If only one stem is over 4-inches in diameter and the remaining stems are less, report the diameter of that specific removal as the diameter of the single largest stem.
- Item 47 and 48. Saplings pruned and removed. Saplings are trees under 4 inches in diameter at breast height (they could also be 6-inches or less in diameter at the stump). Report area covered by the crown of the plant, with a 10 ft^2 maximum for each plant. There must be six inches of soil between stems of the same species for them to count as multiple plants.
- Items 54 and 55. For transmission cycle work, capture the number of acres cleared or sprayed respectively using linear feet.

4.3.2 Daily Report

The *Daily Report* shall be used by crew leaders to keep detailed records on their productivity (Figure 4.6). It is particularly important as a reference for locating trees during audits, and tracking chemical use. Like the *Weekly Report*, the *Daily Report* provides instructions on a cell by cell basis. The *Daily Report* is the property of PacifiCorp, and when completed, supervisors/GFs shall digitize it, and sent to the appropriate forester.

4.4 Tree Crew Audits

The primary purpose of a crew audit is quality control. Furthermore, crew audits offer an opportunity for the forester to provide tree crew leaders and their supervisors/GFs with a clear understanding of PacifiCorp's expectations.

Foresters shall audit one full week of work as many times a year as specified in their goals. All work, including transmission and pole clearing work shall be audited. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together reviewing completed work. Audits should begin with the first tree, and progress in order to the last tree worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

The audits should objectively assess quality, adherence to specifications, tree counts, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on a *Tree Crew Audit Report* (Figure 4.8).

4.4.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees worked in each category.

The percent score shall be averaged for the final rating.

4.4.1.1 Quality

The quality component documents crew adherence to natural target pruning as described in Section 3.1.2. Before conducting an audit, the forester and supervisor/GF should agree on a day to examine cut quality. One way would be to roll a die. In this case, 1 would indicate Monday, 2 for Tuesday and so on. Six would represent Saturday, and would require another roll until a different number turns up.

All final cuts made by the crew that day should be counted and examined for proper technique. A minimum of 20 cuts shall be inspected. If a crew did not make 20 cuts on the selected day, another day should be added until a minimum of 20 cuts have been evaluated. Note that if Friday is the selected day and 20 cuts were not made , the crew leader should alert the forester and GF/supervisor before the audit begins so another day can be added for cut quality.

Rip cuts, flush cuts and improper lateral selections violate the principles of natural target pruning, and shall be counted against the category score. Foresters should grant tree crews one grace faulty cut (the "Mulligan"). In addition, each “hanger” left in the tree will count as one improper cut per inch of the hanger’s diameter. For every two hangers under one-inch in diameter, a single cut penalty will be assessed.

4.4.1.2 Specification Adherence

The *Specification* section examines all trees worked over the course of a week, both pruned and removed. It takes a straight percentage of trees that comply with clearances specified in Chapters 5 and 6 against all those worked during the week. Brush feet sprayed may be counted as brush feet removed. In addition, if climbing spurs were used on a tree on which they were unnecessary in the judgment of the forester, the crew will be penalized for a tree out of specification.

4.4.1.3 Tree Count

The tree count section is used to validate numbers in the *Weekly Report* against those actually identified in the field on a straight percentage basis. Reported side pruned, overhang, crown reduction, secondary trees, and brush feet equivalents ($ft^2 \div 10$ of saplings pruned or removed) should be validated for discrepancies in these categories. If overall tree counts are accurate no penalty should be levied. However, the crew should be counseled about the importance of accurately categorizing tree work.

On transmission cycle work, work in the right-of-way should be reported as acres cleared. Hotspotting should also be reported as individual trees in the right-of-way. Trees outside the right-of-way may be reported as individual trees.

4.4.1.4 Herbicide

The herbicide component should compare total treated stumps and brush feet equivalents (total $ft^2 \div 10$) against those that should have been treated. It should also compare stumps and brush feet equivalents treated with herbicide against the total number reported. Deductions for over or under treatment or reporting should be made on a straight percentage basis and added together (Table 4.1). For example, if in an area where herbicide use was acceptable, a tree crew removed five deciduous trees, but only treated four stumps, they would

Figure 4.4. Weekly Time and Vegetation Report

WKLY TIME REPORT & PACIFICORP WKLY VEGETATION REPORT

1 W/E _____ State _____ Local Union # _____ Crew _____ Contract# _____

Last 4	Employee Name	Code	T	Pay Rate	Sun	Mon	Tue	Wed	Thur	Fri	Sat	ST	OT	DT	Total	HOL	VAC	Other	PAD

Explain Other Hours:

PAD- Paid Absent Day

Eq Name	Equipment Number	Mileage	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat

MAN HOURS	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
28 Travel & Misc.								
29 Inspection/Notification								
30 Traffic Flagging								
31 Chip/Cleanup/Dump								
32 Tree Prune								
33 Tree Removal								
34 Saplings Pruned								
35 Saplings Remove								
36 TGR								
37 Pole Clear/Treating								
38 ROW Clearing								
39 ROW Spraying								
40 Stump Spraying								
41 Total Man-Hours								

PRODUCTIVITY	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
42 # Side Pruning								
43 # Crown Reductions								
44 Over-hang pruning								
45 # Sec/Serv. Pruning								
46 # Removals 4"-11"								
47 # Removals 12"-23"								
48 # Removals 24"-Up								
49 TOTAL PRUNED/REMOVED								
50 Ft2 Saplings Pruned								
51 Ft2 Saplings Removed								
52 # Stump Appliction								
53 # Stumps Ground								
54 # TGR Application								
55 # Poles Cleared								
56 # Poles Treated								
57 # ROW Ac Cleared								
58 # ROW Ac Sprayed								
59 Ft2 Sprayed								
60 # Loads of Chips								
61 # Survey Cards								

Changes 3/4/11

2 District _____

3 Project _____

Crew Information

4 Crew Leader _____

5 Pacificorp # _____

6 Crew Type _____

7 Cert. Appl# _____

8 Supervisor _____

Work Activity

Local Transmission Maintenance

9 Trans Cycle (TRN) TID# _____

10 Trans Ticket (TTK) ❑ _____

11 Trans Hot-Spot (THS) TID# _____

12 Trans Chemical (TCM) TID# _____

13 Trans Inspection (TNT) TID# _____

14 Trans Pole Clear (TPL) TID# _____

Distribution Maintenance

15 Dist Cycle (DST) F/G # _____

16 Dist Ticket (DTK) ❑ _____

17 Dist Hot-Spot (DHS) F/G # _____

18 Dist Chemical (DCM) F/G # _____

19 Dist Pole Clear (DPL) F/G# _____

Main Grid Transmission Maintenance

20 MG Cycle (MGT) TID# _____

21 MG Hot-Spot (MHS) TID # _____

22 MG Chemical (MCM) TID# _____

23 MG Inspection (MGI) TID# _____

24 MG Pole Clear (MPL) TID# _____

25. District Work Order or Storm #s

PM Order # _____

26 Shop Location _____

27. General Work Location

Mon _____

Tue _____

Wed _____

Thrs _____

Fri _____

Sat _____

Sun _____

62 Crew Leader Signature _____

PAGE _____

Vegetation Weekly Report 3/11

Figure 4.5. PacifiCorp Weekly Time and Vegetation Management Report Instructions and Definitions.

Instruction & Definitions

1. Week Ending: The week ending date (Saturday).
2. District: The PacifiCorp district where the work occurred.
3. Project #: District identification number
4. Cr. Leader: Crew Leader's name.
5. Crew #: Three-digit crew number assigned to crew leader.
6. Crew Type: Two-character crew-type code (2-Lift, 2-Mow, 3-Lift, 3-Climb. 4-Climb, 5-Climb, F. Tech, Others)
7. Certified Appl. #: The certified applicators license number.
8. Supervisor: Crew's Supervisor's name.
9. Local Trans Cycle, TID#: Transmission line six-digit Tech ID number.
10. Local Trans Ticket: Check when working transmission tickets. Tech ID number not required.
11. Local Trans Hot-Spot, TID#: Transmission line six-digit Tech ID number.
12. Local Trans Chemical: Transmission line six digit Tech ID number.
13 Local Trans Inspection: Transmission line six digit Tech ID number.
14. Local Trans Pole Clear: Transmission line six digit Tech ID number California Only
15. Dist. Cycle, F/G#: Feeder or grid number, maximum eight characters.
16. Dist. Ticket: Check when working distribution ticket. Feeder or grid numbers not required.
17. Dist. Hot-Spot, F/G#: Feeder or grid number, maximum eight characters.
18. Dist. Chem. F/G#: Chemical Cycle Maintenance: Enter Feeder/Grid #.
19. Dist. Pole Clear F/G#: Feeder or grid number. maximum eight digits. This activity is only in California.
20. Main Grid Cycle: Transmission line six digit Tech ID number
21. Main Grid Hot-Spot: Transmission line six digit Tech ID number
22. Main Grid Chemical: Transmission line six digit Tech ID number
23. Main Grid Inspection: Transmission line six digit Tech ID number
24. Main Grid Pole Clear: Transmission line six digit Tech ID number California Only
25. District Work Order or Storm Work: Plant Maintenance (PM) Order and Cost Center.
26. Shop Location: Shop location.
27. General Work Location: General work location for the day. Detailed locations are to be kept separately in the "yellow books." For audit purposes, crew leaders are responsible to find and identify all trees they worked.
28. Travel & Misc. Man-hours: Number of travel and miscellaneous (meetings, stand-by, etc.) man-hours a day.
29. Inspection/Notification: Number of inspection and notification man-hours a day. Includes facility inspection property owner notification.
30. Traffic Flagging: Number of traffic flagging man-hours a day.
31. Chip/Cleanup/Dump: Number of chipping, cleanup, and dumping man-hours a day.
32. Tree Prune: Number of man-hours a day spent pruning, including setup.
33. Tree Removal: Number of tree removal man-hours a day, including setup.
34. Saplings Pruned: Man-hours a day spent pruning saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
35. Sapling Removed: Man-hours a day removing saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4 .5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
36. TGR: Man-hours a day applying TGRs. including setup.
37. Pole Clear/Treating: Pole clearing man-hours a day.
38. ROW Clearing: Transmission ROW clearing man-hours a day.
39. ROW Spraying: Transmission ROW spraying man-hours a day.
40. Stump Spraying: Man-hours a day spent spraying stumps and stubble from removed saplings. Use 1/4 hour increments
41. Total Man-Hours: Total number of man-hours a day and week. Use 1/4 hour increments.
42. Side Pruning: Total trees pruned to the side of the primary conductor each day. Trunks of these trees are usually 10 feet or more off either side of the center distribution line.
43. Crown Reductions: Total trees pruned under the primary conductor(s) daily. Trunks are usually within 10 feet of either side of the center line.
44. Over-hang Pruning: Trees pruned over-hanging the primary conductor. These trees are usually to the side with removed limbs less than 10 feet above the primary.
45. Sec/Serv. Pruning: Total trees pruned each day for secondary, service, or street light where there is no primary.
46. Removals 4"-11": Total trees removed between 4"-11" DBH
47. Removals 12"-23": Total trees removed between 12"-23" DBH
48. Removals 24" and greater: Total trees removed 24" DBH and greater.
49. TOTAL PRUNED/REMOVED: Total trees pruned or removed a day and week.
50. Sq. Ft. Saplings Pruned: Square feet (length x width) of saplings pruned. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
51. Sq. Ft. Saplings Removed: Square feet (length x width) of saplings removed. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
52. Stump Application: Total trees that were stump treated with herbicides.
53. Stumps Ground: Stumps ground out.
54. TGR Application: Trees treated with Tree Growth Regulators (TGRs [(Implants, soil drench, and soil injection]).
55. Poles Cleared: Poles cleared of trees and brush. This activity is only in California.
56. Poles Treated: Poles treated with herbicides.
57. ROW Acres Cleared: Transmission ROW acres cleared of trees and saplings.
58. ROW Acres Sprayed: Transmission ROW acres where trees and saplings were treated with herbicides.
59. Sq. Ft. Sprayed: Report the square feet of undesirable vegetation sprayed.
60. Loads of Chips: Loads of chips dumped.
61 # Survey cards: Total number of survey cards distributed
62. CREW LEADER SIGNATURE: Crew leader signs the report to authenticate its accuracy.

Figure 4.6 Daily Report

PacifiCorp Vegetation Management Daily Report

'Crew Leader:

[2]Date	[2]Feeder/Grid #, Ticket Work, Trans. TID#, Work Order #	[4]Detailed Location: Street Address, Pole Number, Structure Number, Mile Marker, Reference Point	[5]# Slide Prune	[6]# Crown Reductions	[7]# Over-hang Prune	[8]# Sec/Serv Prune	[9]# Brush Ft² Prune	[10]# Brush Ft² Removed	[11]# Removals 4"-11"	[11]# Removals 12"-23"	[11]# Removals 24" up	[12]# Stump Applications	[13]# Stumps Ground	[14]# TGR Applications	[15]# Poles Cleared	[16]# Poles Treated	[17]# ROW Acres Cleared	[18]# ROW Acres Sprayed	[19]# Brush Ft² Sprayed	[20]Herbicide Product	[21]# Oz. or # Gal. applied	[22]Temperature (F)	[23]Wind Direction	[24]Wind Speed (MPH)	[25]Start Time	[26]Finish Time	[27]Customer Survey

[28]Certified Applicator: _____ [29]Certified Applicator #: _____

[30]Forester _____

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Figure 4.7

PacifiCorp Vegetation Management Daily Report

Instruction and Definitions

1. **Crew Leader:** The name of the crew leader for the day.
2. **Date:** Date work was performed.
3. **Feeder/Grid #, Ticket work, Trans TID #, After Hours Trans or Dist. Storm Work, Worker Order #:** Identify the work with the appropriate number, or as ticket work.
4. **Detailed Location:** Report a detailed work location for each job site.
5. **Side Pruning:** Report the number of trees pruned to the side of the primary conductors.
6. **Crown Reductions:** Report the number of trees pruned under the primary conductors.
7. **Overhang Pruned:** Report the number of pruned overhanging the primary conductors.
8. **Sec/Service Pruned:** Report the number of trees pruned for secondary, service, or street lights where there is no primary.
9. **# Ft^2 Saplings Pruned:** Report the area of power line right-of-way where saplings were pruned. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
10. **# Ft^2 Saplings Removed:** Report the area of power line right-of-way where saplings were removed. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
11. **# Removals 4"-11", 12"-23", and 24" and up:** Report the number of trees removed in each size class measured 4½ feet above the ground).
12. **# Stump Applications:** Report the number of trees that were stump treated with herbicides.
13. **# Stumps Ground:** Report the number of stumps that were ground.
14. **# TGR Applications:** Report the number of trees treated with tree growth regulators.
15. **# Poles Cleared:** Report the number of poles cleared of trees and brush to bare ground.
16. **# Poles Treated:** Report the number of poles treated with herbicides.
17. **# ROW Acres Cleared:** Report the number of transmission ROW acres were cleared.
18. **# ROW Acres Spayed:** Report the number of ROW acres sprayed with herbicides.
19. **# Ft^2 Sprayed:** Report the number of square feet of right-of-way sprayed with herbicides.
20. **Loads of chips:** loads of chips dumbed that day.
21. **Herbicide Product:** Report the herbicide product used at the site. Refer to Herbicides A-F.
22. **# Oz., or # Gal. Applied:** Report the number of herbicide ounces or gallons applied at the site.
23. **Temperature (F):** Report the temperature when the herbicide application is made.
24. **Wind Direction:** Report the wind direction at the site when the herbicide application was made.
25. **Wind Speed (MPH):** Report the wind speed in miles per hour at the site when the herbicide application was made.
26. **Start Time:** Report the time when the herbicide application was started.
27. **Finish Time:** Report the time when the herbicide application was completed.
28. **Certified Applicator:** The name of the liscensed applicator.
29. **Certified Applicator #:** The number of the applicator's license.

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Figure 4.8. Tree Crew Audit Form

CREW FOREMAN: _____ **CREW:** _____ **DATE:** _____

CONTRACTOR: _____ **QUARTER:** _____ **DISTRICT:** _____

FEEDER/GRID, Trans PL: _____

	SCORE	WEIGHT	% FACTOR
QUALITY : # Cuts inspected: # Proper cuts: COMMENTS: (Laterals, flush cuts, bark rips, wounds, stubs, hangers) _____	100.0%	0.25	25%
CLEARANCE: # Trees Inspected: # Trees Spec. Clearance: # Trees non-spec. clearance: 0 COMMENTS: _____	100%	0.25	25%
TREE COUNT: # Trees reported: # Trees verified: COMMENTS: _____	100%	0.25	25%
HERBICIDE: # Trees reported: # Trees verified: Pesticide Applicators Lic. Label & MSDS Sheets (Proper Material, Application, Tools, & Knowledge): _____	100%	0.25	25%
AVERAGE RATING: Of all categories (0 to 100% adherence)	**TOTALS:**		**100.0%**

PRODUCTION: _____

PROFESSIONALISM: _____

EQUIPMENT: (Appearance, condition, operational) _____

SAFETY: ***evaluated by contractor supervisor*** - (Work techniques, traffic control, personal protective equip) _____

CREW EFFICIENCY: (Job planning, multiple tasking idle labor, clean up chip disposal) _____

SUPERVISOR: _____ **FORESTER:** _____

**Crew Personel & Equipment Composition:*

**Week ending date:*

Table 4.1 Herbicide category deductions. Deductions are added together.

Penalty Description	Deduction
Failing to treat stumps or ft^2 of brush requiring treatment	Percentage of stumps or ft^2 of brush missed against the total of those requiring treatment.
Misreported stumps or ft^2 of brush	Percentage of over or under reported stumps, or ft^2 of brush against the total that were actually treated
Crew without a member holding a current applicator's license	100% (crew may be shut down at the forester's discretion).
Crew member has a current applicator's license, but does not have it on site.	10%
Missing herbicide MSDS or Label	10% for each missing document for every chemical on the truck

receive a 20% deduction ((1÷5)×100 = 20%). Moreover, if they reported only three out of the four stumps actually treated, the crew would receive an additional 25% demerit. The total deduction in this example would be 45%, and the crew's herbicide score would be 55% (assuming everything else was in order).

Moreover, foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for crews without a licensed applicator (the crew may be shut down until they secure a valid license at the forester's discretion), a 10% penalty for a crew that has a valid applicator's license but does not have it on site, and a 10% penalty for each missing, but required pesticide document (MSDS and labels, for example [Table 4.1]).

Failing to report treated trees is a violation of law, in addition to not providing PacifiCorp with accurate information. Examples of trees and brush that do not require treatment include conifers that do not sprout from the stump (pines, firs, spruces, cedars and others), and stumps located in areas where herbicide use is prohibited (certain Federal jurisdictions, most municipal watersheds and private property where the owner objects to herbicide use).

4.4.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.

4.4.2.1 Production

Foresters should provide the tree crew's *Statistics Report* (Figure 4.1) and a *Crew Productivity Report* from PVM for the year to date. On the *Statistics Report*, foresters should review the percentage of removals, the type of removals, the amount of nonproductive time and other factors that affect a tree crew's productivity and quality. The *Crew Productivity Report* compares the subject crew's data with the average productivity of crews working in similar areas. It enables crew members to compare their performance against that of their peers.

While productivity data is objective, valid comparisons involve subjective judgment because specific work types are

different from one another. For example, a climb crew's production results will invariably be lower than those of lift crews, ticket work will be worse than cycle work, and one cycle crew working in a vegetation-dense area will have different production from crews working in urban areas. Nevertheless, 70% of PacifiCorp's contractor performance formula is based on productivity; so, audits should stress productivity's importance to program success.

