Exhibit P
Fish and Wildlife Habitat and Species

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

Todd Adams, Project Leader
(208) 388-2740
tadams@idahopower.com

Zach Funkhouser, Permitting
(208) 388-5375
zfunkhouser@idahopower.com

Preliminary Application for Site Certificate

February 2013

TABLE OF CONTENTS

1.0 INTRODUCTION P-1
2.0 APPLICABLE RULES AND STATUTES P-1
2.1 Approval Standard – OAR 345-022-0060 ..... P-1
2.2 Requirements of Exhibit P – OAR 345-021-0010(1)(p) P-1
2.3 Project Order Requirements P-2
3.0 ANALYSIS P-3
3.1 Analysis Area P-3
3.2 Methods P-3
3.3 Information Required by OAR 345-021-0010(1)(p) P-4
3.3.1 Field Surveys and Initial Desktop Review P-4
3.3.2 Habitat Categorization P-18
3.3.3 Fish and Wildlife Habitats P-20
3.3.4 Map Showing the Location of Species Habitat P-26
3.3.5 State Sensitive Species P-26
3.3.6 Potential Impacts to Fish and Wildlife P-36
3.3.7 Measures to Reduce or Avoid Adverse Effects P-54
3.3.8 Monitoring Plan P-57
4.0 CONCLUSION P-58
5.0 SUBMITTAL AND APPROVAL COMPLIANCE MATRICES P-58
6.0 RESPONSE TO COMMENTS FROM REVIEWING AGENCIES AND THE PUBLIC P-59
7.0 REFERENCES P-60

LIST OF TABLES

Table P-1. Biological Surveys Related to Exhibit P P-6
Table P-2. Habitat Categorization Types P-19
Table P-3. Description and Definition of General Habitat Types within the Analysis Area P-22
Table P-4. Acres of Habitat Category Types within the Analysis Area P-25
Table P-5. State Sensitive Species Potentially Present within the Analysis Area (excluding federal or state endangered and threatened species) P-29
Table P-6. Impacts to ODFW Habitat Category Types from Construction and Operations P-39
Table P-7. Submittal Requirements Matrix P-58
Table P-8. Approval Standard P-59
Table P-9. Reviewing Agency and Public Comments P-59

LIST OF FIGURES

Figure P-1. Sage-Grouse Survey Areas 2010, 2011, and 2012 ..... P-8
Figure P-2. Northern Goshawk and American Three-toed Woodpecker 2011 and 2012 Calling Stations P-9
Figure P-3. Great Gray and Flammulated Owl Calling Stations P-10
Figure P-4. Washington Ground Squirrel Survey Area P-11
Figure P-5. Raptor Nest Survey Areas 2011 and 2012 ..... P-12
Figure P-6. Terrestrial Visual Encounter Survey Areas 2011 and 2012 ..... P-13
Figure P-7. ODFW Greater Sage-Grouse Core and Low Density Areas P-34
Figure P-8. Greater Sage Grouse BLM Priority and General Habitats P-37

LIST OF ATTACHMENTS

Attachment P-1. Sage-Grouse Lek Numbers, and Impacts to Core / Low Density / PPH / PGH
Attachment P-2. Habitat Categorization Matrix
Attachment P-3. Revised Final Biological Survey Work Plan
Attachment P-4. Draft Reclamation and Revegetation Plan
Attachment P-5. Draft Vegetation Management Plan
Attachment P-6. Draft Species Conservation Plan
Attachment P-7. Draft Habitat Mitigation Plan
Attachment P-8. Biological Field Survey Technical Reports
Attachment P-9. ODFW Effort to Classify Sage-Grouse Core Areas as Either Category 1 or 2
Attachment P-10. Map Book of Habitat Locations

ACRONYMS AND ABBREVIATIONS

Note: Not all acronyms and abbreviations listed will appear in this Exhibit.

°C	degrees Celsius
4WD	4-wheel-drive
A	ampere
A/ph	amperes/phase
AC	alternating current
ACDP	Air Contaminant Discharge Permit
ACEC	Area of Critical Environmental Concern
ACSR	aluminum conductor steel reinforced
AIMP	Agricultural Impact Mitigation Plan
AMS	Analysis of the Management Situation
aMW	average megawatt
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resource Protection Act
ASC	Application for Site Certificate
ASCE	American Society of Civil Engineers
ASP	Archaeological Survey Plan
AST	aboveground storage tank
ASTM	American Society of Testing and Materials
ATC	available transmission capacity
ATV	all-terrain vehicle
AUM	animal unit month
B2H	Boardman to Hemingway Transmission Line Project
BCCP	Baker County Comprehensive Plan
BCZSO	Baker County Zoning and Subdivision Ordinance
BLM	Bureau of Land Management
BMP	best management practice
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
C and D	construction and demolition
CAA	Clean Air Act
CadnaA	Computer-Aided Noise Abatement
CAFE	Corona and Field Effects
CAP	Community Advisory Process
CBM	capacity benefit margin
CFR	Code of Federal Regulations
CH	critical habitat
CIP	critical infrastructure protection
CL	centerline
cm	centimeter
cmil	circular mil
COA	Conservation Opportunity Area
CO_2e	carbon dioxide equivalent