4.4.2.2 Professionalism

Since tree crews have more interaction with PacifiCorp customers than any other department, it is vitally important for tree crews to exhibit professionalism. Foresters should comment on factors such as ISA Certification, and other considerations.

4.4.2.3 Equipment

The condition of equipment relates to professionalism and productivity. Well cared for equipment and organized tool boxes are not only a positive reflection on the crew, but they also make work safer and more efficient. Foresters should comment on the appearance and functionally of equipment and organization of the bins.

4.4.2.4 Safety

Safety should be evaluated by the supervisor/GF. However, if a forester observes unreasonable safety risks or obvious safety violations (such as someone failing to wear personal protective equipment), he/she should relate their concerns to the crew, and inform that crew's GF/supervisor so that he or she may correct the situation. All crew members should know the safety requirements applicable to their positions and take responsibility for following those requirements.

4.4.2.5 Crew Efficiency

Reviewing work systematically from the first to last tree worked allows foresters and supervisors/GF to gain an impression of job planning, which is a reflection of crew efficiency. Foresters should share their impression of crew efficiency and also comment on methodology, clean up and chip disposal. Inefficient work organization may be the responsibility of the forest tech who originally lined-out the work. Trends in disorganization may require forest tech counseling.

4.4.2.6 Crew Composition

Foresters will note the number of crew members and equipment type on the crew being audited. The field notes will be compared to an itemized invoice itemization for accuracy. Foresters should also note the week ending date to help access the proper invoice.

4.5 Herbicide Crew Audit

The primary purpose of the herbicide crew audit is quality control. Audits should evaluate one full week of herbicide crew work. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together observing completed work. Audits should begin with the first area treated, and progress in order to the last area worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

Moreover, audits should provide the herbicide crew leader with feedback on production, professionalism, equipment,

Figure 4.9. Herbicide Audit Form.

Herbicide Crew Audit Form

CREW FOREMAN: _____ **Crew #** _____ **DATE:** _____

CREW/CONTRACTOR: **WEEK OF WORK AUDITED:** _____

DISTRICT: **QUARTER:**

	SCORE	WEIGHT	%FACTOR
QUALITY: # Stumps reported: _____ #Stumps treated properly: _____	100%	0.33	33%
Ft² brush/Acres: _____ Ft² brush/Acres treated properly: _____			
COMMENTS:			
COUNT: # Trees deciduous stumps: _____ # Deciduous stumps treated verified: _____	100%	0.33	33%
FT² saplings/Acres recorded: _____ Ft² saplings/Acres treated verified: _____			
COMMENTS:			
HERBICIDE: Pesticide Applicators Lic. # _____ Label & MSDS Sheets (Y/N) , _____	100%	0.33	33%
# Stumps/Acres reported _____ # Stumps acres verified _____			
Material, Tools & Knowledge: Herbicide appliation looked good			
AVERAGE RATING: Of all categories (0 to 100% adherence)	**TOTALS:**		*100%*

Specification Manual (yes/no) _____

PRODUCTION:

PROFESSIONALISM:

safety and crew efficiency. Results shall be documented on an *Herbicide Crew Audit Report* (Figure 4.9).

4.5.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees worked in each category. The percent score shall be averaged for the final rating.

4.5.1.1 Quality

The quality section examines proper brush ft^2 treatment following specifications described in Chapter 7. Calculate the score by using percentages of proper brush or acres treated against the total number treated.

4.5.1.2 Count

To complete the *Count* section, check the number brush ft^2 or acres treated against which should have been sprayed.

4.5.1.3 Herbicide

The herbicide section is mainly for evaluating documentation. Foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for crews without a licensed applicator (the crew may be shut down at the forester's discretion), a 10% penalty for a crew that has a valid applicator's license but does not have it on site, and a 10% penalty for each missing pesticide document required for chemical use (MSDS and labels, for example).

Foresters should also comment on material, proper tools and crew knowledge.

4.5.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.

Failing to report herbicide treatment or not having a licensed applicator on the crew is a violation of the law.

4.5.2.1 Professionalism

Same instructions as 4.4.2.2

4.5.2.2 Equipment

Same instructions as 4.4.2.3

4.5.2.3 Safety

Same instructions as 4.4.2.4

4.5.2.4 Crew Efficiency

Same instructions as 4.4.2.5

4.5.2.5 Crew Composition

Same instructions as 4.4.2.6

4.6 Worksite Inspection

PacifiCorp has a *Worksite Inspection Form* (Figure 4.10), which is designed to check tree crew safety. Foresters are required to perform a number of worksite inspections as specified in their annual goals. Foresters may use the form during crew visits. The form provides a general review, as well as tailboard, bucket or climb setup, vehicle, herbicide and other safety provisions.

Figure 4.10. Vegetation Management Worksite Inspection Form.

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

VEG. MANAGEMENT WORKSITE INSPECTION FORM

Employee Name(s)

Feeder/Grid #

District

Inspection Date

0
Crew Leader

Work Location (Address or GPS)

Required? Yes	Required? No	General	In Use? Yes	In Use? No
☐	☐	Hard Hat	☐	☐
☐	☐	Safety Glasses/Face Shield	☐	☐
☐	☐	Hearing Protection	☐	☐
☐	☐	Hand Protection	☐	☐
☐	☐	Chaps	☐	☐
☐	☐	Appropriate Footwear	☐	☐
☐	☐	Safety Vest	☐	☐
☐	☐	Job-site Housekeeping	☐	☐
☐	☐	Proper Clothing	☐	☐
☐	☐	Whistle	☐	☐
☐	☐	Communication	☐	☐
☐	☐	First Aid Kit	☐	☐
☐	☐	Fire Extinguisher	☐	☐
☐	☐	Backpack Water Fire Sprayer	☐	☐
☐	☐	Shovel and Pulaski	☐	☐
☐	☐	Fire Wagon	☐	☐
☐	☐	Dispatch Notified	☐	☐
☐	☐	Seasonal Tools	☐	☐

Required? Yes	Required? No	Tailboard	In Use? Yes	In Use? No
☐	☐	Electric Hazard	☐	☐
☐	☐	Traffic	☐	☐
☐	☐	Parked Vehicles	☐	☐
☐	☐	Structures	☐	☐
☐	☐	Fences	☐	☐
☐	☐	Pets/Livestock	☐	☐
☐	☐	Trip Hazards	☐	☐
☐	☐	Slope	☐	☐
☐	☐	Public/Property Owner Access	☐	☐
☐	☐	Yard Ornaments	☐	☐
☐	☐	Other	☐	☐

Required? Yes	Required? No	Bucket Work	In Use? Yes	In Use? No
☐	☐	Bucket Lanyard/Harness	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Wheel Chocks in Place	☐	☐
☐	☐	Clearance Over Roadway	☐	☐
☐	☐	Outrigger Placement	☐	☐
☐	☐	Hydraulic Saw Use/Storage	☐	☐
☐	☐	Chain Saw Use/Storage	☐	☐

Required? Yes	Required? No	Climb Work	In Use? Yes	In Use? No
☐	☐	Pre-Climb Inspection	☐	☐
☐	☐	Saddle	☐	☐
☐	☐	Rope	☐	☐
☐	☐	Lanyard	☐	☐
☐	☐	2-point Attachment	☐	☐
☐	☐	Proper Tie-in Position	☐	☐
☐	☐	Figure 8 knot	☐	☐
☐	☐	Carabineers/Snaps	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Ladder Use/Placement	☐	☐
☐	☐	Pole Pruners Hung Safely?	☐	☐

Required? Yes	Required? No	Vehicle	In Use? Yes	In Use? No
☐	☐	Wheels Chocked	☐	☐
☐	☐	Positioning and Set-up	☐	☐
☐	☐	Loads Secure	☐	☐
☐	☐	Emergency Brake	☐	☐
☐	☐	Conned off	☐	☐
☐	☐	Signage	☐	☐
☐	☐	Chipper Use	☐	☐
☐	☐	Seatbelt Use	☐	☐

Required? Yes	Required? No	Herbicide	In Use? Yes	In Use? No
☐	☐	Labels	☐	☐
☐	☐	MSDS	☐	☐
☐	☐	Containers Labeled	☐	☐
☐	☐	Sprayers Labeled	☐	☐

Required? Yes	Required? No	Herbicide	In Use? Yes	In Use? No
☐	☐	Rubber Gloves	☐	☐
☐	☐	Proper Application	☐	☐
☐	☐	Wetland Product	☐	☐
☐	☐	Current Applicator's Lisc.	☐	☐

COMMENTS:

CREW LEADER:

FORESTER: _____

4.7 PVM

PacifiCorp Vegetation Management (PVM) is a PacifiCorp intranet-based program available at: http://pdxus033.pacificorp.com/cognos7/cgi-bin/upfcgi.exe, which organizes data downloaded from the *Weekly Report* (Figure 4.4). PVM offers a variety of reports, such as the *Statistics Report* (Figure 4.11), which enable program analysis.

The statistics reports are designed to be flexible. They allow data examination on a program level (it contains data since 1996 for Pacific Power, for example), down to a crew level for a specific week of work. They also provide cost and man-hours per tree, the percentage of various work types (tree removals, the size of trees removed, the number of side pruned trees, crown reduction and others), the percentage of time spent on travel, flagging, cleanup and other activities.

Other PVM reports compare the productivity of individual crews, or breakdown production by district, state, and work code. The reports provide objective information upon which foresters and supervisors/GFs can make sound management decisions based on objective information.

4.8 Monthly Reports

Vegetation management has monthly reports tracking distribution cycle and interim progress, distribution spray progress, tree crew deployment, cycle progress, California Pole Clearing and transmission progress reports. These reports can be found at the PacifiCorp T&D Support Services Website: http://idoc.pacificorp.us/pacificorp_organization/rmp/rmpto/rtss/vm.html. A description of three prominent reports follows.

4.8.1 Distribution Progress Report

The distribution progress report (Figure 4.12) accounts for line miles achieved on systematic distribution work compared to goals for a given year. Systematic distribution work is cycle work throughout the six state service territory, as well as interim work in the Pacific Power service territory. The goal is the recommended cycle (three or four years depending on the state) prorated by the week of the year.

The report provides a summary of line miles achieved, breaks down progress by Pacific Power and Rocky Mountain Power's service territory, includes monthly miles ahead or behind goals, a chart depicting monthly line mile progress, and progress in each state by district and where appropriate, by forester.

4.8.2 Distribution Cycle Progress Report.

The distribution cycle report records line miles achieved over the course of the current recommended cycle compared to goals (Figure 4.13). Goals are prorated monthly and compared to actual progress.

4.8.3 Tree Crew Deployment Report

The tree crew deployment report (Figure 4.14) lists tree crews, forest techs and supervisors/general foremen by forester and district as of the first of each month. In addition to providing information on tree crew locations, the tree crew deployment is used for budget projections.

Figure 4.11. A sample PVM *Statistics Report* showing distribution cycle data for Oregon 2010.

PacifiCorp Vegetation Management

Data Updated on 6/13/11 15:10:25 PM

Statistics Report

FISCAL YEAR: 2011

WORK ENDING: 01/03/2010 TO 01/01/2011 INVOICE

COMPANY NAME CREW CODE

STATE OR CREW TYPE

DISTRICT CODE DST

PROJECT WORK ID

SUPERVISOR FOREMAN

FORESTER

TRIM TOTAL	% SIDE TRIMS	%CROWN REDUCTION TRIMS	%OVERHANG TRIMS	SEC/SERV TRIMS	# BRUSH TRIMS
103,658	44.99	41.95	1.90	4,563.00	70,109

REMOVALS TOTALS	%TREE REMOVALS	#BRUSH FT REMOVED	% BRUSH FEET REMOVED	% 4 - 11 REMOVED	% 12 - 23 REMOVED	% 24+ REMOVED
90,956	46.74	772,283	84.91	12.56	2.02	0.51

TOTAL TREESBRUSH	#STUMP APPLICATIONS	#ACRES SPRAYED	#ACRES CLEARED	#TGR APPLICATIONS
194,614	6,098	0	0	668

#STUMP GROUND	#POLES CLEARED	#POLES TREATED
6	15	0

TOTAL MANHOURS	%TRAVEL./ MISC MANHOURS	%INSPECT/ NOTIFY MANHOURS	%TRAFFIC/ FLAGGING MANHOURS	%CHIP/ CLEANUP MANHOURS
147,737	7.66	13.09	9.73	41.35

%TRIM MANHOURS	%REMOVAL MANHOURS	%TGR MANHOURS	%POLE CLEARING MANHOURS	%ROW CLEARING MANHOURS	% SPRAYING MANHOURS	%STUMP TREAT MANHOURS
22.42	3.64	0.17	0.00	0.00	0.00	0.28

TOTAL COST	TOTAL $/TREE	TRIMMING $/TRIM	REMOVAL $/REMV
$7,797,560	$40.07	$63.34	$11.73

TOTAL MH/TREE	TRIMMING MH/TRIM	REMOVAL MH/REMV	TRIM MH/10FT2 SAPPRUN	REMV MH/ 10FT2 SAPREM
0.76	1.20	0.22	0.06	0.03

06/14/2011 Page 1 of 1

Figure 4.12 Monthly Distribution Progress Report

PACIFICORP VEGETATION MANAGEMENT 2011 DISTRIBUTION PROGRESS REPORT

Summary

Through Dec 3, 2011

	CYCLE WORK					INTERIM WORK			
	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**12,182**	**10,058**	**11,244**	**-1,186**	**4,908**	**4,001**	**4,530**	**-529**
State									
California	2,323	581	569	536	33	581	457	536	-79
Idaho	4,358	1,453	1,135	1,341	-206	0	0	0	0
Oregon	14,184	3,655	2,111	3,373	-1,263	3,438	2,675	3,173	-498
Utah	11,377	3,792	3,528	3,501	27	0	0	0	0
Washington	3,557	889	591	821	-230	889	870	821	49
Wyoming	7,248	1,812	2,125	1,673	452	0	0	0	0
Total	43,047	12,182	10,058	11,244	-1,186	4,908	4,001	4,530	-529

SUMMARY OF SYSTEMATIC WORK* BY FORESTER

	Total Line Miles	Total Miles Scheduled	*Line Miles Completed	*Line Mile Completed Goal	Miles Ahead/(Behind)
	43,047	**16,200**	**14,059**	**15,774**	**-1,715**
Forester		*	*	*	*
Hooley	2,830	1,415	868	1,306	-438
Evans	6,030	2,010	1,690	1,855	-166
Jones	2,351	784	931	723	208
Partridge	3,919	1,960	1,135	1,809	-674
Phillips	5,823	2,912	2,368	2,688	-320
Vanderhoof	14,602	4,263	4,167	3,935	232
Armstrong	7,492	2,857	2,900	3,458	-558
Total	43,047	16,200	14,059	15,774	-1,715

*Combines cycle and interim work.

Weeks 48

Figure 4.13. Cycle Progress Report.

PACIFICORP VEGETATION MANAGEMENT 2011 CYCLE DISTRIBUTION PROGRESS REPORT

Pacific Power - Rocky Mountain Power

Through December 3, 2011

	CYCLE WORK				INTERIM WORK			COMBINED		
	Total Line Miles	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**20,653**	**23,826**	**-3,173**	**14,840**	**16,887**	**-2,047**	**35,493**	**40,713**	**-5,220**
Pacific										0
California	2,323	1,529	1,698	-169	1,602	1,698	-96	3,131	3,395	-264
Oregon	14,184	11,043	13,905	-2,862	11,661	13,480	-1,819	22,704	27,385	-4,681
Washington	3,557	1,293	1,710	-417	1,577	1,710	-133	2,870	3,420	-550
Total	**20,064**	**13,865**	**17,312**	**-3,447**	**14,840**	**16,887**	**-2,047**	**28,705**	**34,200**	**-5,494**
Rocky Mt										
Idaho	4,358	1,135	1,341	-206			0	1,135	1,341	-206
Utah	11,377	3,528	3,500	28			0	3,528	3,500	28
Wyoming	7,248	2,125	1,672	453			0	2,125	1,672	453
Total	**22,983**	**6,788**	**6,514**	**274**	**0**	**0**	**0**	**6,788**	**6,514**	**274**

SUMMARY OF SYSTEMATIC WORK* BY FORESTER					INTERIM WORK			COMBINED		
	Total Line Miles	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	**20,653**	**23,826**	**-3,173**	**14,840**	**16,887**	**-2,047**	**35,493**	**40,713**	**-5,220**
Forester/Pacific		*	*	*						
Hooley	2,830	1,578	2,776	-1,197	2,362	2,776	-414	3,940	5,551	-1,611
Partridge	3,919	2,861	3,770	-909	2808	3770	-962	5,669	7,541	-1,871
Phillips	5,823	4,655	5,203	-548	4,742	5,203	-461	9,397	10,407	-1,010
Armstrong	7,492	4,771	5,563	-792	4,928	5,138	-210	9,699	10,701	-1,002
Total	**20,064**	**13,865**	**17,312**	**-3,447**	**14,840**	**16,887**	**-2,047**	**28,705**	**34,200**	**-5,494**
Forester/Rocky Mt										
Evans	6,030	1,690	1,855	-166			0			0
Jones	2,351	931	723	208			0			0
Vanderhoof	14,602	4,167	3,935	232			0			0
Total	**22,983**	**6,788**	**6,514**	**274**	**0**	**0**	**0**	**0**		**0**

Figure 4.14. Monthly Tree Crew Deployment Report.

PacifiCorp Vegetation Management

Monthly Crew Report: Summary

Date: 12/1/2011

State	Distribution & Local Trans													Main Grid Trans							Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech	Billed Super	Sub Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
California	5.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	3.0	2.75	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
Idaho	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.00	5.0	1.0	0.0	0.0	0.0	0.0	0.3	1.0	6.0
Oregon	30.0	12.0	6.0	0.0	0.0	0.0	0.0	0.0	0.5	6.5	12.5	8.25	55.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	57.0
Utah	27.0	2.0	38.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	13.0	10.50	73.0	4.0	0.0	0.0	0.0	0.0	2.0	4.0	77.0
Washington	5.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	1.5	2.00	10.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	12.0
Wyoming	5.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.50	8.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	8.0
TOTAL	77	17.0	49.0	0.0	0	0	0	2	13	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	3.3	9.0	175.0

Forester	Distribution & Local Trans													Main Grid Trans							Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech.	Billed Super	Crew Sub-Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
Hooley	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.0	2.00	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5
Evans	9.0	1.0	8.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	6.0	3.00	20.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	22.0
Jones	11.0	1.0	20.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	5.0	4.00	35.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	35.0
Partridge	12.0	7.0	5.0	0.0	0.0	0.0	0.0	0.0	2.5	3.0	5.5	3.50	29.5	2.0	0.0	0.0	0.0	0.0	0.0	2.0	31.5
Phillips	15.0	1.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	1.0	7.0	5.00	25.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	25.0
Vanderhoof	17.0	1.0	12.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	4.3	6.00	31.0	3.0	0.0	0.0	0.0	0.0	1.8	3.0	34.0
Armstrong	8.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	3.0	2.5	2.50	14.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	16.0
TOTAL	77.0	17.0	49.0	0.0	0.0	0.0	0.0	2.0	12.5	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	4.3	9.0	175.0

5 DISTRIBUTION SPECIFICATIONS

Distribution lines are overhead facilities that are energized less than 46 kV. Distribution primary voltage ranges from 600 to 45,000 volts, while lines energized below 600 volts are secondary.

5.1 Distribution New Construction Clearing

Every effort should be made by the Company not to build new line over or through trees that will need to be cleared from the facilities in the future. New distribution rights-of-way should be cleared to specification before the lines are energized. Initial clearing is very important because it sets a pattern for future work.

5.2 Distribution Cycle Maintenance

Trees and vegetation should be cleared from distribution facilities on scheduled cycles. Cycle work is methodical, and facilities shall be worked systematically, either by feeder or grid map. Cycles should be based on considerations such as the time elapsed since the last scheduled work, the type of facilities, tree conditions, the number of customer complaints, the growth rate and density of predominant tree species, geography, the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other facilities) whether the area is rural or urban, single or multiple phase wires and other factors. Trees and vegetation should be cleared from distribution facilities to last until the next scheduled cycle work.

The intent of the cycle program is to:

- Systematically obtain specification clearance and maintain compliance with state regulatory rules, laws or regulations.
- Remove trees to reduce inventories, provide clearance, or improve access to facilities. This includes removing non-landscape trees 6-inch DBH or less, after providing the property owner notification (following Section 8.2).
- Identify and correct readily climbable trees.
- Identify and remove tree houses built inside of criteria specified in Table 2.1.
- On insulated secondaries or services, prune stems that are causing strain to the point of deflection (Figure 5.4) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle. If pruning or removal is not practical, arrangements should be made with operations to re-route facilities or have suitable material or devices installed to avoid insulation damage by abrasion.
- Identifying and removing hazard trees that could fall through facilities.
- Apply herbicide to saplings (< 4” DBH) of tall-growing species after property owner notification (presuming the property owner has not expressed objection to herbicide application).
- Apply tree growth regulators (TGR’s) to fast-growing tree species after providing property owner notification.

5.3 Distribution Interim Maintenance

In some cases, fast-growing trees will not hold for an entire scheduled cycle. On the Pacific Power system, resulting tree conditions on a feeder or grid should be corrected systematically in

the interim half way through the scheduled cycle.

Interim work should be restricted to critical conditions, including:

- Hazard trees.
- Trees interfering with primary or open-wire secondary conductors, or trees violating specific state regulatory agency regulations.
- Trees with clearances that will violate specific regulatory or other governmental agency tree regulations before the next scheduled work.
- Readily climbable trees.
- Identifying and removing tree houses built inside of criteria specified in Table 2.1.
- On insulated secondaries or services, prune stems that are causing strain to the point of deflection (Figure 5.4) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle. If pruning or removal is not practical, arrange with operations to have suitable material or devices to avoid insulation damage by abrasion.
- All work should be completed to company specifications. Non-critical conditions should be monitored until the next scheduled maintenance cycle work.

5.4 Distribution Ticket Maintenance

Customers, district operations staff, governmental bodies, regulatory agencies or others often alert vegetation management to real or perceived conflicts between trees and power lines. The intent of ticket maintenance is to determine whether or not the reported conditions present unreasonable safety or electrical service risks, and if they do, correct them.

Emergency situations should be corrected within 24 hours. Critical conditions reported by regulatory agencies and other urgent situations should be inspected within 48 hours and corrected within 7 days. Other tickets should be inspected within 10 business days from the date of request, and a determination made regarding whether or not the reported condition warrants work.

The concerned party shall be contacted regarding the inspection determination. This contact may be face to face if the customer is present, or by door hanger, letter, or telephone if they are not present.

Ticket work should be limited to critical conditions, including:

- Trees representing an unreasonable safety risk as determined by the responsible forest tech.
- Trees that have caused an outage.
- Trees violating specific state regulatory regulations.
- Limbs that are deflecting secondary conductors to the extent they present a high probability of tearing down the wire before the next scheduled work.
- Trees that are likely to start a fire.
- Readily climbable trees.
- Trees where the property owner requires clearance so non-utility line clearance workers may work the tree. This work complies with various state line safety acts.

All work should be completed to Company specifications. Non-critical conditions should be monitored when the next scheduled maintenance cycle work is lined out, and worked if necessary.

5.5 Distribution Clearance Specifications

Removals are encouraged. When trees are pruned, branches should be cut to natural targets rather than predetermined clearance limits (following section 3.3). Consequently, the clearances

in this specification should not be used as strict boundaries requiring cuts at the precise distances indicated. Rather, they are guidelines to use in obtaining proper clearances. Accurate natural target pruning is the overriding principal, with tree structure dictating appropriate cut locations. In many cases, the best targets are outside established clearance limits. So, many properly pruned trees will have more than specified clearance from conductors.

The type of facility and tree growth rate determine distribution clearance. Trees should be removed or pruned to provide for specification clearances as described in Figures 5.1, 5.2 and 5.3 and Table 5.1. The figures and table provide work thresholds and specification clearances for slow, medium and fast-growing trees. Trees that exceed work threshold distances should hold until the next scheduled work and not be pruned. However, these trees should still be considered to be removal candidates. <u>If trees violate pruning thresholds, they shall be removed or pruned to provide specification clearances</u>.

5.5.1 Growth Rate Definitions

Slow-growing trees grow less than one-foot a year. Moderate growing trees grow between one and three feet a year and fast-growing trees grow more than three feet a year.

5.5.2 Side Clearance

Side clearances work thresholds and side clearances can be found in Table 5.1. Work thresholds for trees growing adjacent to primary conductors are four feet for slow (Figure 5.1), six feet for moderate (Figure 5.2) and eight feet for fast-growing trees (Figure 5.3).

Specification side clearance is at least eight feet for slow (Figure 5.1), ten feet for moderate (Figure 5.2) and twelve feet for fast-growing trees (Figure 5.3).

Side clearances may be reduced to three feet for structurally sound limbs greater than 6 inches in diameter at wire height, provided the tree is not readily climbable. Hazard trees should be removed or pruned to reduce the safety risk.

5.5.3 Under Clearance

Under clearances work thresholds and side clearances can be found in Table 5.1. On trees growing under conductors, work thresholds are six feet for slow (Figure 5.1), eight feet for moderate (Figure 5.2) and ten feet for fast-growing trees (Figure 5.3). Specification clearance is at least ten feet for slow-growing trees (Figure 5.1), twelve feet for moderate growing trees (Figure 5.2) and fourteen feet for fast-growing trees (Figure 5.3).

5.5.4 Overhang Clearance

Trees overhanging primary conductors should be removed or pruned to provide at least ten feet of clearance (Figures 5.1, 5.2 and 5.3). Increased or even complete overhang clearance should be considered by the forester or GF/supervisor under the following types of circumstances: three-phase lines, rural or difficult to access areas, weak wooded or fast-growing tree species, weak structure and foreseeable weather conditions such as high wind, heavy rains, ice and snow. Dead wood that could fall or be blown into the primary conductors shall be removed. In some cases, such as three phase lines or remote areas, all overhanging branches may be removed.

Figure 5.1. PacifiCorp Vegetation Management
Distribution Primary Clearances

Slow Growing Trees

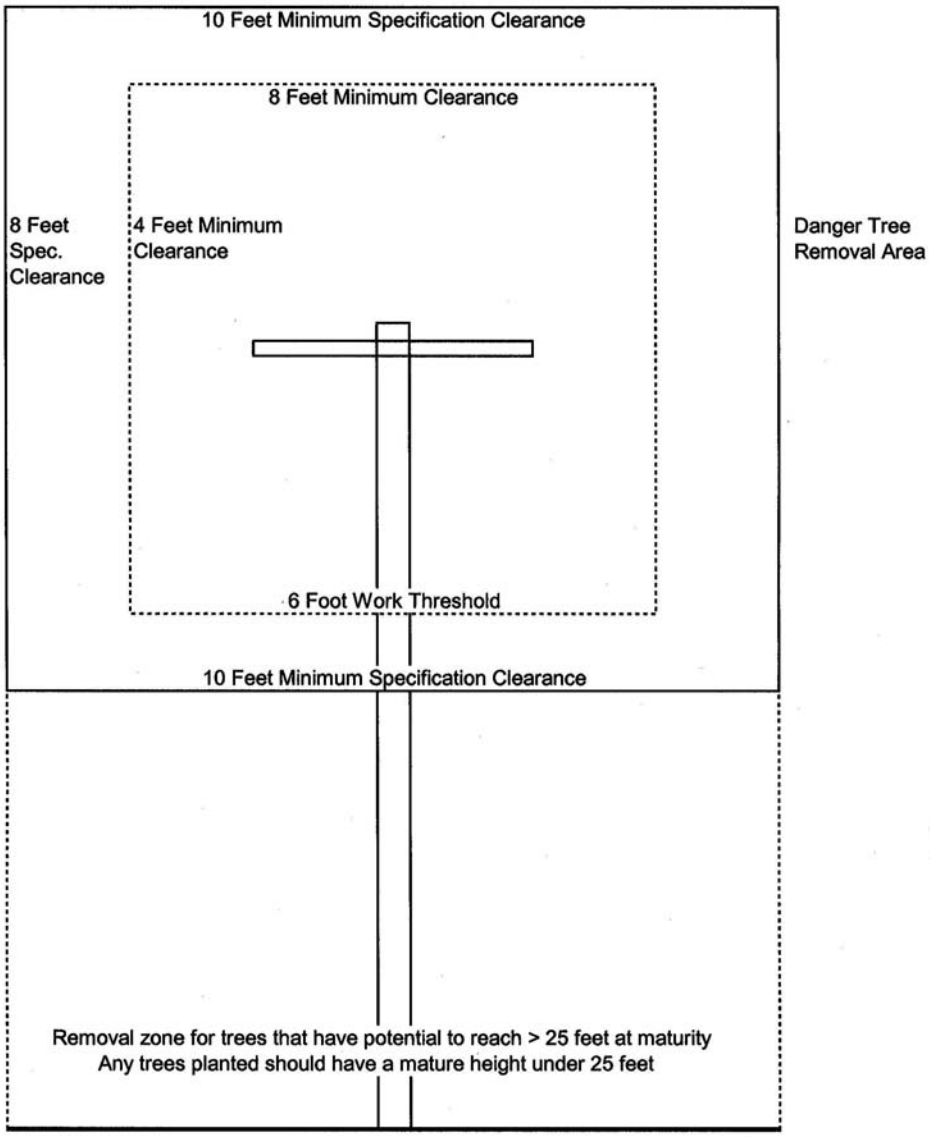
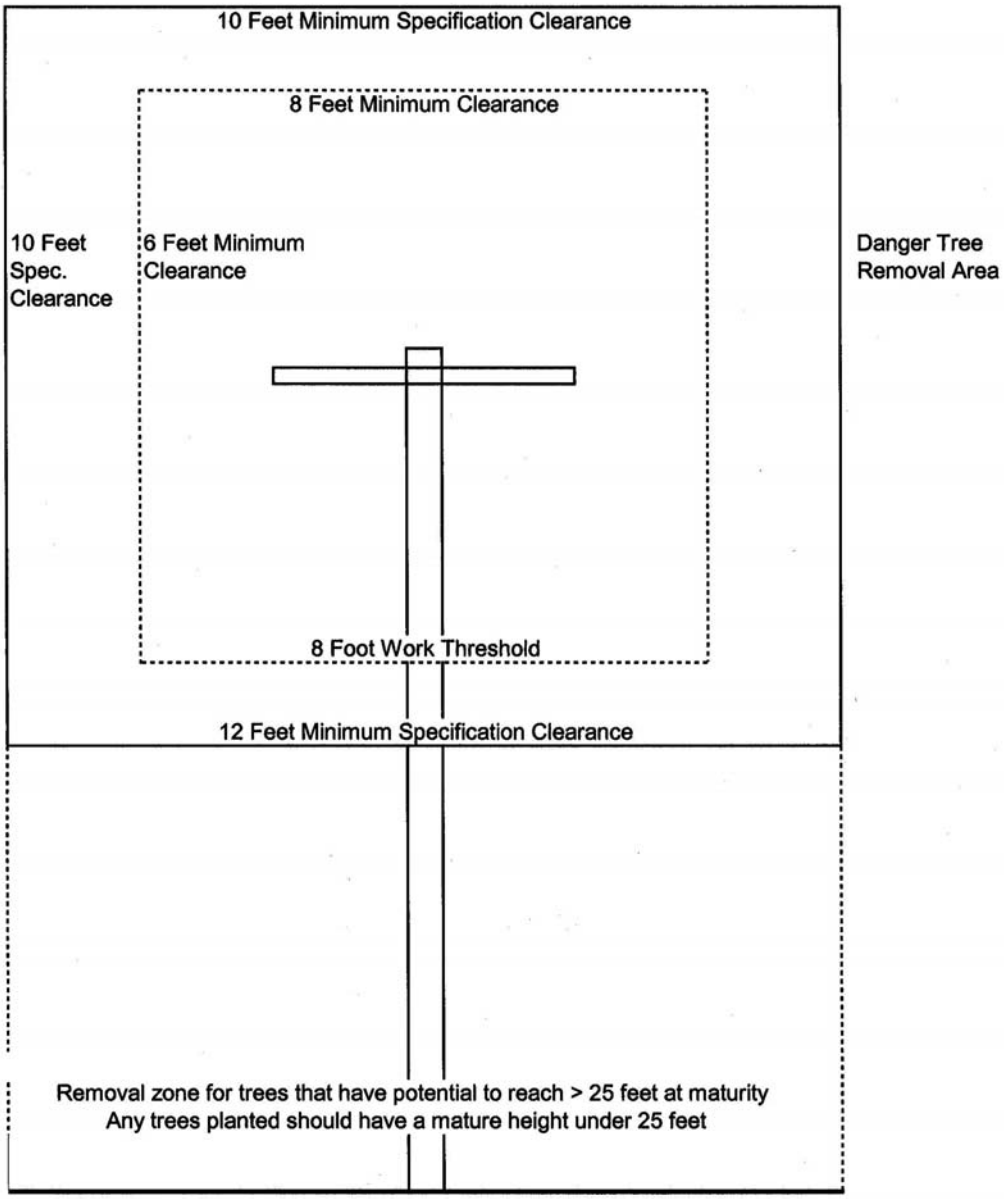


Figure 5.2: PacifiCorp Vegetation Management Distribution Primary Clearances

Moderate Growing Trees



Fgure 5.3: PacifiCorp Vegetation Management Distribution Primary Clearances

Fast Growing Trees

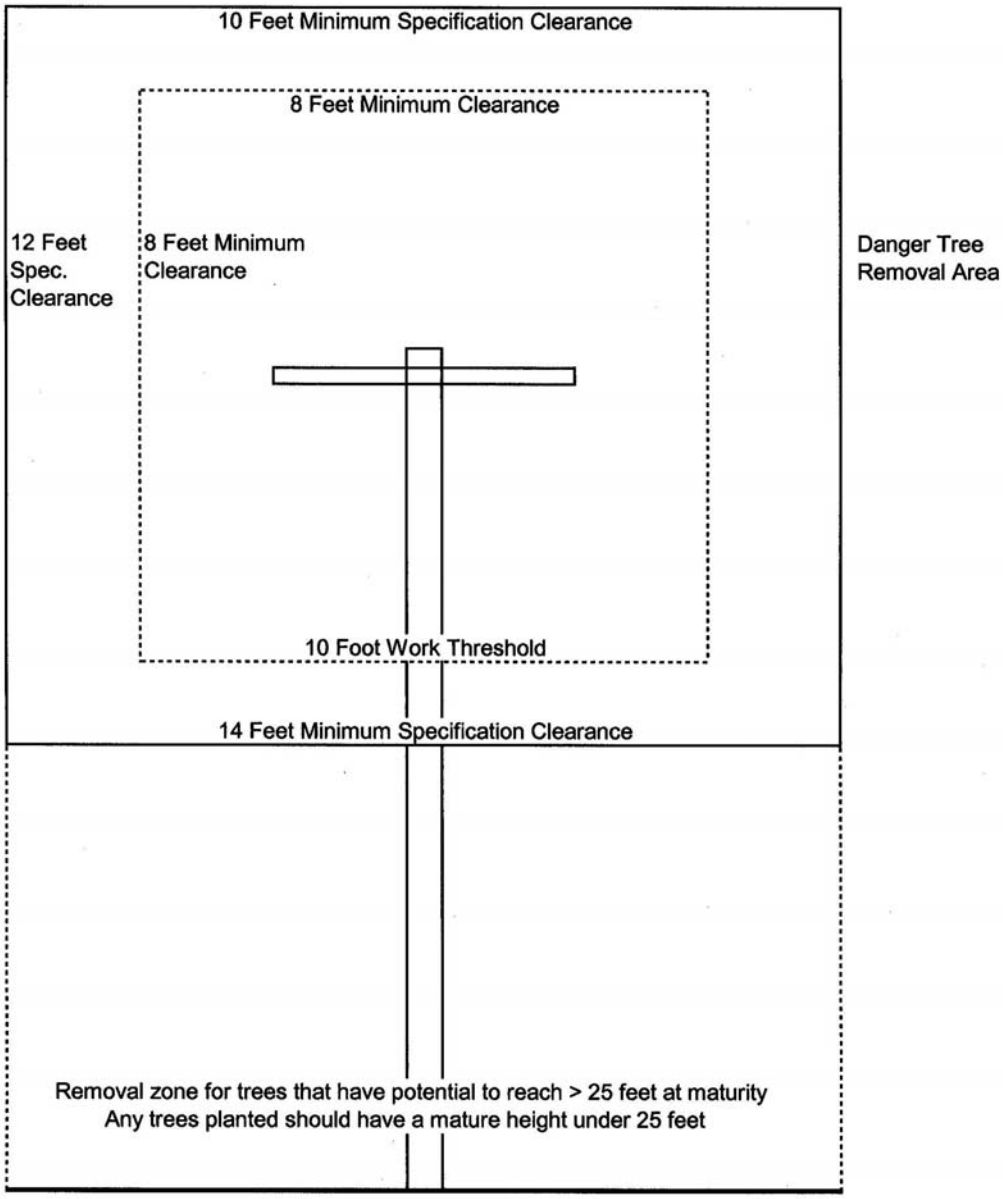


TABLE 5.1: DISTRIBUTION PRIMARY CLEARANCES

Slow-growing Trees (< 1 ft/yr)	Work Threshold	Specification Clearance
Side Clearance	4 feet	8 feet
Under Clearance	6 feet	10 feet
Overhang Clearance	8 feet	10 feet
Moderate Growing Trees (1-3 ft/yr)		
Side Clearance	6 feet	10 feet
Under Clearance	8 feet	12 feet
Overhang Clearance	8 feet	10 feet
Fast-growing Trees (> 3 ft/yr)		
Side Clearance	8 feet	12 feet
Under Clearance	10 feet	14 feet
Overhang Clearance	8 feet	10 feet

*Note: Trees with clearances that exceed the pruning threshold should not require cutting, provided they will not interfere with the primary conductors or violate state tree clearance requirements before the next scheduled work.

Table 5.2. Non-primary wire clearances.

Line Type	Work Threshold	Specification Clearance
Triplex service	Deflection/abrasion	Relieve pressure
Triplex pole-to-pole secondary/streetlight wire	Deflection/abrasion	2-feet
Non-insulated wire service/street light wire	Contact	1-foot
Non-insulated wire pole-to-pole secondary	Contact	3-feet
Neutral low condition	Contact	2-feet
Neutral on cross arm	Primary as in Table 5.1	Primary as in Table 5.1
Guy wire	2-inch or greater diameter limb applying pressure, threatened by hazard tree	Relieve pressure or remove hazard tree

5.5.5 Neutral and Insulated Pole-to-Pole Secondary Clearance

During cycle work, trees should be maintained to provide at least two feet of clearance around insulated pole-to-pole secondary and neutral conductors (Table 5.2). Tree limbs should not be allowed to remain between primary and neutral or insulated secondary conductors. Neutral conductors in a raised (primary) position should be provided secondary clearance distances during ticket or interim work, and primary specification clearance distances during cycle work.