COM Plan	Construction, Operations, and Maintenance Plan
CPCN	Certificate of Public Convenience and Necessity
cps	cycle per second
CRP	Conservation Reserve Program
CRT	cathode-ray tube
CRUP	Cultural Resource Use Permit
CSZ	Cascadia Subduction Zone
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	*Clean Water Act of 1972*
CWR	Critical Winter Range
dB	decibel
dBA	A-weighted decibel
DC	direct current
DoD	Department of Defense
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DPS	Distinct Population Segment
DSL	Oregon Department of State Lands
EA	environmental assessment
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement (DEIS for Draft and FEIS for Final)
EFSC or Council	Energy Facility Siting Council
EFU	Exclusive Farm Use
EHS	extra high strength
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
EPC	Engineer, Procure, Construct
EPM	environmental protection measure
EPRI	Electric Power Research Institute
ERO	Electric Reliability Organization
ERU	Exclusive Range Use
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	Evolutionarily Significant Unit
EU	European Union
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFT	find, fix, track, and report
FLPMA	Federal Land Policy and Management Act
Forest Plan	Land and Resource Management Plan
FPA	Forest Practices Act
FSA	Farm Services Agency
FWS	U.S. Fish and Wildlife Service
G	gauss

GeoBOB	Geographic Biotic Observation
GF	Grazing Farm Zone
GHG	greenhouse gas
GHz	gigahertz
GIL	gas insulated transmission line
GIS	geographic information system
GPS	Global Positioning System
GRMW	Grande Ronde Model Watershed
GRP	Grassland Reserve Program
HAC	Historic Archaeological Cultural
HCNRA	Hells Canyon National Recreation Area
HPFF	high pressure fluid-filled
HPMP	Historic Properties Management Plan
HUC	Hydrologic Unit Code
Hz	hertz
I-84	Interstate 84
ICC	International Code Council
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
ILS	intensive-level survey
IM	Instructional Memorandum
INHP	Idaho Natural Heritage Program
INRMP	Integrated Natural Resources Management Plan
IPC	Idaho Power Company
IPUC	Idaho Public Utilities Commission
IRP	integrated resource plan
IRPAC	IRP Advisory Council
ISDA	Idaho State Department of Agriculture
JPA	Joint Permit Application
KCM	thousand circular mils
kHz	kilohertz
km	kilometer
KOP	Key Observation Point
kV	kilovolt
kV/m	kilovolt per meter
kWh	kilowatt-hour
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
lb	pound
LCDC	Land Conservation and Development Commission
LDMA	Lost Dutchman's Mining Association
LiDAR	light detection and ranging
LIT	Local Implementation Team

LMP	land management plan
LOLE	Loss of Load Expectation
LRMP	land and resource management plan
LUBA	Land Use Board of Appeals
LWD	large woody debris
m	meter
mA	milliampere
MA	Management Area
MAIFI	Momentary Average Interruption Frequency Index
MCC	Malheur County Code
MCCP	Morrow County Comprehensive Plan
MCE	Maximum Credible Earthquake
MCZO	Morrow County Zoning Ordinance
mG	milligauss
MHz	megahertz
mm	millimeter
MMI	Modified Mercalli Intensity
MP	milepost
MPE	maximum probable earthquake
MRI	magnetic resonance imaging
MVAR	megavolt ampere reactive
Mw	mean magnitude
MW	megawatt
µV/m	microvolt per meter
N_2O	nitrous oxide
NAIP	National Agriculture Imagery Program
NED	National Elevation Dataset
NEMS	National Energy Modeling System
NEPA	*National Environmental Policy Act of 1969*
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NF	National Forest
NFPA	National Fire Protection Association
NFS	National Forest System
NGDC	National Geophysical Data Center
NHD	National Hydrography Dataset
NHOTIC	National Historic Oregon Trail Interpretive Center
NHT	National Historic Trail
NIEHS	National Institute of Environmental Health Sciences
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Division
NOI	Notice of Intent to File an Application for Site Certificate
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSR	noise sensitive receptor
NTTG	Northern Tier Transmission Group
NWGAP	Northwest Regional Gap Analysis Landcover Data
NWI	National Wetlands Inventory
NWPP	Northwest Power Pool
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic Rivers System
NWSTF	Naval Weapons Systems Training Facility
O_3	ozone
O&M	operation and maintenance
OAIN	Oregon Agricultural Information Network
OAR	Oregon Administrative Rules
OATT	Open Access Transmission Tariff
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHGW	overhead ground wire
OHV	off-highway vehicle
OPGW	optical ground wire
OPRD	Oregon Parks and Recreation Department
OPS	U.S. Department of Transportation, Office of Pipeline Safety
OPUC	Public Utility Commission of Oregon
OR	Oregon (State) Highway
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
ORWAP	Oregon Rapid Wetland Assessment Protocol
OS	Open Space
OSDAM	Oregon Streamflow Duration Assessment Methodology
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Structural Specialty Code
OSWB	Oregon State Weed Board
OWC	Oregon Wetland Cover
P	Preservation
PA	Programmatic Agreement
pASC	Preliminary Application for Site Certificate
PAT	Project Advisory Team
PCE	Primary Constituent Element
PEM	palustrine emergent
PFO	palustrine forested
PGA	peak ground acceleration
PGE	Portland General Electric
PGH	Preliminary General Habitats
Pike	Pike Energy Solutions

PNSN	Pacific Northwest Seismic Network
POD	Plan of Development
POMU	Permit to Operate, Maintain and Use a State Highway Approach
PPH	Preliminary Priority Habitats
Project	Boardman to Hemingway Transmission Line Project
PSD	Prevention of Significant Deterioration
PSS	palustrine scrub-shrub
R	Retention
R-F	removal-fill
RCM	Reliability Centered Maintenance
RCRA	Resource Conservation and Recovery Act
ReGAP	Regional Gap Analysis Project
RFP	request for proposal
RLS	reconnaissance-level survey
RMP	resource management plan
ROD	Record of Decision
ROE	right of entry
RNA	research natural area
ROW	right-of-way
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Sensitive Critical
SEORMP	Southeastern Oregon Resource Management Plan
SF6	sulfur hexafluoride
Shaw	Shaw Environmental and Infrastructure, Inc.
SHPO	State Historic Preservation Office
SLIDO	Statewide Landslide Inventory Database for Oregon
SMS	Scenery Management System
SMU	Species Management Unit
SPCC	Spill Prevention, Containment, and Countermeasures
SRMA	Special Recreation Management Area
SRSAM	Salmon Resources and Sensitive Area Mapping
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil Geographic Database
SUP	special-use permit
SV	Sensitive Vulnerable
SWPPP	Stormwater Pollution Prevention Plan
T/A/Y	tons/acre/year
TDG	Total Dissolved Gas
TES	threatened, endangered, and sensitive (species)
TG	Timber Grazing
TMIP	Transmission Maintenance and Inspection Plan
TNC	The Nature Conservancy
tpy	tons per year
TSD	treatment, storage, and disposal
TV	television
TVES	Terrestrial Visual Encounter Surveys

TVMP	Transmission Vegetation Management Program
UBAR	Umatilla Basin Aquifer Restoration
UBWC	Umatilla Basin Water Commission
UCDC	Umatilla County Development Code
UCZPSO	Union County Zoning, Partition and Subdivision Ordinance
UDP	Unanticipated Discovery Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USGS	U.S. Geological Survey
UWIN	Utah Wildlife in Need
V/C	volume to capacity
V	volt
VAHP	Visual Assessment of Historic Properties
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resource Management
WAGS	Washington ground squirrel
WCU	Wilderness Characteristic Unit
WECC	Western Electricity Coordinating Council
WHO	World Health Organization
WMA	Wildlife Management Area
WOS	waters of the state
WOUS	waters of the United States
WPCF	Water Pollution Control Facility
WR	winter range
WRCC	Western Regional Climate Center
WRD	(Oregon) Water Resources Division
WRP	Wetland Reserve Program
WWE	West-wide Energy
XLPE	cross-linked polyethylene

Exhibit P
Fish and Wildlife Habitat and Species

1.0 INTRODUCTION

Exhibit P to Idaho Power Company's (IPC's) Preliminary Application for Site Certificate (pASC) contains information regarding the potential impacts of the Boardman to Hemingway Transmission Line Project (Project) on State Sensitive[1] fish and wildlife species as well as their habitats along the Oregon portion of the Project,[2] as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(p), paragraphs (A) through (H). Exhibit P contains evidence upon which the Energy Facility Siting Council (EFSC or Council) can make the required findings under OAR 345-022-0060 and conclude that the design, construction, and operation of the Project, taking into account mitigation, will be consistent with the Oregon Department of Fish and Wildlife (ODFW) Habitat Mitigation Goals and Standards contained in OAR 635-415-0025.[3]

2.0 APPLICABLE RULES AND STATUTES

2.1 Approval Standard – OAR 345-022-0060

Pursuant to OAR 345-022-0060, the Council's Fish and Wildlife Habitat Standard:

> *For the Council to issue a site certificate, it must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.*

2.2 Requirements of Exhibit P – OAR 345-021-0010(1)(p)

To demonstrate compliance with this standard, and in accordance with OAR 345-021-0010(1)(p), Exhibit P must include the following:

> *(A) A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.*

> *(B) Identification of all fish and wildlife habitat in the analysis area, classified by the habitat categories as set forth in OAR 635-415-0025 and a description of the characteristics and condition of that habitat in the analysis area, including a table of the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and subtype.*

> *(C) A map showing the locations of the habitat identified in (B).*

> *(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species*

[1] State Sensitive Species are defined by the ODFW as "naturally-reproducing fish and wildlife species, subspecies, or populations which are facing one or more threats to their populations and/or habitats" (OAR 635-100-0040).
[2] Exhibit P does not address federal threatened or endangered species listed under the Endangered Species Act (ESA), or Oregon state-listed endangered or threatened species. ESA listed species and Oregon state-listed species are addressed in Exhibit Q per the requirements found in OAR 345-021-0010(1)(q).
[3] In this Exhibit, IPC's preliminary analysis shows that the Project impacts on fish and wildlife habitat are not consistent with the ODFW fish and wildlife habitat mitigation goals and standards. In order to achieve consistency with applicable standards, IPC will either propose mitigation, refine the Project location to avoid sensitive habitat, or ask the Council to exercise balancing authority under OAR 345-022-0000(2). For additional discussion regarding mitigation, see Section 3.3.6 and Attachment P-7, Habitat Mitigation Plan.

that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.

(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.

(F) A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility.

(G) A description of any measures proposed by the applicant to avoid, reduce or mitigate the potential adverse impacts described in (F) in accordance with the ODFW mitigation goals described in OAR 635-415-0025 and a discussion of how the proposed measures would achieve those goals.

(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).

2.3 Project Order Requirements

The Project Order requires Exhibit P to include the following specific information:

The applicant has proposed a "phased survey" approach for data collection during the site certificate review process. The Department understands that the entire length of the proposed transmission line corridor has not yet been surveyed, mapped for vegetation types, and categorized under ODFW's habitat categorization guidance. (Nor has the applicant defined the exact locations of some related and supporting facilities, such as laydown areas, fly yards, or access roads, all of which also requires completion of surveys prior to construction). Nevertheless, Exhibit P should include as much information as possible about the results of the field surveys conducted to date for various biological resources on state, private, and federal lands, and the schedule for future surveys.