5.5.6 Non-Insulated Open/Spaced Secondary Clearances

Trees growing around non-insulated open/spaced secondary conductors shall be pruned on cycle to provide a minimum of three-feet of clearance (Table 5.2). During cycle work, trees shall be cleared from the space between primary and non-insulated open/spaced secondary conductors. Side clearances may be reduced to one foot for structurally sound limbs greater than 6-inches in diameter at wire height.

5.5.7 Insulated Service and Insulated Street Light Line Clearances

Stems that are causing strain to the point of deflection (Figure 5.4) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle should be pruned to relieve the pressure (Table 5.2). If pruning or removal is not practical, arrange with operations to have the facility re-routed or have suitable material or devices installed to avoid insulation damage by abrasion.

If the customer desires to remove other limbs or trees around these lines, they must arrange for a temporary disconnection to allow the desired work to be done safely. PacifiCorp does not clear trees for street light illumination, unless required to by specific language in a franchise agreements.

5.5.8 Non-insulated Service Line and Non-Insulated Street Light Line Clearances

Trees should be pruned to provide at least one-foot of clearance around non-insulated service and street light lines (Table 5.2). If the customer desires to remove other limbs or trees around these lines, forest techs or crew leaders should inform the customer to call the customer service line to arrange for a temporary disconnection of the facilities to allow safe completion the desired tree work, as required by law.

5.5.9 Other Facility Clearances

5.5.9.1 Guy Wires.

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned (Table 5.2).

5.5.9.2 Poles.

One-third of the circumference around poles shall be cleared of vegetation to a distance of 5-feet to allow linemen a clear climbing path.

5.5.9.2.1 Vines

Vines shall be removed from poles and guys, cut at ground level, and treated with an approved herbicide (see Section 7.3). They shall be reported as brush or tree removed (depending on stem diameter). Vines clearly part of a landscape and rooted well away from the pole may be pruned and reported as

Figure 5.4. Trees with branches applying sufficient pressure to cause damage to insulated service and street light lines should be pruned on cycle to relieve the pressure.

crown reductions. Vines shall be pulled off the bottom 5-feet of poles after they have been cut. The facility point shall be documented by the tree crew and given to their supervisor/GF, who shall report it to operations to clear the remainder of the pole, and arrangements made with PacifiCorp journeymen linemen for the job.

5.5.9.3 Telecom and Private Electrical Lines

Trees should not be pruned or removed expressly to provide clearance for television cable, telephone lines or private electrical facilities unless authorized by the area forester.

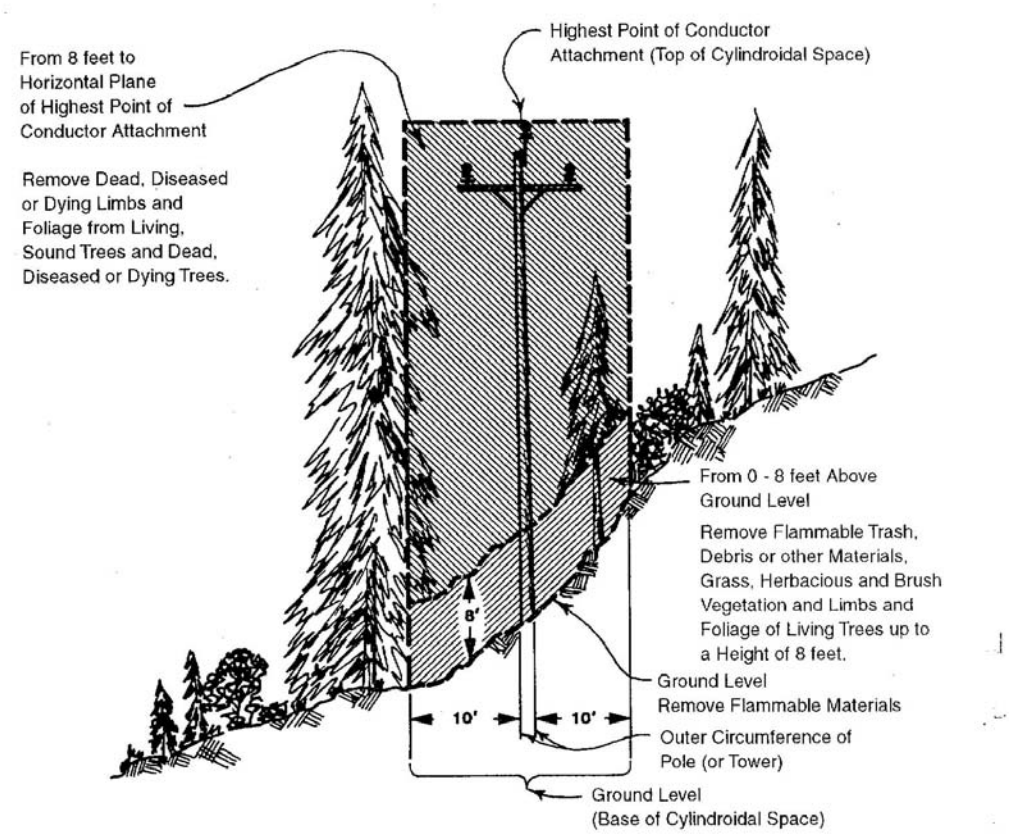
5.5.9.4 Street Light Illumination

Moreover, trees shall not be pruned to improve streetlight illumination, unless required by specific language in a franchise agreement.

5.6 Pole Clearing.

California Resource Code 4292, requires a ten-foot radius cylinder of clear space from pole top to bare ground around "subject" poles in delineated resource areas during designated fire

Figure 5.5. California pole clearing requirements (from Nichols et al. 1995).



season. Trees or saplings with trunks within clearance zone should have eight feet of vertical clearance from the ground to the highest limb (Figure 5.5).

Subject poles have fuses, air switches, clamps or other devices that could create sparks and start fires (Nichols et al. 1995). This cleared space should be established and maintained by pruning and removing above ground branches and plant parts. After removing vegetation to bare ground for a 10-foot radius around subject poles, herbicides, including soil sterilants, should be applied.

6. TRANSMISSION VEGETATION MANAGEMENT PLAN (SPECIFICATIONS)

Transmission facilities are overhead lines energized to greater than 45 kV. Typical transmission voltages on PacifiCorp's system are 46 kV, 69 kV, 115 kV, 138 kV, 161 kV, 230 kV, 345 kV and 500 kV. Facility voltage and type determine the amount of transmission clearance needed. Table 6.1 provides specification clearances for transmission rights-of-way.

Transmission work shall comply with the ANSI A300 Part 7: *American National Standard for Tree Care Operations (Integrated Vegetation Management a Electric Utility Rights-of-way* [ANSI 2006]) and the ISA *Best Management Practice: Integrated Vegetation Management for Electric Utility Rights-of-way* (Miller 2007).

Transmission work on lines at or above 200 kV and those designated by the Western Electricity Coordinating Council as an element of the major transfer path in the bulk electric system shall also conform to the North American Electric Reliability Corporation's (NERC) Reliability Standard FAC-003-01 (Effective 2006) along with other chapters in this manual.

6.1 Work Objective

The objective of systematic transmission work is to improve the reliability of PacifiCorp's transmission system by preventing outages from vegetation located on transmission rights-of-way and minimizing outages from vegetation located adjacent to the right-of-way.

6.2 Philosophy

PacifiCorp's vegetation management philosophy for transmission lines is to utilize integrated vegetation management best practices to conduct cover type conversion and to cultivate stable, low-growing plant communities comprised of plants that will never interfere with transmission lines in their lifetime.

Reliability and safety are most effectively protected through establishing and maintaining a right-of-way consistent with the wire-border zone concept (Figures 6.4a and 6.4b). When the line is less than 50 feet off the ground, the wire-border zone should be cleared of all incompatible vegetation unless an easement fails to provide authority or there are legal impediments from doing so.

6.3 Initial Clearing and Construction

Newly constructed transmission lines should be cleared to this specification prior to being energized.

6.4 Inspection

Transmission lines falling under the auspices of FAC-003-01 should be inspected at least once a year by ground or air, depending on the anticipated growth of vegetation and any other environmental or operational factors that could affect the relationship of vegetation to the transmission lines.

Line Patrolmen have responsibility for inspecting transmission lines subject to FAC-003-01 and reporting conditions to vegetation management. In addition, each area forester shall meet twice each year to discuss vegetation conditions with

the line patrolman with mutual geographic responsibilities.

Line Patrolmen encountering a tree that poses an imminent threat of a transmission outage shall follow procedures in PacifiCorp Operating Procedure PCC-215, in order to comply with Requirement R1.5 of NERC Standard FAC-003-01 (*Transmission Vegetation Management Program.* Line patrolmen must:

- Immediately notify the grid operator by phone and describe the nature and extent of the threat.
- Complete and process the Emergency Tree Action Form.
- Communicate the vegetation conditions to vegetation management for urgent attention.

Examples of an imminent threat include (but are not limited to) trees that violate or are pose a risk within 72 hours of violating NERC Clearance 2, uprooted trees that are leaning toward the line and pose a risk of immediate failure and trees that structural failures so they may break in part or whole onto the transmission facilities.

6.4.1 Additional Inspection

Foresters should annually select lines among those over 200 kV and those designated by the Western Electricity Coordinating Council as elements of the major transfer path in the bulk electric system for annual inspection in addition to that performed by line patrolmen. These inspections are to supplement, rather than substitute for, those conducted by line patrolmen. Foresters should assign representatives to complete these inspections.

Such inspection should identify trees that pose an imminent hazard, and trees that will violate NERC Clearance 2 distances within the next year. Locations should be noted on an activity report, and assigned to a tree crew for work, with the appropriate forester's approval. If the inspections discover an imminent threat, forest techs shall contact the appropriate forester within three hours. Foresters shall immediately request the appropriate line patrolman to inspect the line according to the imminent threat procedure described in section 6.4.

6.5 Work Plan

The Vegetation Management A300 standard (ANSI 2006) and the ISA integrated vegetation management best management practice (Miller 2007) recommends against cycle-based transmission work thresholds. Rather, work should be scheduled depending on line voltage, line importance, vegetation conditions that violate the action thresholds in Table 6.1, location, predominant species' growth rates, threatened and endangered species, archeological sites, topography and other factors.

A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments, and it ensures that future planned work is sufficient at all locations on the right-of-way Removal is superior to pruning. Removal minimizes the possibility of conflicts between energized conductors and vegetation.

6.5.1 Annual Work Plan

PacifiCorp performs vegetation management work in accordance with annual work plans that details the circuits and facilities to be managed during a calendar year. Plans should include:

- A list of facilities subject to scheduled work.

- If only a portion of a line is scheduled, the line segment must be identified.
- Dates when work is anticipated to start and end on each project (Gantt charts are recommended).
- A description of the type of control methods, (cycle, herbicide, mowing, aerial etc.)

6.5.1.2 Annual Work Plan Adjustments

The annual work plan may be adjusted during the year to account for changes in conditions that require a circuit, line segment or project to be moved into or out of the work plan. Examples of reasons for adjustments include, but are not limited to, vegetation growth in excess of anticipated levels, vegetation inspection results, new construction projects or removal of existing facilities. Adjustments to the annual work plan shall be documented as they occur.

6.6 Clearances

6.6.1 NERC Clearances

The NERC Vegetation Management Standard FAC-003-01 has two clearance requirements: Clearance 1 and Clearance 2.

6.6.1.1 NERC Clearance 1

NERC Clearance 1 represents minimum clearances to be achieved at the time of work (Table 6.1). These distances should be increased, depending upon local conditions and the expected time frame to return for future vegetation management work. Local conditions may include appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, worker approach distance requirements and other factors.

6.6.1.2 Clearance 2

NERC Clearance 2 represents radial distances from the lines inside of which trees should not encroach (Table 6.1) Trees that violate NERC Clearance 2 shall be corrected within 24 hours of their identification following PacifiCorp SOP-013, *Transmission Grid Operations Operating Procedure PCC-215.*

6.6.1.3 Action Thresholds

The action thresholds in Table 6.1 provide roughly ten-foot buffers from NERC Clearance 2. Trees identified within the action thresholds should be scheduled for work within twelve months.

6.6.2 Side Clearance in Transmission Rights-of-Way

Specification side clearances are presented in Table 6.1. Consider potential sway of conductors in foreseeable high wind, particularly mid span, where clearances could need to be increased at mid span to accommodate conductor sag and swing in high temperature and winds.

6.6.3 Structure Clearances

Trees and brush should be cleared within a twenty-five foot radius of transmission "H" or metal structures, a ten-foot radius of single pole construction and a five-foot radius of guy anchors. Clearing activities shall not damage poles, structures, guys or anchors.

6.7 Integrated Vegetation Management

The purpose of vegetation management on utility rights-of-way is to

Table 6.1. Transmission clearance requirements (in feet).

	500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	69 kV	45 kV
Maximum Flash Distances (NERC Clearance 2)	14.8	9.5	5.2	3.5	3.0	2.5	1.3	N/A
Action thresholds	25	20	15	13.5	13	12.5	11.5	5
*Minimum under & side clearances following work (NERC Clearance 1)	50	40	30	25	25	25	25	20

Clearance 2 represents minimum clearances that should be maintained at all times, considering the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. They follow table 5 in IEEE 516-2003 as specified in FAC-003-01

Action thresholds indicate work should be scheduled within the next year. They are roughly IEE

Clearance 1 represents minimum clearance following work.

establish sustainable plant communities that are compatible with the electric facilities. Stable, low-growing plant ecotypes are compatible with conductors encourage and promote diversity, and the establishment of a sustainable supply of forage, escape and nesting cover, movement corridors for wildlife, reduced fire risk, and more open access to the line (Yanner and Hutnik 2004). Establishing native vegetation will also reduce the invasion of noxious weeds into the corridor (BPA 2000).

6.7.1 IVM Control Methods

Control methods are the processes used to achieve objectives. Many cases call for a combination of methods. There are a variety of controls from which to choose, including manual, mechanical, chemical, biological, and cultural options (Miller 2007). Ground disturbance shall be minimized on all rights-of-way.

6.7.1.1 Manual Control Methods

Manual methods involve workers using hand-carried tools, including chainsaws, handsaws, pruning shears and other devices to control incompatible vegetation. Manual techniques are selective and can be used where others may not be appropriate, including urban or developed areas, environmentally sensitive locations (such as wetlands or places inhabited by sensitive species), in the vicinity of archeological sites and on steep terrain.

6.7.1.2 Mechanical Control Methods

Machines are used for mechanical control. They are efficient and cost effective, particularly for clearing dense vegetation during initial establishment, or

reclaiming neglected or overgrown rights-of-way. On the other hand, mechanical control methods can be non-selective and disturb sensitive sites, such as wetlands, archeologically rich localities or developed areas. At times, machines leave behind petroleum products, leaks and spills from normal operation. Furthermore, heavy equipment can be risky to use on steep terrain, where they may be unstable.

6.7.1.3 Chemical Control Methods

Tree growth regulators and herbicides must be used according to directives on their labels. Applicators are not only required to comply with label instructions, but also all other laws and regulations pertaining to tree growth regulator and herbicide use (see Chapter 7).

6.7.1.3.1 Tree Growth Regulators

Tree growth regulators (TGRs) are designed to reduce growth rates by interfering with natural plant processes. TGRs can be used to slow fast-growing trees, and be helpful where removals are prohibited or impractical.

6.7.1.3.2 Herbicides

Herbicides control plants by interfering with specific botanical biochemical pathways. There are a variety of herbicides, each of which behaves differently in the environment and in their affects on plants, depending on the formulation and characteristics of the active ingredient. While appropriate herbicide use reduces the need for future intervention, if misused they can cause unintended environmental harm due to drift, leaching and volatilization.

6.7.1.4 Biological Control Methods

Biological control uses natural processes to control undesirable vegetation. For example, some plants, including certain grasses, release chemicals that suppress other plant species growing around them. Known as allelopathy, this characteristic can serve as a type of biological control against incompatible species. Promoting wildlife populations is also a form of biological control. Birds, rodents and other animals can encourage compatible plant communities by eating seeds or shoots of undesirable plants.

6.5.1.5 Cultural Control Methods

Cultural methods modify habitat to discourage incompatible vegetation. Cultivated landscapes of compatible plants and agricultural crops are examples of cultural control.

A cultural control known as cover-type conversion provides a competitive advantage to short-growing, early successional plants, allowing them to thrive and eventually out-compete unwanted tree species for sunlight, essential elements and water. Cultural methods also take advantage of seed banks of native, compatible species lying dormant on site. In the long run, cultural control is the most desirable method where it is applicable.

The early successional plant community is relatively stable, tree-resistant and reduces the amount of work, including herbicide application, with each successive treatment.

While it is a type of cultural control, cover-type conversion employs a combination of manual, mechanical, herbicide and biological methods. For example, although encouraging allelopathic plants and increasing wildlife populations by improving habitat are types of biological controls, they are also forms of cultural control.

Tree-resistant communities are created in two stages. The first involves non-selectively clearing the right-of-way of undesirable trees using the best applicable control method or methods. The second develops a tree-resistant plant community using selective techniques, including herbicide applications and releasing the seed bank of native, compatible species for germination.

Cover type conversion, uses herbicides to remove incompatible tall-growing trees and other vegetation from the right-of-way in order to establish a stable, low-growing plant community. The specific IVM technique selected for a particular site is based upon various conditions, which include terrain, accessibility, environmental considerations (wetlands, streams, etc.) cultural factors, worker and public health, economics and other factors.

6.7.1.5.1 Wire-Border Zone

Over roughly sixty years of research on transmission rights-of-way has demonstrated that integrated vegetation management applied to creating distinct, compatible plant communities not only effectively manages vegetation on rights-of-way, but also enhances wildlife habitat, at least in forested areas (Yanner and Hutnik 2004). The wire zone-border zone concept was developed by W.C. Bramble and W.R. Byrnes (Bramble et al 1991).

On flat terrain, the wire zone is the right-of-way portion directly under the wires and 10-feet to the field side of the outside phases. The border zone ranges from ten-feet outside the outer phases to the right-of-way edge (Figure 6.4a). The border zone may be reduced or eliminated on the up-slopes slope where wire sag and sway may preclude leaving trees of any type. It may also extended on down-slopes (Figure 6.4b).

Properly managed, wire zone-border zone linear corridors not only effectively protect the electric facilities, but also can become an asset for forest ecology and forest management (Bramble et al 1991, Yanner, Bramble and Byrnes 2001, Yanner and Hutnik 2004).

6.7.1.5.1.1 Region A

Region A is the area where lines are less than 50 feet off the ground (Figure 6.5). The 50 foot height should be from maximum engineered sag mid-span, with attention to side slope and potential sway of conductors in high wind. The right-of-way in Region A should be cleared following the wire zone - border zone recommendations of Bramble and Byrnes (Bramble et. al. 1991 [Figure 6.2]).

After clearing, the Region A wire zone should consist of grasses, legumes, herbs, ferns and low-growing shrubs (under 5-feet at maturity). The border zone should consist of tall shrubs or short trees (up to 25 feet in height at maturity), grasses and forbs. These cover types benefit the right-of-way by competing with and excluding undesirable plants.

6.7.1.5.1.2 Region B

Region B occurs where the lines are between 50 and 100 feet off the ground from maximum engineered sag (Figure 6.5). In Region B, a border zone regime should be established throughout the right-of-way.

Note that many transmission structures are over 50 feet high. So, in many cases, a border zone community can be maintained near structures. Care should be taken to maintain access to the structure.