The information should include the survey methodology, exact survey areas, and the results of all surveys for listed wildlife species, raptor nests, aquatic species, and other biological resources. Surveys must be performed by qualified survey personnel during the season or seasons appropriate to the detection of the species in question. The applicant should also include in Exhibit P its preliminary habitat categorization and tables depicting the estimated temporary and permanent impacts, broken down by habitat categories.

If particular fish and/or wildlife habitat are identified within the analysis area that could be significantly affected as a result of the proposed transmission line, the applicant shall include description of the nature, extent and duration of potential adverse impacts and a description of any proposed mitigation measures.

At the time of this writing, the applicant has formed several workgroups related to conducting biological resource surveys. Include in Exhibit P (or as attachments to Exhibit P), the description of each workgroup, its membership, its purpose, and copies of any workplans that the workgroup has developed governing survey methodologies. Provide a copy of any programmatic agreements or memorandums of understanding related to biological resources.

Exhibit P should include analysis of how the evidence provided supports a finding by the Council that the proposed facility meets the Council's fish and wildlife protection standard. Provide proposed site certificate conditions for the Council's consideration

related to requirements for the applicant to complete all unfinished surveys within the project's site boundary prior to construction. The proposed site certificate conditions should also address submittal requirements for reporting future survey results, adjustment of previously calculated impact areas (if necessary), and the applicant's proposed approach to document approval of final results by agencies or the Council prior to commencing construction activities.

OAR 635-044-0130(1) [Nongame Wildlife Protected] states that "it is unlawful for any person to hunt, trap, pursue, kill, take, catch, angle for, or have in possession, either dead or alive, whole or in part," any of the species listed. Exhibit P should include information about the applicant's survey and salvage plan to protect the listed species during construction of the facility. This information may be incorporated into a wildlife monitoring and mitigation plan as an attachment to Exhibit P.

3.0 ANALYSIS

3.1 Analysis Area

Pursuant to the Project Order, the analysis area for Exhibit P is the Site Boundary, which is defined in OAR 345-001-0010(55) as "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant." The Site Boundary for the Project includes the following related and supporting facilities in Oregon:

- Proposed Corridor: 277.2 miles of 500-kilovolt (kV) transmission line corridor, 5.0 miles of double circuit 138/69-kV transmission line corridor, and 0.3 mile of 138-kV transmission line corridor.
- Alternate Corridor Segments: Seven alternate corridor segments consisting of approximately 134.1 miles that could replace certain segments of the Proposed Corridor. IPC has proposed these alternate corridor segments in order to allow flexibility for IPC and EFSC, as well as federal agencies, to reconcile competing resource constraints in several key locations.
- One proposed substation expansion of 3 acres; two alternate substation sites (one 3-acre substation expansion and one new 20-acre substation). IPC ultimately needs to construct and operate only one substation expansion or substation in the Boardman area.
- Eight communication station sites of less than one acre each in size; four alternate communication station sites along alternate corridor segments.
- Temporary and permanent access roads.
- Temporary multi-use areas, pulling and tensioning sites, and fly yards.

The features of the Project are fully described in Exhibit B and the Site Boundary for each Project feature is described in Exhibit C, Table C-21. The location of the Project (Site Boundary) is outlined in Exhibit C.

3.2 Methods

This section discusses the methods used during biological field surveys, as well as how the habitats were categorized in accordance with ODFW Habitat Mitigation Policy (i.e., OAR 635-415-0025). The Revised Final Biological Survey Work Plan (Attachment P-3) contains the agency comments regarding the plan and survey protocols, as well as IPC's responses to these comments (i.e., describing how any concerns by the agencies were addressed).

After consultation with applicable federal and state agencies, IPC determined that field surveys and data collection for the Project would be conducted via a phased study approach, which utilized three phases (see Attachment P-3).[4] During Phase 1 (i.e., the initial desktop review), IPC compiled existing biological information relevant to the Site Boundary. In Phase 2, IPC undertook comprehensive field survey efforts specific to the Site Boundary for the Project. Phase 3 has not yet occurred, but will include all field surveys in previously unsurveyed areas and all preconstruction surveys that may be necessary to identify special status species locations for avoidance and mitigation for compliance with temporal or spatial restrictions. A detailed description of the biological and botanical field surveys performed for the Project is provided in Section 3.3.1 below.

3.3 Information Required by OAR 345-021-0010(1)(p)

3.3.1 Field Surveys and Initial Desktop Review

OAR 345-021-0010(1)(p)(A)

A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.

3.3.1.1 Initial Desktop Review

Existing data were initially researched to determine the preliminary list of species that could potentially occur within the analysis area. Databases and literature from the Oregon Biodiversity Information Center[5] (ORBIC; 2008, 2010, 2012), StreamNet (2011), ODFW (2008), Oregon Department of Agriculture (ODA; 2008), U.S. Department of Agriculture, Forest Service (USFS; 2008), Bureau of Land Management (BLM; 2008), watershed basin plans, the GeoBOB database (BLM 2012), ODFW native fish status report (ODFW 2005), Federal Register notifications, Bonneville Power Administration and Northwest Power and Conservation Council reports, and the National Oceanic and Atmospheric Administration Fisheries Division (NOAA Fisheries; 2009) were reviewed for information on the species that could occur within the analysis area. Moreover, in recognition of the fact that species might occur in an area even in the absence of documented occurrence, local agency experts were consulted and field surveys were conducted, to better identify the list of species that could potentially occur within the analysis area. Consultation with the applicable agencies is described in the following paragraph, while the field surveys conducted to determine baseline conditions are described in Section 3.3.1.4.

3.3.1.2 Development of Field Survey Protocols and Agency Consultation

As required by OAR 345-021-0010(1)(p)(E) and consistent with direction provided to IPC in the Project Order, IPC consulted with state and federal agencies in developing its field survey protocols for the Project. An initial meeting was held on August 22, 2008, in Baker City, Oregon, with land managers and biologists from the ODFW, Idaho Department of Fish and Game (IDFG), USFS, U.S. Fish and Wildlife Service (FWS), NOAA Fisheries, and the BLM. The purpose of this meeting was to establish an interagency / intergovernmental working group that would determine the list of species that could potentially occur near the Project, as well as to identify the surveys and protocols that would be required to identify wildlife species, rare plant species, wetlands, vegetation, and general habitats in the analysis area. Subsequent meetings

[4] Note that the original dates of the phased survey effort proposed in the Biological Survey Work Plan (i.e., Attachment P-3) do not always directly correspond to the dates in which these surveys were actually conducted; many of the surveys outlined in the Biological Survey Work Plan were conducted earlier (i.e., in an earlier year) than proposed in Attachment P-3. See Table P-1 for a list of dates in which surveys were completed.

[5] ORBIC requested that rare species occurrence locations be kept confidential; upon request, they may be available from the Oregon Department of Energy with approval from ORBIC.

with ODFW biologists were held in Baker City on September 30, 2008, and in Pendleton, Oregon, on October 17, 2008. A meeting with the IDFG was held in Boise, Idaho, on February 9, 2009. As a result of these meetings, IPC prepared a draft of the Biological Survey Work Plan, which contained the proposed biological surveys and their protocols. This plan was submitted to agency specialists on February 10, 2009, and on February 17, 2009, IPC met to discuss the plan with the Oregon Department of Energy (ODOE), ODFW, USFS, FWS, NOAA Fisheries, and BLM.

Shortly after meeting with the agenies to discuss the Biological Survey Work Plan, IPC initiated the Community Advisory Process (CAP) to develop a broader range of possible routes for the Project. Following completion of the CAP, a second interagency meeting was held on October 26, 2010, with representatives of the ODFW, BLM, USFS, ODOE, NOAA Fisheries, and FWS, to obtain additional input on species and habitats within the Project's Site Boundary. Input from agency specialists was used to identify the special status species that could occur within the area, those that would require field surveys, and the species targeted during concurrent field surveys. The Revised Final Biological Survey Work Plan (dated April 2011) contains a list of all agency required biological surveys, as well as a detailed description of the final protocols used (Attachment P-3).

3.3.1.3 Survey Access

IPC attempted to gain access rights to all areas that require surveys. On federally and state managed lands, this was accomplished through coordination with the respective agencies. On privately owned lands, individual permission from each landowner is required prior to accessing the land. In some cases, private landowners refused IPC access rights to their lands, so that surveys on such lands could not be completed.

3.3.1.4 Surveys

Table P-1 lists the various biological surveys that were conducted (relative to Exhibit P), the survey protocols that were used, the dates of these surveys, the approximate acreage of area requiring surveys, the total acreage that has been surveyed to date (missing areas related to lands where access to private lands was not granted), and the strategy that will be followed in order to complete a 100 percent survey coverage of the necessary area. These areas are shown in Figures P-1 through P-6.

Table P-1. Biological Surveys Related to Exhibit P

Survey Name	Protocol Used	Total Area Requiring Surveys (acre)	Surveys Completed to Date (acre / date)	Compliance Strategy
Greater Sage-Grouse	ODFW Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (Hagen 2005); see Attachment P-8A	693,130; see Figure P-1	693,130/ April 2012	Aerial Surveys Completed.
Northern Goshawk and American Three-toed Woodpecker	A Field Protocol to Monitor Cavity-Nesting Birds (Dudley and Saab 2003), and the Northern Goshawk Inventory and Monitoring Technical Guide (Woodbridge and Hargis 2006); see Attachment P-8B	808 goshawk and woodpecker calling stations; see Figure P-2	609 goshawk and woodpecker calling stations / July 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Great Gray and Flammulated Owl	Survey Protocol for the Great Gray Owl Within the Range of the Northwest Forest Plan (Quintana-Coyer et al. 2004), and Flammulated Owl Surveys Final Report (Smucker et al. 2008); see Attachment P-8C	569; see Figure P-3	449 / June 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Washington Ground Squirrel	Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtoni*) on State of Oregon Lands (Morgan and Nugent 1999); see Attachment P-8D	16,761; see Figure P-4	10,270 / May 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Raptor Nest	Post-Construction 2008 Aerial Raptor Nest and Greater Sage-Grouse Lek Surveys for the Wild Horse Wind Facility (Jeffrey et al 2008), and Inventory Methods for Raptors (MSRM 2001); also see Attachment P-8E	762,944; see Figure P-5	762,944 / June 2012	Survey Completed

Table P-1. Biological Surveys Related to Exhibit P (continued)

Survey Name	Protocol Used	Total Area Requiring Surveys (acre)	Surveys Completed to Date (acre / date)	Compliance Strategy
Terrestrial Visual Encounter Survey (TVES)	USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006) ; see Attachment P-8F	31,638; see Figure P-6	25,869 / July 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Wetland	U.S. Army Corp of Engineers (USACE) Arid West and Mountains Delineation Supplement, while waters of the U.S. were recorded via the Oregon Streamflow Duration Assessment Method (OSDAM) ; see Exhibit J	1,082 water features; see Figures J-A1 through J-E1 in Exhibit J	1,077 water features / August 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.