6.7.1.1.3 Region C

Region C is where the lines are 100 feet or more off the ground (Figure 6.5). Tall-growing trees may be allowed in Region C provided they have at least 50 feet of clearance. Trees with less than 50 feet of clearance can be selectively removed.

6.8 Transmission Rights-of-Way Widths

Right-of-way clearing should conform to the greater of the NERC clearances or the width indicated on the easement or permit. Removals are always desirable under transmission lines.

Transmission lines may be constructed on the edge of dedicated road right-of-way where that may or may not be an easement or permit on the adjoining property allowing encroaching vegetation to be cleared. In these cases or others where the easement or permit does not specify a width, right-of-way dimensions in Table 6.2 apply. However, if no authority exists to remove trees, at minimum work should conform to Tables 6.1 and 6.2.

Easements should be researched through PacifiCorp Right-of-Way Services referencing the *Plan and Profile.* The *Plan and Profile* may also be useful in determining if the age of the line qualifies it for a prescriptive easement (see Section 8.3.1.1 and Table 8.1). Ground disturbance shall be minimized on all rights-of-way.

6.9 Post Work Assessment

Foresters should audit transmission work following procedures outlined in Section 4.3. The audits should objectively assess quality, adherence to specifications, production, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an *Audit Report* (Figure 4.7). Following systematic work, the entire length of completed line shall be inspected by the contractor to verify work complies with PacifiCorp specifications.

6.10 Mitigation Measures

NERC Requirement R1.4, directs transmission owners to develop mitigation measures to achieve sufficient clearances for protection of the transmission facilities when it identifies locations on the right-of-way where the transmission owner is restricted from attaining Clearance 1.

Whenever the restriction is caused by a landowner, the refusal process in Chapter 8 shall be followed. If the refusal process has been completed without attaining Clearance 1 distances, such locations should be documented on the *Work Release* (Figure 4.2). These sites should be reported in writing to the appropriate line patrolmen within 30 days. The line patrolmen should report annually on these site's status. Moreover, foresters or their contract designee should inspect the site biannually.

6.11 Hazard Trees

Hazard trees are structurally unsound and could strike a target (such as electric facilities) when they fail. Off right-of-way hazard trees shall be identified bearing prevailing winds and soil depth in mind. Trees on the uphill and windward sides of rights-of-way should receive particular scrutiny. Hazard trees should be either removed or pruned to reduce the exposure. Work shall be performed in a manner that neither damages trunks nor disturbs root

Figure 6.1. Right-of-way reclamation using mechanical control. In this case, a slashbuster.

TABLE 6.2. Active transmission right-of-way widths.

Facility	Distance from Center	Urban Width	Rural Width
46 kV Single pole	25 feet	50 feet	50 feet
69 kV Single pole	25 feet	50 feet	50 feet
115 kV Single pole	30 feet	60 feet	60 feet
138 kV Single pole	30 feet	60 feet	60 feet
161 kV Single pole	40 feet	80 feet	80 feet
230 kV Single pole	40 feet	80 feet	80 feet
69 kV H frame	40/50 feet	80 feet	100 feet
115 kV H frame	40/50 feet	80 feet	100 feet
138 kV H frame	40/50 feet	80 feet	100 feet
161 kV H frame	40/50 feet	80 feet	100 feet
230 kV H frame	62½ feet	125 feet	125 feet
345 kV H frame	75 feet	150 feet	150 feet
345 kV Steel tower	75 feet	150 feet	150 feet
500 kV Steel tower	87½ feet	175 feet	175 feet

Note rights-of-way should be cleared to those specified in the easement. If no easement exists, rights-of-way in this table apply. Widths conform to those in PacifiCorp Transmission Construction Standard TA 181.

Figure 6.2 In densely vegetated areas, rights-of-way usually have to be completely cleared as the initial stage of establishing a wire-border zone.

Figure 6.3. Line 4 in California following work (note the trees midspan where the line is more than 110-feet off the ground).

Lorelei Phillips photo

Figure 6.4a. Bramble and Byrnes Wire Zone - Border Zone (adapted from Yahner, Bramble and Byrnes, 2001).

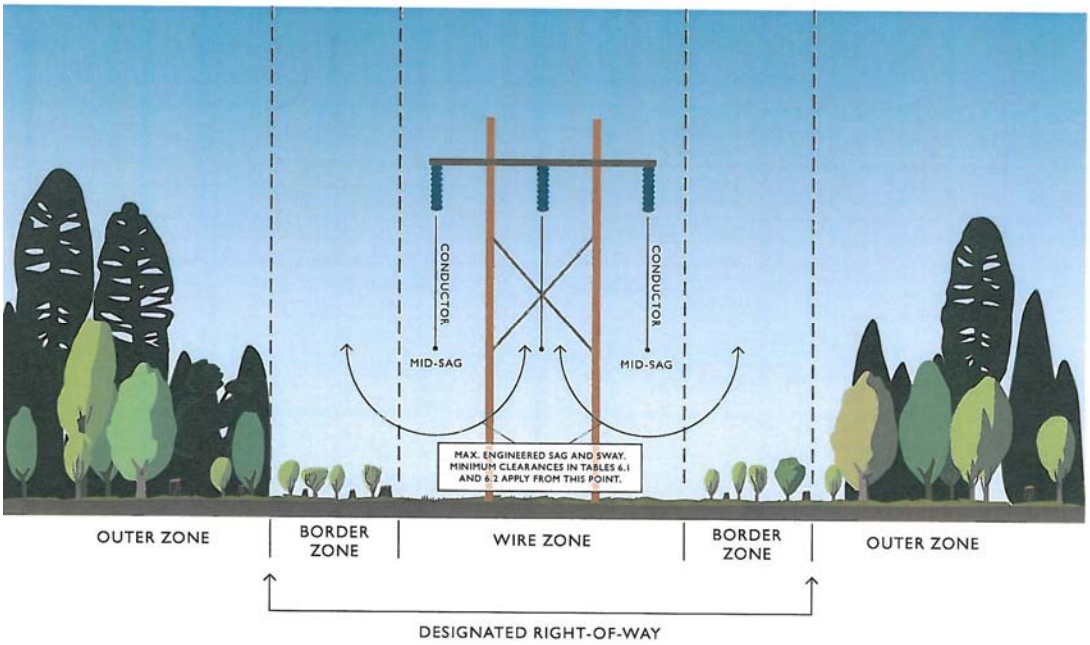
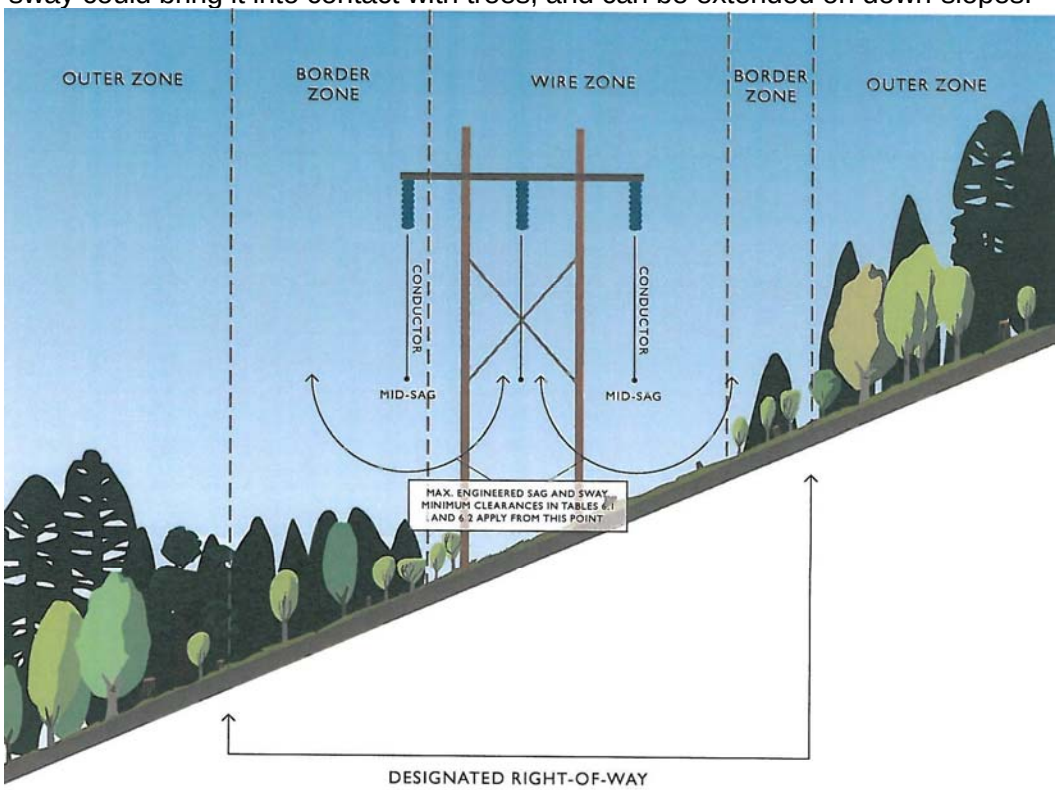
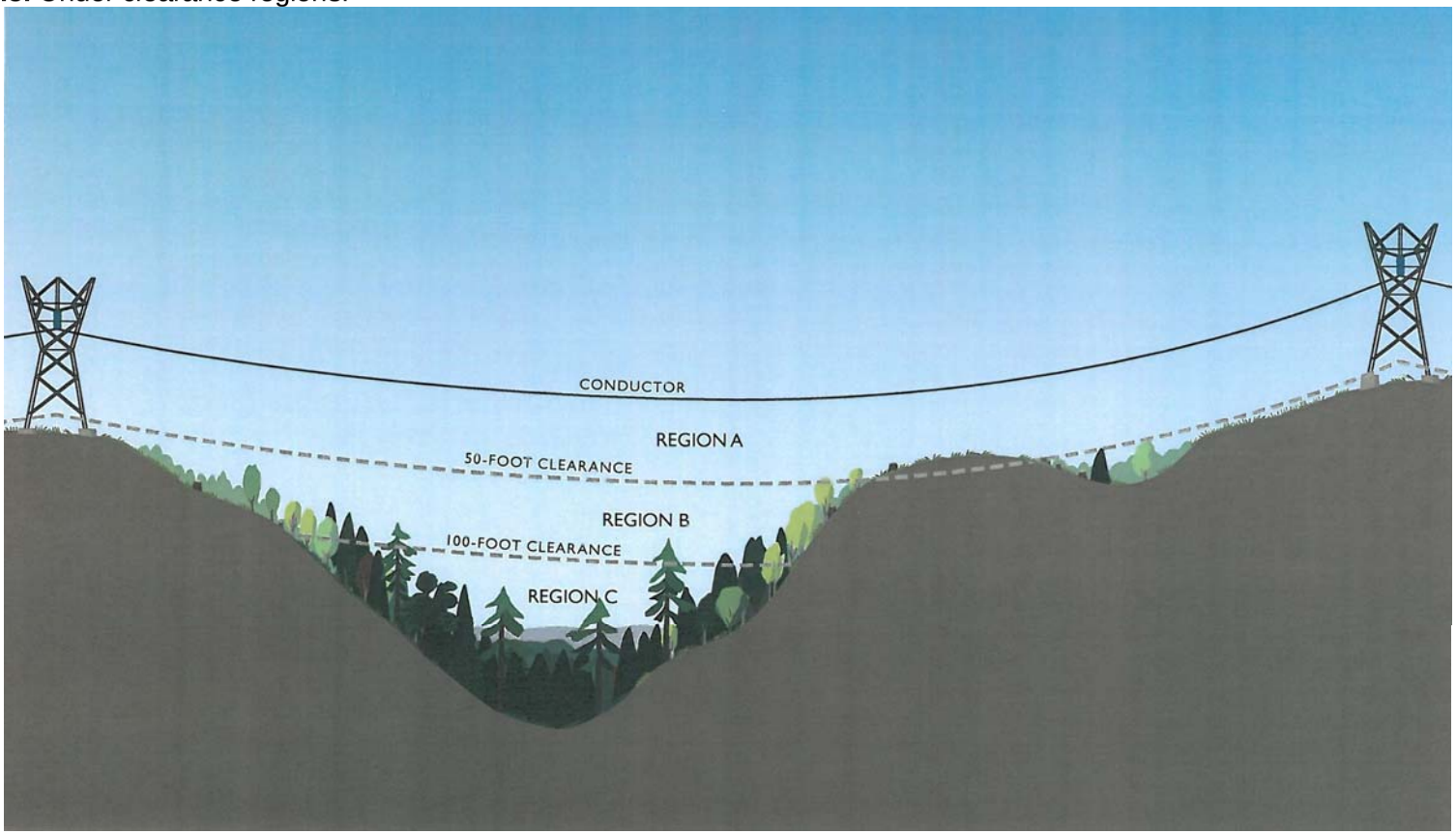


Figure 6.4b. The border zone may be reduced or eliminated on up-slopes where wire sag and sway could bring it into contact with trees, and can be extended on down-slopes.



Brad Gouch drawings (Figures 6.4 and 6.5).

Figure 6.5. Under clearance regions.



Region Definitions:

Region A: Where conductor to ground clearance is less than 50 feet (from maximum engineered sag and sway.

Region B: Where the conductor to ground clearance is 51-100 feet (from maximum engineered sag and sway.

Region C: Where the conductor to ground clearance is over 100 feet (from maximum engineered sag and sway.

Appropriate Region Plant Species:

Region A: Grasses, legumes, ferns and low-growing shrubs (<5' at maturity).

Region B: Region A species as well as large shrubs and short-growing trees (<25' at maturity).

Region C: All tree and shrub species.

systems of adjacent trees. Damaged trees could decline, decay or die, threatening the conductors if they fall.

Federal and state agencies could request hazard trees to be topped to create "wildlife trees". PacifiCorp may honor such requests provided the safety of the tree workers or facilities are not compromised, and the trees are topped below a height that would allow them to contact Company facilities should they fall.

PacifiCorp manages millions of trees across its 15,000 mile transmission system. That means in every mile of line, the Company potentially has hundreds or thousands of trees, any one of which could compromise public safety and electrical service reliability. It is impossible to completely secure an electrical system from that level of exposure. Nevertheless, PacifiCorp has a responsibility to make a reasonable effort to maintain vegetation to reduce risks to both the public and power supply.

6.12 Vegetation Screens

Vegetation screens may be required by federal or local authorities in some locations at high visibility areas such as major road crossings. Where such mandates exist, vegetation screens should consist of border zone communities and be located near structures (where the line is unlikely to sag), if possible. If no border zone species are present, tall-growing trees may be left provided they have at least the minimum clearances in Table 6.1 following scheduled work.

Leaving tall-growing trees in transmission rights-of-way should be discouraged because they impede cover type conversion. So, trees should be removed, rather than be pruned to obtain proper clearances, if at all possible. Vegetation screens should be no more than twenty-five feet from frequented vantage points into the right-of-way. Areas where tall-growing species are retained as screens shall be documented and monitored annually by line patrolmen. If remaining trees violate work thresholds specified in Table 6.1, line patrolmen should report them to Vegetation Management for correction within 30 days.

6.13 Merchantable Timber

Rights-of-way could contain merchantable timber. Merchantable timber is defined as trees with at least six-inch diameter at breast height (DBH), that is recoverable and has a market in the local area. Merchantable timber belongs to the property owner unless the easement or permit states otherwise. If merchantable timber needs to be felled, the property owner should be contacted regarding timber recovery.

After the merchantable timber is felled, it should be de-limbed and left in total tree length on the right-of-way for recovery by the owner. In limited cases, PacifiCorp may decide to purchase merchantable timber from the property owner and retain or transfer ownership to another party. A forest practice permit from the appropriate state department of forestry is required for timber recovery.

6.14 Transmission Safety Procedures

The following safety procedures shall be followed by all tree crews on PacifiCorp transmission facilities.

6.14.1 Pre-work Communication with Dispatch

Communication with dispatch is critical for tree crew safety. Every morning before starting transmission work, tree crews shall call the dispatcher

from the right-of-way by radio or telephone and provide the following information to comply with *Power Delivery System Operations System policy SOP-POL-013* (Figure 6.6):

- Name of crew leader
- Name of company
- Name of transmission line
- Line section (substation names between which work is to occur, such as "Alvey to Dixonville," or "Ben Lomond to Terminal")
- Location of work (structure number, address or both)
- How long the crew will be working at that location
- Radio or cellular telephone number of the crew
- Name of GF/supervisor and their cellular telephone number

If radio or telephone contact cannot be made with the dispatcher from the right-of-way, non-emergency work shall not be performed at that site. The crew should relocate to work where they can communicate with the dispatcher. Operative communication capability is mandatory at all times on transmission rights-of-way. Satellite phones could be necessary in remote locations to provide the required communication.

6.14.2 Post-Work Communication with Dispatch

Each afternoon after completing transmission work for the day, tree crews shall call the dispatcher and provide the following information (Figure 6.6):

- Name of crew foreman and company.
- Name of transmission line
- Line section (substation names between which work occurred, such as "Alvey to Dixonville," or Ben Lomond to Terminal").
- Location where work was performed
- Crew members and equipment are off the right-of-way or in the clear.

6.14.3 Safe Working Procedure

Do not take chances. If a tree cannot be felled or pruned safely, do not proceed. If a tree or limb falls into the conductors, stop work and immediately and follow the emergency procedure in Figure 2.1. Minimum approach distances (Table 2.1) shall not be violated. Remember, transmission conductors can sag considerably at mid-span during hot weather, ice buildup and heavy loads. Trees that have safe clearance in the morning may not have safe clearance in the afternoon. Conditions could require a hold or clearance. Clearances on some transmission lines can take weeks or months to schedule. Conditions could require a hold or a clearance. See Section 2.1.1 for hold and clearance instructions.

6.15 Monthly Progress Tracking

Progress on the annual work plan for NERC Transmission Lines shall be tracked on the *PacifiCorp Main Grid Transmission 2008 MASTER* for lines under the auspices of NERC Standard FAC-003-01. Progress on the annual work plan for other transmission lines shall be tracked on the monthly *Local Transmission Progress Report.* Both reports track miles achieved against plan on a monthly basis (Figure 6.7).

Figure 6.6. Transmission communication procedure with Dispatch (operative communication is mandatory at all times on transmission rights-of-way. Satellite phones could be necessary in remote locations).