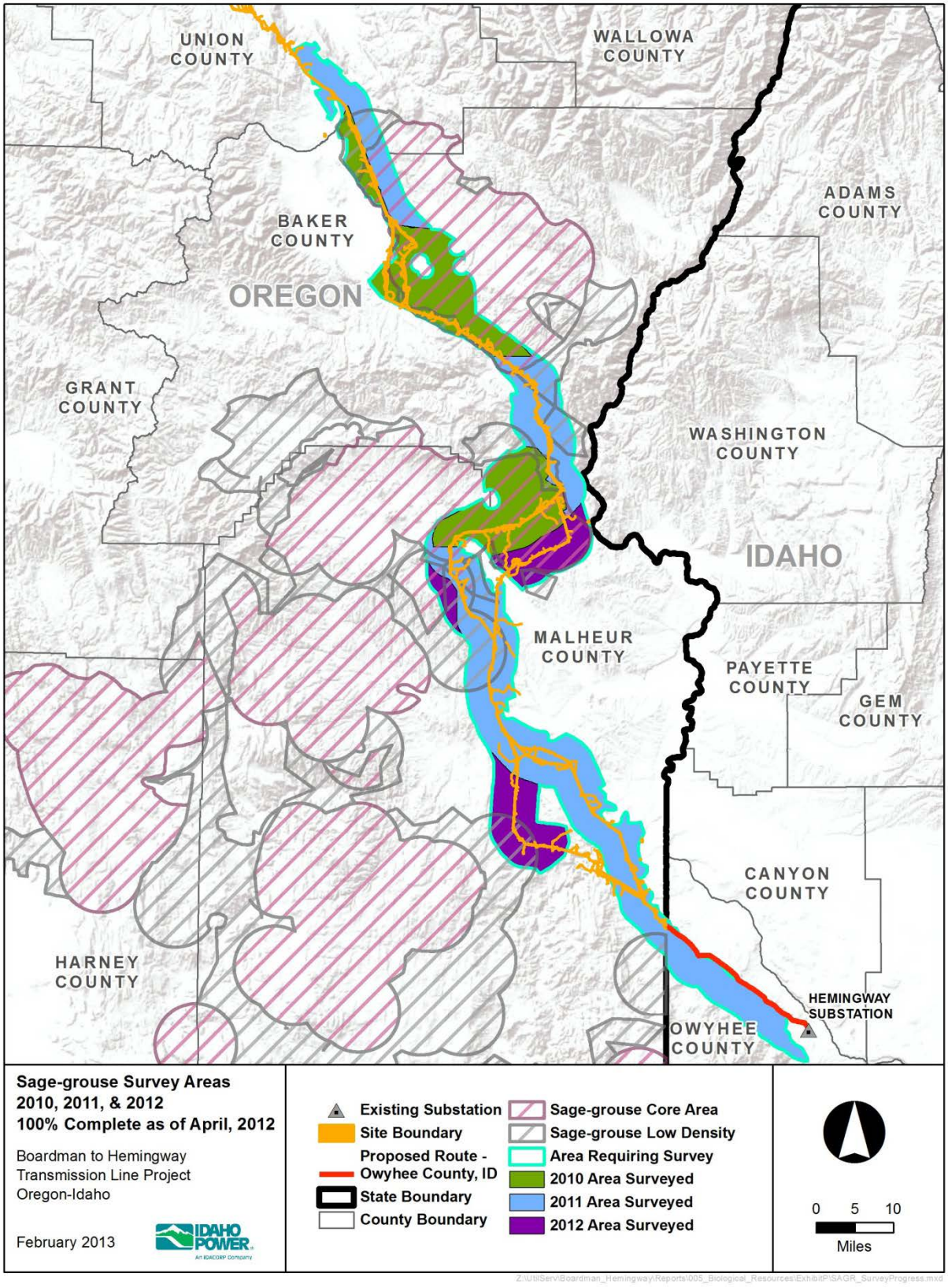


Figure P-1. Sage-Grouse Survey Areas 2010, 2011, and 2012

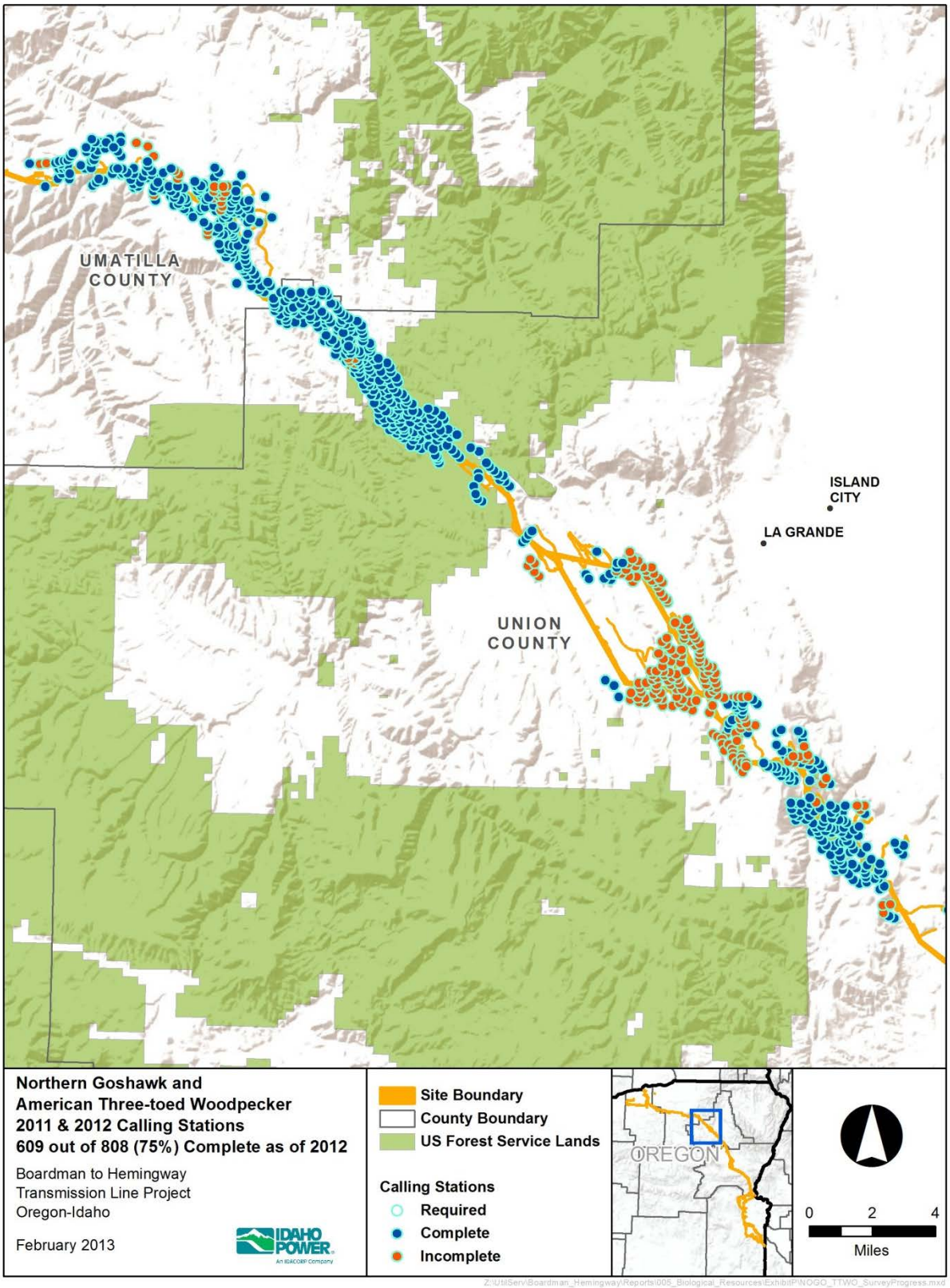


Figure P-2. Northern Goshawk and American Three-toed Woodpecker 2011 and 2012 Calling Stations