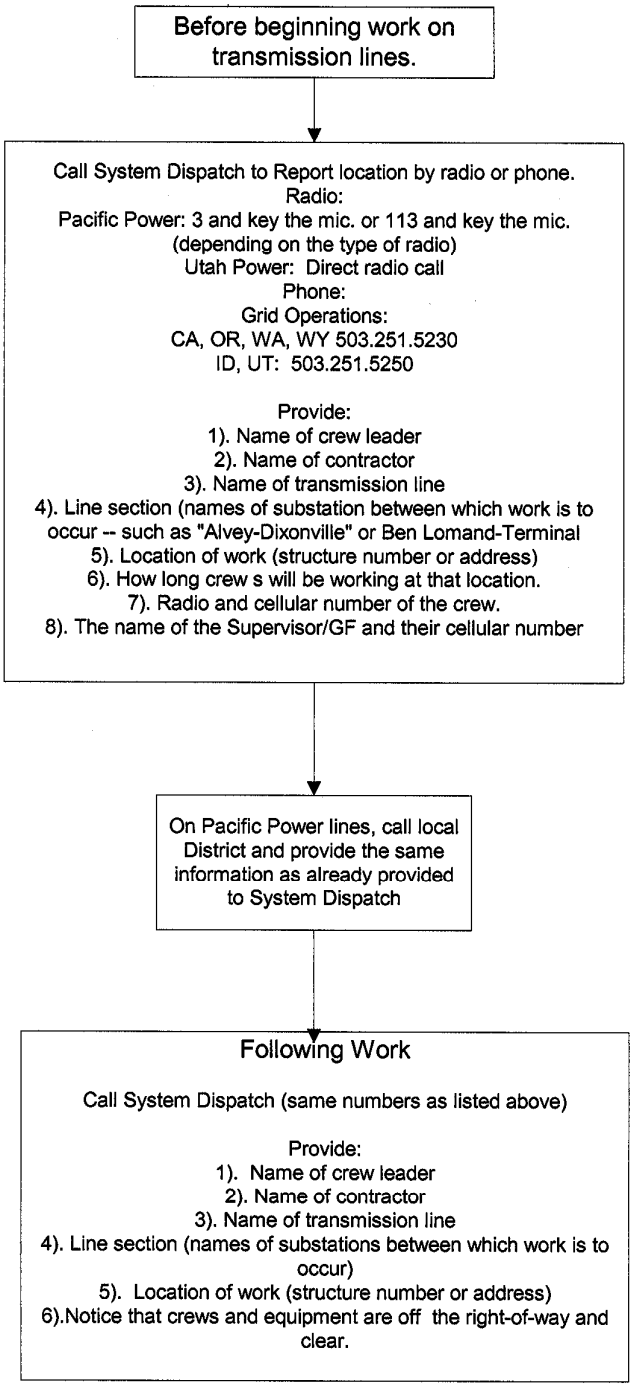


Figure 6.7. Summary pages of main grid and local transmission monthly reports.

PACIFICORP VEGETATION MANAGEMENT 2011 MAIN GRID TRANSMISSION PROGRESS REPORT

Through Dec 31, 2011

STATE SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7,160	795	803	795	8
State					
California	129	23	11	23	-11
Idaho	1,206	99	99	99	0
Misc States	66	0	0	0	0
Montana	137	46	30	46	-16
Oregon	1,131	224	224	224	0
Utah	2,329	207	230	207	23
Washington	284	160	168	160	8
Wyoming	1,877	37	41	37	4
TOTAL	7,160	795	803	795	8

FORESTER SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7160	795	803	795	8
Forester					
Armstrong	609	306	311	306	5
Evans	1865	127	142	127	14
Jones	64	21	21	21	0
Partridge	284	35	42	35	8
Phillips	734	58	46	58	-12
Vanderhoof	3,534	239	237	239	-2
Hooley	71	9	4	9	-5
Total	7,160	795	803	795	8

PACIFICORP VEGETATION MANAGEMENT 2011 LOCAL TRANSMISSION PROGRESS REPORT

Summary

Through Dec 31, 2011

LOCAL TRANSMISSION WORK

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
State					
California	572	106	116	106	10
Idaho	797	38	46	38	8
Oregon	1,836	279	340	279	61
Utah	3,747	1,445	1,587	1,445	142
Washington	324	131	89	131	-42
Wyoming	660	137	138	137	1
Total	7,936	2,136	2,316	2,136	180

SUMMARY OF WORK BY FORESTER

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
Forester		*	*	*	*
Hooley	356	9	41	9	32
Evans	2,304	977	1,035	977	58
Jones	766	330	413	330	83
Partridge	594	259	191	259	-68
Phillips	1,038	90	138	90	48
Vanderhoof	2,134	313	323	313	10
Armstrong	744	158	176	158	18
Total	7,936	2,136	2,316	2,136	180
Weeks					
52					

7. CHEMICAL SPECIFICATIONS

Herbicides and tree growth regulators (TGRs) are an integral part of PacifiCorp's Vegetation Management program. Chemical applications shall be performed according to federal, state and local regulations. Labels are the law, and chemical use must comply with labeling. PacifiCorp's director of vegetation management shall approve all products and mixes. Property owners shall be notified at least five days, but no more than six weeks in advance, whenever chemicals are to be used on their property. Property owner objection to herbicide use shall be honored.

The company making the application is responsible for chemical purchase and storage, record keeping as well as container disposal. All vegetation management crews shall have at least one individual who holds a valid applicator's license. Applicators shall either hold that license, or work under the direct supervision of a certified applicator. Tree crews found working without a valid applicators license for the state in which they are working may be shut down at the forester's discretion. Supervisors/GFs of qualified applicators shall hold a certified applicator's license in the state or states in which they supervise crews.

7.1 Chemical Reports

All chemical applications shall be documented in the *Daily Report* (Figure 4.6). The company making the application shall be responsible for maintaining reports for review by the state departments of agriculture.

When chemical work is done on or adjacent to PacifiCorp Hydro properties, copies of chemical reports shall be provided to the plant manager weekly.

7.2 Herbicide Applications

Herbicide applications shall be pursued wherever possible as a vegetation management tool. Herbicides prevent sprouting from stumps of deciduous trees and should be used on saplings of tall-growing species to reduce future inventories (Figure 7.2). Herbicides are essential in establishing the wire zone-border zone method on transmission lines.

When properly used, herbicides are effective and efficient, minimize soil disturbance, and enhance plant and wildlife diversity. Herbicide application can benefit wildlife by improving forage as well as escape and nesting cover. In some instances, noxious weed control is a desirable objective on utility rights-of-way that can be satisfied through herbicide treatment.

Herbicide use can control individual plants that are prone to re-sprout or sucker after removal. When trees that re-sprout or sucker are removed without herbicide treatment, dense thickets develop, impeding access, swelling workloads, increasing costs, blocking lines-of-site, and deteriorating wildlife habitat (Yanner and Hutnik 2004 [Figure 7.1]).

Treating suckering plants allows early successional, compatible species to dominate the right-of-way and out-compete incompatible species, ultimately reducing work.

7.2.1 Selectivity

Herbicides can be selective or non-selective depending on their type. Selective herbicides only control specific kinds of plants, when applied according to the label. For example, synthetic

auxins are a class of selective herbicides that control broadleaved plants, but do not harm grass species when applied according to the label. By contrast, non-selective herbicides work against both broadleaved plants and grasses. Non-selective herbicides can be effective where a wide variety of target plant species are present, like that often found during initial clearing or reclaiming dense stands of invasive or other undesirable vegetation.

Application techniques can also be either selective or non-selective. Selective applications are used against specific plants or pockets of plants. Non-selective techniques target areas rather than individual plants (see *Application Methods*). Non-selective use of non-selective herbicides eliminate all plants in the application area. Non-selective use of a selective herbicide controls treated plants that are sensitive to the herbicide, without differentiating between compatible or incompatible species. Selective use of either would only control targeted vegetation. Selective use is preferable unless target vegetation density is high.

7.2.2 Herbicide Best Management Practices

PacifiCorp is dedicated to ensuring proper application of approved herbicides to minimize the effects on non-target vegetation, human health, fish and wildlife species and water quality (Childs 2005).

Herbicide applications shall (Childs 2005):

- Follow all product label mandatory provisions such as registered uses, maximum use rates, application restrictions, worker safety standards, restricted entry levels, environmental hazards, weather restrictions, and equipment cleansing.
- Follow all product label advisory provisions such as mixing instructions, protective clothing and others matters.
- Have on site a copy of the label and MSDS sheets.
- Be made in the presence of a licensed applicator valid for the state in which work is performed.

7.2.3 Wetlands and Water Bodies

The affects of herbicides on wetland and water resources should be minimized by utilizing buffer zones. Such zones reduce the movement of herbicides into from the application site into adjoining water bodies. Buffer zones in Table 7.1 must be followed unless instructed otherwise by competent authorities. Climate, geology and soil types should be considered when selecting the herbicide mix with the lowest relative risk of migrating to water resources (Childs 2005).

7.2.4 Spills

Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills (Miller 1993). To prepare for accidental spills, some kind of absorptive material shall be available.

Figure 7.1. Untreated rights-of-way quickly fill in with thickets of sprouts following mowing

Jay Neil photo

Figure 7.2. Incompatible species treated in the Line 72 right-of-way in, Oregon two years after reclamation. Herbicide treatments help maintain the right-of-way and are used to convert it to a wire zone-border zone prescription (Figure 6.3)

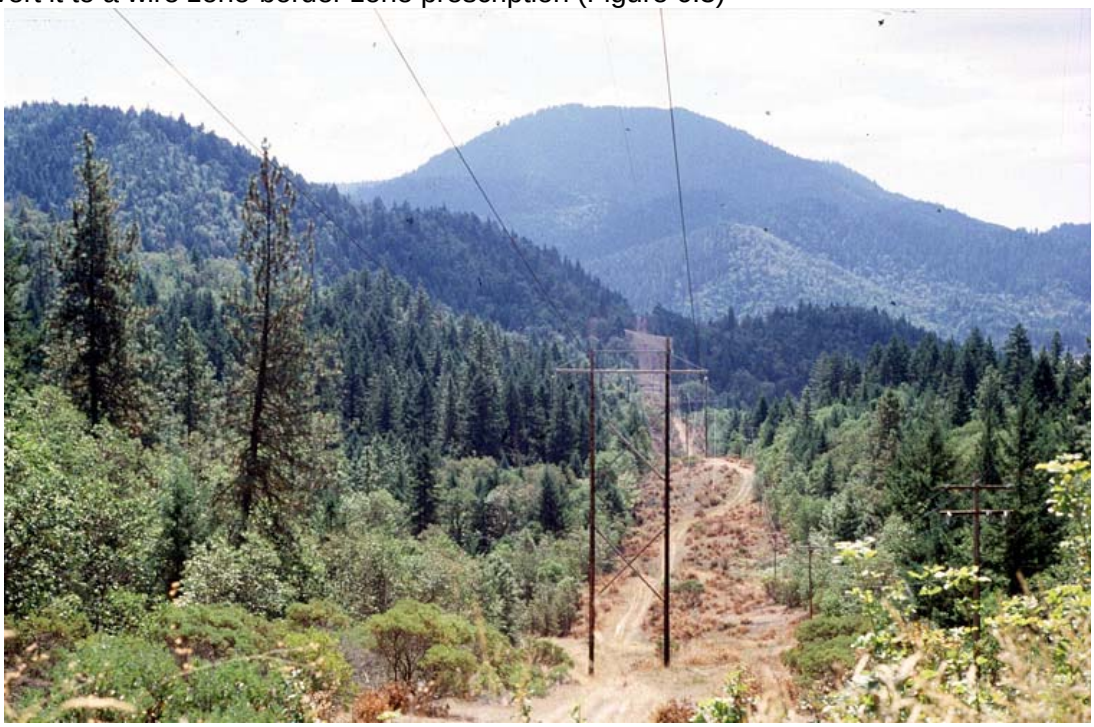


Table 7.1. Buffer Widths to Minimize Impacts on Non-Target Resources (adapted from Childs 2005).

Herbicide Ecological Toxicities and Characteristics	Buffer Width from Water Resource per Application Method			
	Spot	Localized	Broadcast	Mixing, Loading, Cleaning
Practically Non-toxic to Slightly Toxic	Up to the Edge	Up to Edge	50 feet	100 feet
Moderately Toxic, or Label Advisory for Ground/Surface Water	25 feet	35 feet	300 feet	250 feet
Highly Toxic to Very Highly Toxic	35 feet	100 feet	Noxious weed control only. Buffers shall comply with local regulations	250 feet

In the event of a spill or misapplication:

- STOP, CONTAIN, ISOLATE
  - o Stop the source of the spill
  - o Contain the spill (it is especially important to prevent the spill from entering waterways)
- Isolate the area – prevent people or vehicles from passing through the area.
- Report the spill to the Spill Hotline: 800.94.SPILL and provide:
  - o Caller and manager's name
  - o Date and time spill was discovered
  - o Location (address or longitude and latitude)
  - o Manufacturer name and serial number
  - o Cause of spill
  - o Amount of spill
  - o Types of surfaces contaminated
  - o Containment and/or clean up activities performed so far
- Request the help of and notify supervisor/GF and PacifiCorp forester.
- Remediate the spill
  - oClean up the spill or have it cleaned up, following directives from the Spill Hotline
  - oWash equipment and vehicles.
  - oProperly dispose of cleanup materials
  - oFollow up with appropriate cleanup documentation.
- Clean-up at or near PacifiCorp generating sites or substations must comply with site specific spill prevention and remediation plans.

7.2.5 Inappropriate Applications

There are situations where herbicide applications are inappropriate. If application company representatives are uncertain whether or not applications are appropriate, they shall consult the appropriate forester. Inappropriate situations include (but are not limited to):

- Areas where the property owner expresses objections to herbicide use.
- Governmental lands where herbicides are prohibited.
- Conditions of heavy precipitation or strong winds. If these conditions exist, the treatment should be deferred until weather improves.
- High temperatures that would cause product volatility and damage off-target plants. This is particularly important for foliar applications. During high temperatures, treatment should be deferred until weather cools.
- Trees that could be root grafted to desirable trees.
- Trees that are near desirable plants where the herbicide could move into contact with off target foliage or roots.
- Trees that are sufficiently close to contaminate agricultural crops or harvestable, edible plants.

If there is any uncertainty regarding whether or not an application is appropriate, contact the appropriate forester.

7.2.6 Application Methods

Herbicide application methods are categorized by the quantity of herbicide used, the character of the target, vegetation density and site parameters. Dyes can be used in the herbicide mix to mark areas that have been treated. Treatments include individual stem, broadcast and aerial treatments.

7.2.6.1 Individual Stem Treatment

Individual stem treatments are selective applications. They include stump, basal, injection, frill, selective foliar and side-pruning applications. Due to their specific nature, proper individual stem applications work well to avoid damage to sensitive or off target plants. However, they are impractical against broad areas or sites dominated by undesirable species.

Stump applications are a common individual stem treatment, where herbicides are applied to the stump cut surface around the cambium and to the top side of the bark. Water-based formulations require immediate stump treatment, while oil-based herbicides can be applied hours, days or even weeks after cutting.

Injections involve inserting herbicide into a tree. Frill (commonly called “hack and squirt”) treatments, consist of herbicide application into cuts in the trunk. Injections or frill treatments are especially useful against large incompatible trees to be left standing for wildlife.

Basal applications often use an herbicide in an oil-based carrier at the base of stems and root collar. The oil penetrates the bark, carrying the herbicide into the plant. Although basal applications can be made year round, dormant treatment is often best on deciduous plants, when they do not have foliage that can obstruct access to individual stems.

Selective foliar applications are done by spraying foliage and shoots of specific target plants. They can be either low or high volume treatments. For low volume applications, comparatively high concentrations of herbicide active ingredient are made in lower volumes of water than would be used with high volume treatment. Foliar applications are only made during the active growing season, normally late spring to early fall.

Side pruning is a technique where non-translocatable herbicides are applied to control specific branches growing

toward the electric facility. Treating large branches could damage trees in the same way as removing them through pruning.

7.2.6.2 Broadcast Treatment

Broadcast treatments are nonselective because they control all plants sensitive to a particular herbicide in a treatment area. They can provide a degree of selectivity with proper herbicides. Even then, broadcast treatments do not differentiate between compatible and incompatible plants that the herbicide controls. Broadcasting is particularly useful to control large infestations of incompatible vegetation (including invasive species) in rights-of-way or along access roads.

Broadcast techniques include high-volume foliar, cut-stubble and bare ground applications. High volume foliar applications are similar to high volume selective foliar applications. The difference is that broadcast high volume foliar treatments target a broad area of incompatible species, rather than individual plants or pockets of plants. Cut-stubble applications are made over areas that have just been mowed. Bare-ground treatments are used for clearing all plant material in a prescribed area, such as in substations or around poles to protect against fire. Bare-ground applications are usually granular or liquid applications following mechanical removal of vegetation, or used as a pre-emergent in maintaining graveled areas such as substations.

7.2.6.3 Aerial Treatment

Aerial treatments are made by helicopter (rotary wing) or small airplane (fixed wing). Rotary wing aircraft provide the most accuracy, because helicopters can fly more slowly and are more maneuverable than airplanes. However, airplanes are less expensive to operate than helicopters. Aerial control methods are also nonselective, but can provide a level of selectivity with proper herbicides. Aerial applications can be useful in remote or difficult to access sites, and be cost effective and quick, especially if large areas need to be treated. They also can be used where incompatible vegetation dominates a right-of-way. The primary disadvantage of aerial application is that it carries the threat of off-target drift, so it must be performed under low-wind conditions with low toxicity herbicides.

7.3 Approved Herbicides

A list of approved products appears in the following sections. PacifiCorp's director of vegetation management must authorize other chemicals.

7.3.1 Stump Application

- 2, 4-D
- Glyphosate
- Picloram
- Triclopyr

7.3.2 Low Volume Basal Application

- Imazapyr
- Triclopyr

7.3.3 Foliar Application

- 2, 4-D
- Aminopyralid
- Fosamine ammonium
- Glyphosate
- Metasulfuron methyl
- Picloram
- Sulfometuron methyl
- Triclopyr

7.3.4 Soil Application

- Diuron
- Imazapyr

- Picloram
- Sulfentrazone
- Tebuthiuron

7.4 Tree Growth Regulators

Tree Growth Regulator (TGR) applications are intended to retard fast-growing trees so that they will not interfere with facilities or violate state regulatory agency tree policy before the next scheduled maintenance.

7.4.1 Approved TGR Application Chemicals

- Fluprimidol
- Paclobutrazol

8. CUSTOMER RELATIONS

Representatives of vegetation management meet with more customers than any other Company department. As a result, customers often develop an impression of the entire Company based on their experience with PacifiCorp vegetation management. Since vegetation management work is often controversial, excellent customer service is imperative for a successful program. Company and contract personnel must be professional, prompt, fair and courteous to customers.

8.1 Educational Information

PacifiCorp has a variety of educational materials about tree-power line conflicts and planting the right tree in the right place.

8.1.1 Trees and Power Lines Brochure

The *Trees and Power Lines* brochure is a companion to the "yellow door card" (see Section 8.2.1). It explains the need for line clearance work, as well as natural target pruning. It also provides color pictures of how properly pruned trees could look following line clearance.

8.1.2. Small Trees for Small Places

The *Small Trees for Small Places* is a publication in PDF format available at PacificPower.net or RockyMountainPower.net. It provides tree selection tree planting and electrical safety information. It offers an easy to use chart on ornamental and adaptive characteristics of 100 different species that can be used adjacent to power lines. Not all these trees can be used everywhere in PacifiCorp's service territory. However, the idea is that with a choice of 100 small-statured trees, there should be a choice of several to use in any given location around PacifiCorp's system.

8.1.3 Right Tree in the Right Place Poster

The *Right Tree in the Right Place* poster provides illustrations and descriptions of small trees that are suitable across PacifiCorp's service territory. It also relates information about proper utility tree pruning and tree planting.

8.2 Notification for Tree Work

Notification for tree work is not required by any state tariff in PacifiCorp’s service territory. However, PacifiCorp vegetation management attempts to notify property owners or tenants prior to vegetation management work at home and business sites. PacifiCorp area foresters should authorize any line clearance work to be done without property owner or tenant notification. In cases of municipal, county, state or federal properties, the proper agency representative shall be notified. The appropriate customer and community relations manager should be notified prior to meeting with governmental officials.

Notification, including that for tree or chemical work, should be by letter, phone, personal visit or door card at least five business days, but no more than six weeks, prior to the crew arriving. Notification shall be documented on an *Activity Report* (Figure 4.3). Notification cards shall not be placed in U.S. Mail boxes. Notification cards should be used

only where the owner or tenant is likely to be present on a regular basis. Some circumstances, such as work on historic, unique or unusual trees, could warrant personal contact with the customer.

8.2.1 Door hangers

PacifiCorp has a variety of door hangers (Figure 8.1). These door hangers come in Pacific Power and Rocky Mountain Power versions. Pacific Power door hangers shall be used in California, Oregon and Washington. Rocky Mountain Power printings shall be used in Idaho, Utah and Wyoming.

8.2.1.1 Distribution (Yellow)

PacifiCorp's distribution door hanger is yellow, and should be used to notify customers of upcoming distribution cycle or interim work. The door hanger has forest tech contact information, an explanation of the need for line clearance work, of how the work will be performed and how much clearance is required. The door hanger informs customers that volunteer trees (those not planted as part of a landscape) six-inches or fewer in diameter at breast height will be removed. It also includes drawings of shapes customers could expect from the work, and tips about tree planting (Figure 8.2)

8.2.1.2 Ticket (Blue)

The blue door hanger should be used to communicate with customers who have called in requests for tree work. It has four check boxes with the most common responses to customer requests. The tree(s):

- Do not pose an immediate threat to electric service.
- Are not affecting PacifiCorp facilities.
- Are growing in proximity to service lines, but do not threaten electric service. If a customer wishes to have the tree pruned, PacifiCorp can disconnect the line to enable the customer to safely perform the work or hire a professional tree care company to do it for them.
- Are the customer's responsibility because they have more than ten feet from distribution primary conductors.

The form also has space for comments, and forest tech contact information.

8.2.1.3 Distribution Removal (White)

The white door hanger is a tree removal request, to fulfill PacifiCorp's requirement for written permission to remove trees where no easement granting authority exists to do so (see Section 2.7.1). The white door hanger identifies trees to be removed, has check boxes indicating whether or not the logs will be cut to firewood length and the stumps treated with herbicide. The door card also provides contact information for the forest tech, or comments and a sketch to help the customer understand the request.

8.2.1.4 Rural Transmission (Purple)

The rural transmission door hanger explains the need to remove trees under transmission lines. It relates the process the customer can expect, how trees and how debris will be left. It informs them that herbicide could be used on their property, and that we have a coupon program for tree replacement. It provides information on the voltage of the line and widths of the right-of-way. The door hanger also has a wire zone-border zone illustration and offers forest tech contact information.

Figure 8.1 Various PacifiCorp Vegetation Management door hangers.

8.2.1.5 Urban Transmission (Forest Service Green)

The green transmission door hanger is for use in urban or developed areas. It differs from the rural door hanger insofar as it doesn't have a diagram of wire-border zone technique. It still stresses removal.

8.2.1.6 TGR (Grey)

The grey TGR door hanger is for notifying customers about upcoming tree growth regulator application on their property. It provides space to see what trees will be treated and forest tech contact information.

8.2.1.7 Herbicide (Grey)

The grey herbicide door hanger is for notifying customers about upcoming herbicide application on their property.

8.2.1.8 Tree Crew Request (Orange)

The orange door hanger is for tree crews to use to ask customers for their cooperation with upcoming tree work. It provides information about when a tree crew will arrive on site, and has check

Figure 8.2. "Yellow" door hanger.

About Tree Pruning

How much necessary for safety?

Depending on species and speed of growth, trees require different clearance. Clearance is measured from the top wire.

- Fast-growing species require at least 14 feet of clearance (e.g. willow, Siberian elm, cottonwood, boxelder)
- Medium-growing species require at least 12 feet of clearance (e.g. ash, Norway maple, birch, pine)
- Slow-growing species require at least 10 feet of clearance (e.g. spruce, oak)

In addition to trimming, trees not intentionally planted as part of the landscape that measure less than six inches in diameter at 4.5 feet high will be removed and treated with herbicide. All firewood will be left on site.

Utah Power does not allow our contractors to use "round over" trimming, which causes a tree to grow unnaturally and severely wounds the tree.

Here are some shapes you may expect from proper pruning:

Fast growing trees may be treated with tree growth regulators which slow growth.

Tips for planting

To reduce the need for future pruning, be sure you plant the right tree in the right place. Some things to keep in mind as you're planting:

- Plant tall-growing trees (over 25 feet when mature) at least 25 feet away from overhead power lines.
- Low-growing trees (under 25 feet when mature) may be planted adjacent to overhead power lines.
- Trees and shrubs should be planted at least 10 feet away from ground-mounted transformers.
- Locate underground utilities before you plant. Call us at **1-888-221-7070** and we'll give you the number for the locating service in your area.
- Plant deciduous trees on the southeast and southwest exposures for summer shade and winter sun.
- Plant evergreen trees to provide winter windbreaks.
- For more information on the right type of tree to plant adjacent to power lines, call **1-888-221-7070** for a copy of our *Small Trees for Small Places* booklet.

Tree Maintenance
NOTICE

We will be in your neighborhood soon to conduct tree work. We thought you might like to learn more about tree pruning, safety and planting. If you have any additional questions, please contact me.

Date: _____

Contact: _____

Phone No: _____

Details: _____

_____

_____

_____

- We regularly prune and remove trees to provide safe and reliable electric service to your community. Trees that grow too close to power lines create hazardous conditions that can interrupt service to you and your neighbors.
- We hire arborists to maintain a safe corridor around power lines. These arborists are knowledgeable about the proper way to prune trees and use specially designed equipment to work near electric lines.
- Our tree contractors use natural pruning methods to maintain the health of the trees. Natural pruning, besides being healthier for the tree, also reduces resprouting in problem areas and limits the length of sprouts that do occur. The tree's species, structure and the strength of wood are all considered when trees are pruned.

Look up and live!

Never climb trees near power lines, and never climb a utility pole for any reason. When working outside with antennas, ladders and other long-handled tools, remember to always look up to see if power lines are near. Never trim limbs or remove trees around power lines. Call Pacific Power for assistance.

Para más información, llame al 1-888-225-2611 y podrá hablar con un representante que hable español.

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Making it happen.

boxes for requests to move something (like a car) from under the tree or secure a dog. It also can be used for permission to dive on property and has space for comments.

8.2.1.9 Pole Clearing

The pole clearing door hanger is to notify California customers of upcoming work to comply with California Resource Code 2492 (see Section 5.6)

8.2.2 Other Customer Contact Forms

In addition to door hangers, PacifiCorp has two forms for use in customer communication. The *Property Owner Permission* form has check boxes requesting authorization for tree removal, tree and brush disposal, mowing, notification of herbicide and TGR application. It provides a space for the property owner's signature. Property owner signatures are required for tree removal, but not brush disbursal or herbicide application.

PacifiCorp also has a *Refusal /Complaint Form.* This form should be completed by forest techs, supervisors/GFs, tree crews or foresters whenever a customer has concerns about upcoming or recently completed work. It identifies the property owner, the type of project and the nature of the refusal or complaint. These documents should be kept in a permanent file.

8.2.3 Crew Arrival on Site

When crews arrives for work at a residential site, as a courtesy they should knock at the door to let the home owner or tenant know they are about to begin work. If no one is home, the crew should proceed with the planned tree work.

8.3 Customer and Property Owner Refusal Procedure

The customer refusal process is presented in Figure 8.4. Detailed records must be kept of every conversation, including the date and time it occurred, and summary of the matters discussed. If a vegetation management representative makes a failed attempt to contact a refusal by phone, the date and time of the call should also be noted.

8.3.1 Forest Tech Refusal Procedure

When a property owner refuses to allow the work necessary to satisfy PacifiCorp specifications, the forest tech shall complete a *Property Owner Refusal/Complaint Report* and notify their supervisor/GF, and area forester within two working days and before any work is performed on the property. Forest techs shall not compromise clearances.

8.3.1.1 Easements

After documenting the refusal, the forest tech should research the right-of-way to determine PacifiCorp's property rights for that location. PacifiCorp often owns easements, copies of which are available from PacifiCorp right-of-way services. In addition, states grant prescriptive rights if the line has existed for specified length of time. This time period varies depending on the state (Table 8.1). This information should be provided to the appropriate GF/supervisor.

8.3.2 Crew Leader Refusal Procedure

When a property owner refuses to allow the crew leader to obtain specification clearances, the crew leader shall complete a *Property Owner Refusal/Complaint Report* and notify

their GF/supervisor, forest tech, or area forester within two working days and before any work is performed on the property. Crew leader notification initiates the refusal procedure from the beginning.

8.3.3 General Foreman/Supervisor Procedure

The supervisor/GF should contact the property owner within two weeks of being informed of a refusal to try to resolve the situation. The GF/Supervisor should review the documentation surrounding the refusal before contacting the customer. GF/supervisors should not compromise work below the specification without written authorization from the responsible area forester. If a prescriptive or written easement exists, the supervisor/GF should inform the customer of our rights under those easements. Notwithstanding, the general foreman/supervisor should not have the trees worked without customer consent.

If the general foreman/supervisor cannot resolve the refusal to full specification, he or she shall refer it to their area forester by turning in the *Property Owner Refusal/Complaint Report.*, along with any associated easement information.

8.3.4 Area Forester Procedure

When an area forester receives a refusal that the forest tech and general foreman/supervisor have been unable to resolve, within two weeks he or she shall contact the property owner to attempt to resolve the refusal. The forester may compromise work below the specifications, provided that trees have not grown within work thresholds in tables 5.1 or 6.1 and the agreement will not present unreasonable safety or electric service risks until the next regularly scheduled work This section is not intended to defer judgment to property owners on how much clearance to allow. Neither is it intended to justify clearances outside of specification in order to avoid dealing with an escalated complaint.

If the forester cannot resolve the refusal, the customer shall be sent a certified letter informing them that PacifiCorp has a duty to clear the trees from the conductors to Company specifications. The letter shall set a date and time that the tree will be worked. The date shall be at least five business days from the time the letter is postmarked. The letter should reference the applicable written or prescriptive easement if they exist. The forester shall alert the director of vegetation management, transmission and distribution support managing director, as well as the appropriate operations manager, customer and community manager, wires director, and regulatory analyst about the letter. The regulatory analyst will inform the proper regulatory agency about the action. If it appears the media could become involved, the Media Hotline should be notified.

Once the letter is sent, tree crews shall be dispatched to work the site to specifications at the assigned date and time, regardless of whether or not a right-of-way or prescriptive easement exists. The forester or GF/supervisor should be on site during work. Records shall be kept for use in potential litigation. Before and after photos of the site should be taken.

8.4 Customer and Property Owner Complaints

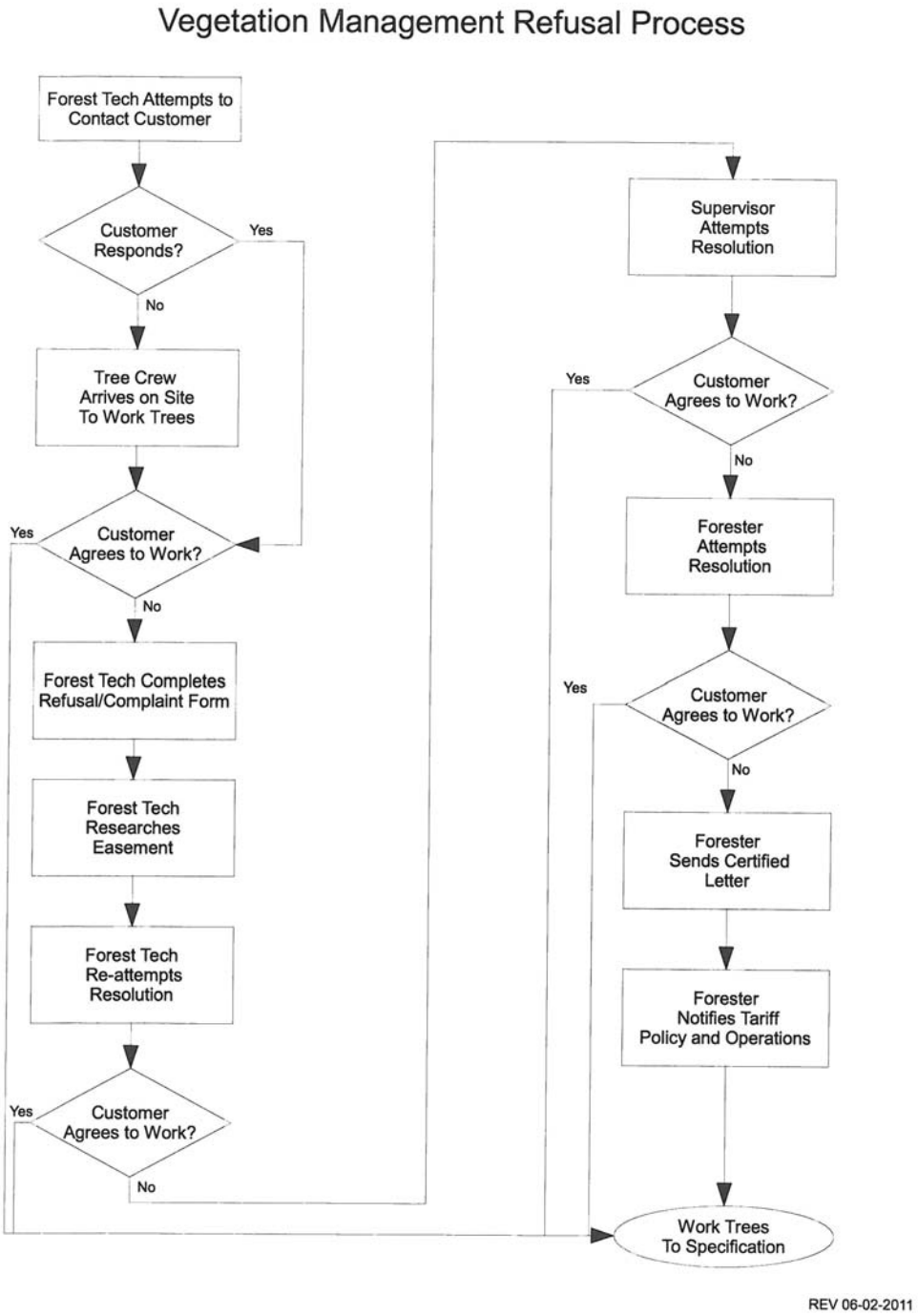
Customer and property owner complaints regarding any aspect of the vegetation management program shall be

TABLE 8.1. Prescriptive easement time requirements by state

State	Time
California	5 years
Idaho	20 years
Oregon	10 years
Utah	20 years
Washington	10 years
Wyoming	10 years

Figure 8.3. Information surrounding refusals should be documented and electronically filed with the appropriate project.

Figure 8.4. Refusal process.



addressed promptly, fairly and professionally. PacifiCorp should be notified of complaints using a *Property Owner Refusal/ Complaint Report.* Customers will be contacted within 48 hours of receipt of the complaint. Documentation surrounding the refusal should be digitally filed to be accessed with other information from the specific project for use the next time through.

8.5 Commission Complaints

Commission responses should go through tariff policy with assistance from the vegetation management service coordinator. It is important to provide timelines with appropriate summaries of vegetation management's interaction with the subject party. Response for data request should be provided within 24 hours if at all possible, but no later than 72 hours.

8.6 Customer Survey

PacifiCorp has Pacific Power and Rocky Mountain Power customer surveys. Surveys are vitally important for quality control, and for giving customer's a voice regarding vegetation management's performance.

The survey asks customers to rate from 1 (lowest) to 5 (highest) Vegetation Management's performance relative to five questions:

- Our notification clearly explained the work we would be doing.
- The workers were friendly and courteous.
- The work was completed as you understood it would be.
- The property was left neat and orderly.
- Overall, I am satisfied with how the work was handled.
- It also allows space for comments and for the customer to identify him/herself.

Tree crews should leave customer surveys on each property on which utility tree work is performed. For work on municipal or other government agency trees, a survey should be provided to the appropriate management authority. The area forester should also see that surveys are left on properties where they conduct crew audits. The survey is self addressed and postage paid for the respondent's convenience.

9. DEFINITIONS

Allelopathy. Production of a chemical by one plant to suppress competing plants of other species.

BMP. Best management practice

Border zone. The Region A right-of-way portion that extends from the right-of-way edge to 10 feet from the outside phases.

Branch bark ridge. Area of raised bark between two stems. The ridge is formed as the two stems grow together, pushing the bark outward. A raised branch bark ridge is often a sign of a strong branch attachment.

Branch collar. Wood formed around a branch attachment. It contains wood from both the branch and parent stem.

Branch core. Area in the trunk of a tree that traces the branch back to its origins as a bud on a twig.

Branch protection zone. Area in the branch core that undergoes chemical change in response to wounding or disease in the branch. The chemicals protect the tree by inhibiting or preventing diseases from passing from the branch to the parent stem.

Caliper. The diameter of a tree six inches off the ground.

Cambium. Area of cell division responsible for stem diameter growth.

Clearance. Line de-energizing for safety purposes. Clearances require 48 hour notices to all customers that will be effected by the outage.

Clearance 1. As defined by the NERC Standard FAC-003-1 (2006) as clearances between trees and transmission lines to be achieved at the time of work on bulk (main grid) transmission lines. They appear in Table 6.1.

Clearance 2. As defined by the NERC Standard FAC-003-1 (2006) as clearances between trees and transmission lines that should never be breached. The correspond to Institute of Electronic and Electrical Engineers Standard 516-2003. They appear in Table 6.1.

Company. PacifiCorp.

Crown reduction. Reduction of the top or sides of the tree by thinning cuts (lateral or branch collar cuts).

Crown Restoration. Restoring a previously headed stem's natural structure by thinning sprouts emanating from the old wound. Crown restoration should be done incrementally over the course of several cycles. The crowns of many third order trees may be so damaged they may never be restored.

Cycle buster. Fast-growing tree species that will not hold for a complete cycle.

DBH. Diameter at breast height.

Danger tree. A tree on or off the right-of-way that may contact electric facilities either through growth or if it should fall.

Decurrent form. Trees lacking a strong central leader, resulting in a spreading crown (for example, American elm [*Ulmus americana]*).

Distribution line. Lines energized between 600 and 45,000 volts.

Drip line. The horizontal extent of the crown out to the branch tips.

Drop-crotch. Archaic term for lateral cut.

Excurrent form. Tree with a strong central leader (for example, Ponderosa pine [*Pinus ponderosa]*).

Fast -growing species. Tree species that grow more than three feet per year.

Flush cut. A final pruning cut flush with the parent stem (the trunk, for example) that cuts into or removes the branch collar. Flush cuts are damaging and inappropriate.

GF. General foreman.

Hazard tree. Dead, dying, diseased, deformed, or unstable trees which have a high probability of falling and contacting a substation, distribution or transmission conductors, structure, guys or other Company electric facility.

Heading cut. Internodal cut on a stem, or a cut made to an inappropriate lateral.

Hold. Deactivating the automatic re-closers and the line. Holds are issued to a Journeyman lineman who, in the event of an outage, is responsible for ensuring that it is save to re-energize the line.

Included bark. Bark included in the juncture between two stems. It is a structural defect that can lead to stem failure.

Integrated Vegetation Management (IVM). Integrated vegetation management is a system of managing vegetation in which undesirable vegetation is identified, action thresholds are considered, all possible control options are evaluated, and selected control(s) are implemented (ANSI 2006).

Interim Work. Scheduled work in the interim half way between cycles. For example, most of Oregon is on a four years cycle. Two years after completing cycle work, most feeders will be scheduled for a systematic pass to work trees that will not hold for the rest of the cycle.

ISA. International Society of Arboriculture.

kV. One thousand volts.

Lateral cut. A cut that shortens a branch to a lateral no less than one-third the diameter of the original stem and removing no more than one-half the lead's foliage.

Lead. An upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem

Low-growing tree species. Trees with a potential mature height under 25 feet.

Merchantable timber. Trees with a DBH of 6 inches or more, which are recoverable and have a market in the area.

Moderate-growing species. Tree species that can be expected to grow between one and three feet per year under normal conditions.

Natural target. Proper final pruning cut location at a strong point in a tree's disease defense system. They are branch collars and proper laterals.

Pruning. Scientifically-based arboricultural practice of removing tree parts.

Readily climbable tree. Readily climbable trees have low limbs that are accessible from the ground and sufficiently close together so that the tree can be climbed by a child or average person without using a ladder or special equipment. Vehicles do not render trees climbable. Climbable trees should have a main stem or major branch that would support a child or average person either within arm's reach of an uninsulated energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

Refusal. A case where a property owner does not allow trees to be cleared from PacifiCorp facilities to specification.

Region A. The area in transmission rights-of-way where the wire is less than 50 feet off the ground.

Region B. The area in transmission rights-of-way where the wire is between 50 feet and 100 feet off the ground.

Region C. The area in transmission rights-of-way where the wire is more than 100 feet off the ground.

Round over. A traditional line clearing technique that lowers a tree to a specified clearance distance and sculpts it into a ball. Round overs are a damaging practice that expressly violate PacifiCorp specifications.

Sapling. Young tree under four inches in diameter.

Secondary line. Wire energized to less than 600 volts.

Service line. A secondary line that runs between the electric supply and the customer.

Shall. A mandatory requirement.

Short-growing tree. A tree with a potential mature height of 25 feet or less.

Should. An advisory recommendation.

Slash. Brush and stems under 6 inches in diameter removed from trees during vegetation management operations.

Slow-growing species. Tree species that can be expected to grow less than one foot per year.

Subordination. Removing the terminal, typically upright or end portion of a parent branch or stem to slow the growth rate so other portions of the tree grow faster (Gilman 2002).

Tall-growing species. Tree species that grow to 25 feet or more at maturity.

TGR. Tree Growth Regulator. In the context of these specifications, TGR refers to chemicals that slow growth of some tree species.

Third order pruning. Utility lateral pruning on trees that have received many cycles of roundovers.

Transmission lines. Wire energized over 45 kV

Trimming. Reducing the length of toenails, hair, the amount of budgets and other things, Christmas tree decoration and unskilled removal of tree parts.

Volunteer. A naturally seeded, non-landscape tree.

Wetland. Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (EPA 2004) http://www.epa.gov/owow/wetlands/vital/what.html.

Whorl. A node in a pine tree where three or more limbs commonly originate.

Wire zone. Right-of-way portion that is directly under the wires and within 10 feet to the field side of the outside phases (Bramble et al. 2001).

Work threshold. Distance from conductors inside of which trees should be pruned or removed during cycle work.

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Appendix D – Land Description of Selected Route Across Federal Land

BUREAU OF LAND MANAGEMENT, EXHIBIT A OF
ROCKY MOUNTAIN POWER RIGHT-OF-WAY GRANT
LEGAL DESCRIPTION
PERMANENT RIGHT-OF-WAY

Salt Lake Meridian, Richfield Field Office, Sevier County

T. 22 S., R. 02 W.,
sec. 33, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 34, SE1/4SE1/4.

T. 23 S., R. 02 W.,
sec. 5, SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 7, SE1/4NE1/4.

T. 23 S., R. 03 W.,
sec. 13, SE1/4NE1/4, NE1/4SE1/4, and S1/2SE1/4.

Salt Lake Meridian, Cedar City Field Office, Beaver County

T. 26 S., R. 07 W.,
sec. 1, SE1/4SE1/4;
sec. 3, SE1/4SE1/4;
sec. 10, NE1/4NE1/4;
sec. 11, NW1/4NE1/4, S1/2NE1/4, and N1/2NW1/4;
sec. 12, lot 5, NE1/4NE1/4, S1/2NE1/4, and SE1/4NW1/4.

T. 26 S., R. 09 W.,
sec. 3, SE1/4SW1/4;
sec. 10, E1/2NW1/4, E1/2SW1/4, and SW1/4SE1/4;
sec. 15, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 22, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 27, E1/2NW1/4 and E1/2SW1/4;
sec. 34, NE1/4NW1/4, SW1/4NW1/4, and W1/2SW1/4.

T. 27 S., R. 09 W.,
sec. 3, lot 4, SW1/4NW1/4;
sec. 4, NE1/4SE1/4 and S1/2SE1/4;
sec. 6, lot 7, SE1/4SW1/4;
sec. 7, N1/2NE1/4, SE1/4NE1/4, and NE1/4NW1/4;
sec. 8, S1/2NE1/4, NW1/4NW1/4, S1/2NW1/4, and E1/2SE1/4;
sec. 9, N1/2NE1/4, SW1/4NE1/4, NE1/4NW1/4, S1/2NW1/4, and NW1/4SW1/4.

T. 27 S., R. 10 W.,
sec. 1, N1/2SW1/4 and SE1/4;
sec. 5, S1/2SW1/4 and S1/2SE1/4;
sec. 6, S1/2SW1/4.

T. 27 S., 11 W.,
sec. 1, S1/2SW1/4 and SE1/4;
sec. 11, NE1/4NE1/4;
sec. 12, NW1/4 and E1/2SW1/4;
sec. 25, E1/2NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 35, lots 2 and 3, NE1/4NE1/4, S1/2NE1/4, and NW1/4SE1/4.

T. 28 S., R. 11 W.,
sec. 1, SW1/4SW1/4;
sec. 11, E1/2NW1/4 and SW1/4;
sec. 12, N1/2NW1/4, SE1/4NW1/4, and NE1/4SW1/4;
sec. 15, SE1/4NE1/4 and E1/2SE1/4;
sec. 22, lots 5, 7, and 8, W1/2NE1/4 and W1/2SE1/4;
sec. 27, lot 1, NW1/4NE1/4 and NW1/4SW1/4;
sec. 28, SE1/4SE1/4;
sec. 33, lots 4 to 6, inclusive, N1/2NE1/4, SW1/4NE1/4, E1/2SW1/4, and NW1/4SE1/4.

T. 29 S., R. 11 W.,
sec. 4, lot 4;
sec. 5, lot 1, S1/2NE1/4, NE1/4SW1/4, S1/2SW1/4, and NW1/4SE1/4;
sec. 7, E1/2NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 8, N1/2NW1/4 and SW1/4NW1/4;
sec. 18, lots 1 to 3, inclusive, E1/2NW1/4.

T. 29 S., R. 12 W.,
sec. 13, SE1/4;
sec. 24, W1/2NE1/4, SE1/4NW1/4, E1/2SW1/4 and NW1/4SE1/4;
sec. 25, N1/2NW1/4, SW1/4NW1/4, and W1/2SW1/4;
sec. 26, SE1/4SE1/4;
sec. 35, E1/2NE1/4 and SE1/4.

T. 30 S., R. 12 W.,
sec. 10, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 16, NE1/4SE1/4 and S1/2SE1/4;
sec. 20, lots 3 and 4, W1/2SE1/4;
sec. 21, NW1/4NE1/4, E1/2NW1/4, SW1/4NW1/4, and NW1/4SW1/4;
sec. 29, NW1/4NE1/4, E1/2NW1/4, and SW1/4NW1/4;
sec. 30, S1/2SE1/4.

Salt Lake Meridian, Cedar City Field Office, Iron County

T. 31 S., R. 12 W.,
sec. 6, SE1/4SE1/4;
sec. 7, E1/2NE1/4 and E1/2SE1/4;
sec. 18, NE1/4NE1/4 and E1/2SE1/4;
sec. 31, lot 1.

T. 32 S., R. 12 W.,
sec. 7, lot 1;
sec. 18, lots 1 and 2, SE1/4SW1/4;
sec. 19, lots 1 to 4, inclusive, E1/2NW1/4;
sec. 30, lots 1 to 4, inclusive;
sec. 31, lots 1 to 3, inclusive.

T. 33 S., R. 12 W.,
sec. 6, lot 7.

T. 33 S., R. 13 W.,
sec. 13, N1/2NE1/4, SW1/4NE1/4, SE1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 14, SE1/4SE1/4;
sec. 22, S1/2SE1/4;
sec. 23, N1/2NE1/4, SW1/4NE1/4, E1/2NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 27, W1/2NE1/4, SE1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 28, SE1/4SE1/4;
sec. 32, W1/2SE1/4.

T. 34 S., R. 14 W.,
sec. 14, SE1/4SE1/4.

T. 35 S., R. 15 W.,
sec. 24, NW1/4NW1/4.

T. 36 S., R. 15 W.,
sec. 3, SE1/4NE1/4 and SE1/4;
sec. 10, lots 1, 2, 5, 6, and 8, NE1/4SW1/4 and W1/2SE1/4;
sec. 14, SW1/4SW1/4;
sec. 15, N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4, and S1/2SE1/4;
sec. 20, lots 3 and 4, SW1/4SE1/4 and E1/2SW1/4;
sec. 21, NE1/4NE1/4, SW1/4NE1/4, S1/2NW1/4, and N1/2SW1/4;
sec. 22, N1/2NE1/4 and N1/2NW1/4;
sec. 29, N1/2NW1/4 and SW1/4NW1/4;
sec. 30, lots 7, 10, 11, and 12, S1/2NE1/4, N1/2SE1/4, and SW1/4SE1/4.

Salt Lake Meridian, Fillmore Field Office, Millard County

T. 25 S., R. 07 W.,
sec. 21, S1/2SE1/4;
sec. 22, S1/2SW1/4;
sec. 27, S1/2SW1/4 and SW1/4SE1/4;
sec. 28, NW1/4NE1/4, NW1/4, N1/2SW1/4, NW1/4SE1/4, and S1/2SE1/4;
sec. 29, NE1/4NE1/4, S1/2NE1/4, S1/2NW1/4, NE1/4SW1/4, and N1/2SE1/4;
sec. 30, lot 1, NW1/4NE1/4, S1/2NE1/4, and NE1/4NW1/4;
sec. 34, NW1/4NE1/4, S1/2NE1/4, and SE1/4.

T. 25 S., R. 08 W.,
sec. 17, NE1/4SW1/4 and N1/2SE1/4;
sec. 21, lot 1, E1/2NE1/4;
sec. 22, lots 4, 7, 8, and 10, SW1/4NW1/4, and NE1/4SW1/4;
sec. 23, lot 1, NW1/4SW1/4, SE1/4SW1/4, and S1/2SE1/4;
sec. 24, SW1/4SW1/4;
sec. 25, NE1/4 and N1/2NW1/4.

T. 25 S., R. 09 W.,
sec. 13, N1/2NW1/4;
sec. 14, N1/2NE1/4, NE1/4NW1/4, and S1/2NW1/4;
sec. 15, E1/2SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 22, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 27, NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 34, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and NW1/4SE1/4.

T. 26 S., R. 07 W.,
sec. 1, SE1/4SE1/4;
sec. 2, lot 3, SE1/4NW1/4;
sec. 3, lot 1, SE1/4NE1/4 and E1/2SE1/4.

T. 26 S., R. 09 W.,
sec. 3, lot 3, SE1/4NW1/4 and E1/2SW1/4.

BUREAU OF LAND MANAGEMENT, EXHIBIT A
ROCKY MOUNTAIN POWER RIGHT-OF-WAY GRANT
LEGAL DESCRIPTION
TEMPORARY RIGHT-OF-WAY

Salt Lake Meridian, Richfield Field Office, Sevier County

T. 22 S., R. 02 W.,
sec. 33, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 34, SE1/4SE1/4.

T. 23 S., R. 02 W.,
sec. 5, SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 7, SE1/4NE1/4.

T.23 S., R.03 W.,
sec. 13, SE1/4NE1/4, NE1/4SE1/4, and S1/2SE1/4.

Salt Lake Meridian, Cedar City Field Office, Beaver County

T. 26 S., R. 07 W.,
sec. 1, SE1/4SE1/4;
sec. 3, SE1/4SE1/4;
sec. 10, E1/2NE1/4;
sec. 11, NW1/4NE1/4, S1/2NE1/4, and N1/2NW1/4;
sec. 12, lots 3 and 5, NE1/4NE1/4, S1/2NE1/4, and SE1/4NW1/4.

T. 26 S., R. 09 W.,
sec. 3, SE1/4SW1/4;
sec. 10, N1/2NW1/4, SE1/4NW1/4, E1/2SW1/4, and SW1/4SE1/4;
sec. 15, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 22, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 27, E1/2NW1/4 and E1/2SW1/4;
sec. 34, NE1/4NW1/4, SW1/4NW1/4, and W1/2SW1/4.

T. 27 S., R. 09 W.,
sec. 3, lot 4, SW1/4NW1/4;
sec. 4, NE1/4SE1/4 and S1/2SE1/4;
sec. 6, lot 7, SE1/4SW1/4;
sec. 7, N1/2NE1/4, SE1/4NE1/4, and NE1/4NW1/4;
sec. 8, S1/2NE1/4, NW1/4NW1/4, S1/2NW1/4, and E1/2SE1/4;
sec. 9, N1/2NE1/4, SW1/4NE1/4, NE1/4NW1/4, S1/2NW1/4, and NW1/4SW1/4.

T. 27 S., R. 10 W.,
sec. 1, N1/2SW1/4 and SE1/4;
sec. 5, S1/2SW1/4 and S1/2SE1/4;
sec. 6, S1/2SW1/4.

T. 27 S., 11 W.,
sec. 1, SW1/4 and S1/2SE1/4;
sec. 11, NE1/4NE1/4;
sec. 12, NW1/4 and E1/2SW1/4;
sec. 25, E1/2NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 35, lots 2 and 3, NE1/4NE1/4, S1/2NE1/4, and NW1/4SE1/4.

T. 28 S., R. 11 W.,
sec. 1, SW1/4SW1/4;
sec. 11, E1/2NW1/4 and SW1/4;
sec. 12, N1/2NW1/4, SE1/4NW1/4, and NE1/4SW1/4;
sec. 15, SE1/4NE1/4 and E1/2SE1/4;
sec. 22, lots 5, 7, and 8, W1/2NE1/4 and W1/2SE1/4;
sec. 27, lot 1, NW1/4NE1/4 and NW1/4SW1/4;
sec. 28, SE1/4SE1/4;
sec. 33, lots 4 to 6, inclusive, N1/2NE1/4, SW1/4NE1/4, E1/2SW1/4, and NW1/4SE1/4.

T. 29 S., R. 11 W.,
sec. 4, lot 4;
sec. 5, lot 1, S1/2NE1/4, NE1/4SW1/4, S1/2SW1/4, and NW1/4SE1/4;
sec. 7, E1/2NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 8, N1/2NW1/4 and SW1/4NW1/4;
sec. 18, lots 1 to 3, inclusive, E1/2NW1/4.

T. 29 S., R. 12 W.,
sec. 13, SE1/4;
sec. 24, W1/2NE1/4, SE1/4NW1/4, E1/2SW1/4 and NW1/4SE1/4;
sec. 25, N1/2NW1/4, SW1/4NW1/4, and W1/2SW1/4;
sec. 26, SE1/4SE1/4;
sec. 35, E1/2NE1/4 and SE1/4.

T. 30 S., R. 12 W.,
sec. 10, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 16, NE1/4SE1/4 and S1/2SE1/4;
sec. 20, lots 3 and 4, W1/2SE1/4;
sec. 21, NW1/4NE1/4, E1/2NW1/4, SW1/4NW1/4, and NW1/4SW1/4;
sec. 29, NW1/4NE1/4, E1/2NW1/4, and SW1/4NW1/4;
sec. 30, S1/2SE1/4.

Salt Lake Meridian, Cedar City Field Office, Iron County

T. 31 S., R. 12 W.,
sec. 6, SE1/4SE1/4;
sec. 7, E1/2NE1/4 and E1/2SE1/4;
sec. 18, NE1/4NE1/4 and E1/2SE1/4;
sec. 31, lot 1.

T. 32 S., R. 12 W.,
sec. 7, lot 1;
sec. 18, lots 1 and 2, SE1/4SW1/4;
sec. 19, lots 1 to 4, inclusive, E1/2NW1/4;
sec. 30, lots 1 to 4, inclusive;
sec. 31, lots 1 to 3, inclusive.

T. 33 S., R. 12 W.,
sec. 6, lot 7.

T. 33 S., R. 13 W.,
sec. 13, N1/2NE1/4, SW1/4NE1/4, SE1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 14, SE1/4SE1/4;
sec. 22, S1/2SE1/4;
sec. 23, NE1/4, E1/2NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 27, W1/2NE1/4, SE1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;
sec. 28, SE1/4SE1/4;
sec. 32, W1/2SE1/4.

T. 34 S., R. 14 W.,
sec. 14, SE1/4SE1/4.

T. 35 S., R. 15 W.,
sec. 24, NW1/4NW1/4.

T. 36 S., R. 15 W.,
sec. 3, SE1/4NE1/4 and SE1/4;
sec. 10, lots 1, 2, 5, 6, and 8, NE1/4SW1/4 and W1/2SE1/4;
sec. 14, SW1/4SW1/4;
sec. 15, N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4, and S1/2SE1/4;
sec. 20, lots 3 and 4, SW1/4SE1/4 and E1/2SW1/4;
sec. 21, NE1/4NE1/4, SW1/4NE1/4, S1/2NW1/4, and N1/2SW1/4;
sec. 22, N1/2NE1/4 and N1/2NW1/4;
sec. 29, N1/2NW1/4 and SW1/4NW1/4;
sec. 30, lots 7, 10, 11, and 12, S1/2NE1/4, N1/2SE1/4, and SW1/4SE1/4.

Salt Lake Meridian, Fillmore Field Office, Millard County

T. 25 S., R. 07 W.,
sec. 21, S1/2SE1/4;
sec. 22, S1/2SW1/4;
sec. 27, S1/2SW1/4 and SW1/4SE1/4;
sec. 28, NW1/4NE1/4, NW1/4, N1/2SW1/4, NW1/4SE1/4, and S1/2SE1/4;
sec. 29, NE1/4NE1/4, S1/2NE1/4, S1/2NW1/4, NE1/4SW1/4, and N1/2SE1/4;
sec. 30, lot 1, NW1/4NE1/4, S1/2NE1/4, and NE1/4NW1/4;
sec. 34, NE1/4 and SE1/4.

T. 25 S., R. 08 W.,
sec. 17, NE1/4SW1/4 and N1/2SE1/4;
sec. 21, lot 1, E1/2NE1/4;
sec. 22, lots 4, 7, 8, and 10, SW1/4NW1/4, and NE1/4SW1/4;
sec. 23, lot 1, NW1/4SW1/4, SE1/4SW1/4, and S1/2SE1/4;
sec. 24, SW1/4SW1/4;
sec. 25, NE1/4 and N1/2NW1/4.

T. 25 S., R. 09 W.,
sec. 13, N1/2NW1/4;
sec. 14, N1/2NE1/4, NE1/4NW1/4, and S1/2NW1/4;
sec. 15, SW1/4, N1/2SE1/4, and SW1/4SE1/4;
sec. 22, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 27, NE1/4, E1/2NW1/4, E1/2SW1/4, and W1/2SE1/4;
sec. 34, W1/2NE1/4, E1/2NW1/4, E1/2SW1/4, and NW1/4SE1/4.

T. 26 S., R. 07 W.,
sec. 1, SE1/4SE1/4;
sec. 2, lots 2 and 3, SW1/4NE1/4 and SE1/4NW1/4;
sec. 3, lot 1, SE1/4NE1/4 and E1/2SE1/4.

T. 26 S., R. 09 W.,
sec. 3, lot 3, SE1/4NW1/4 and E1/2SW1/4.