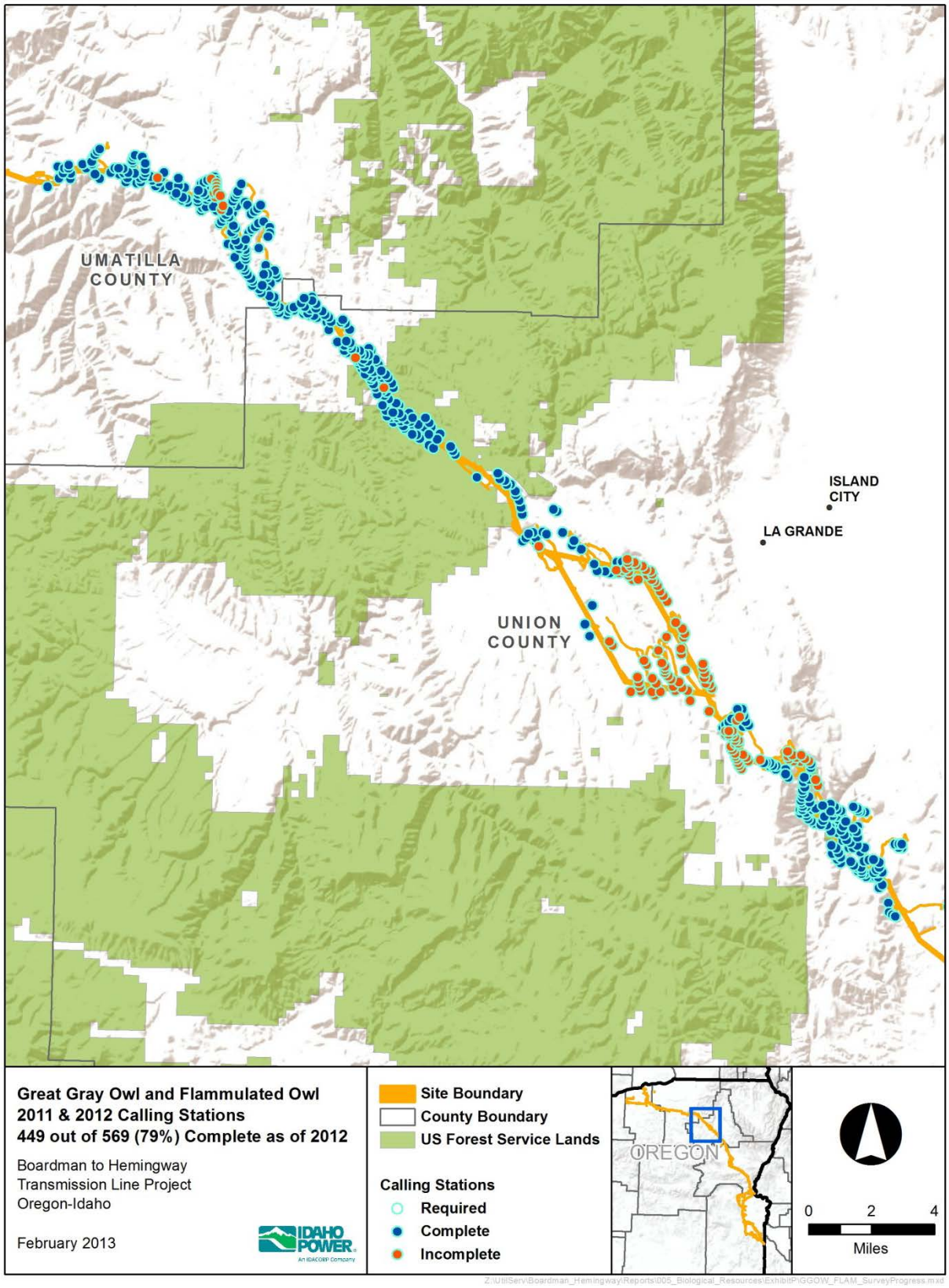


Figure P-3. Great Gray and Flammulated Owl Calling Stations

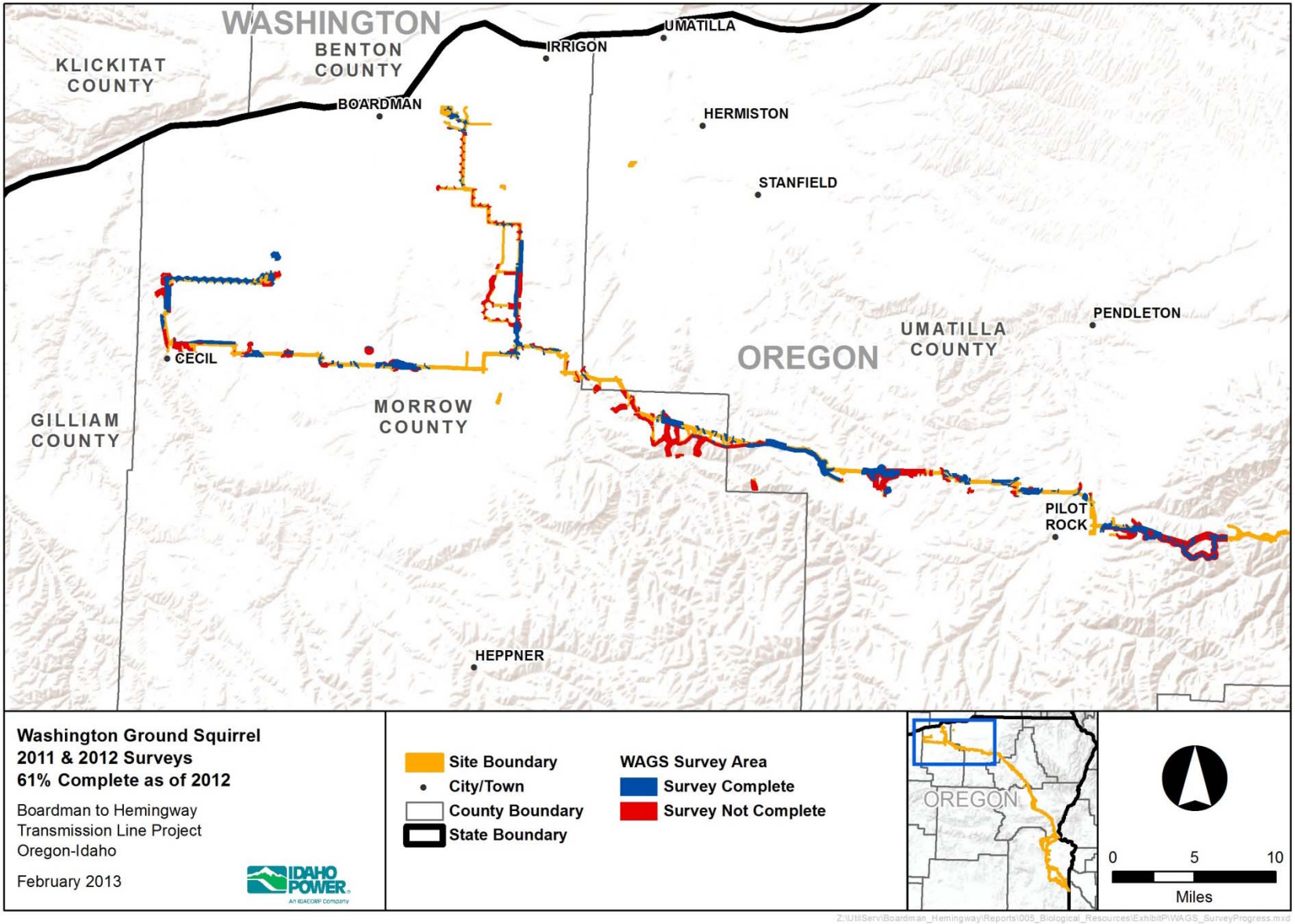


Figure P-4. Washington Ground Squirrel Survey Area

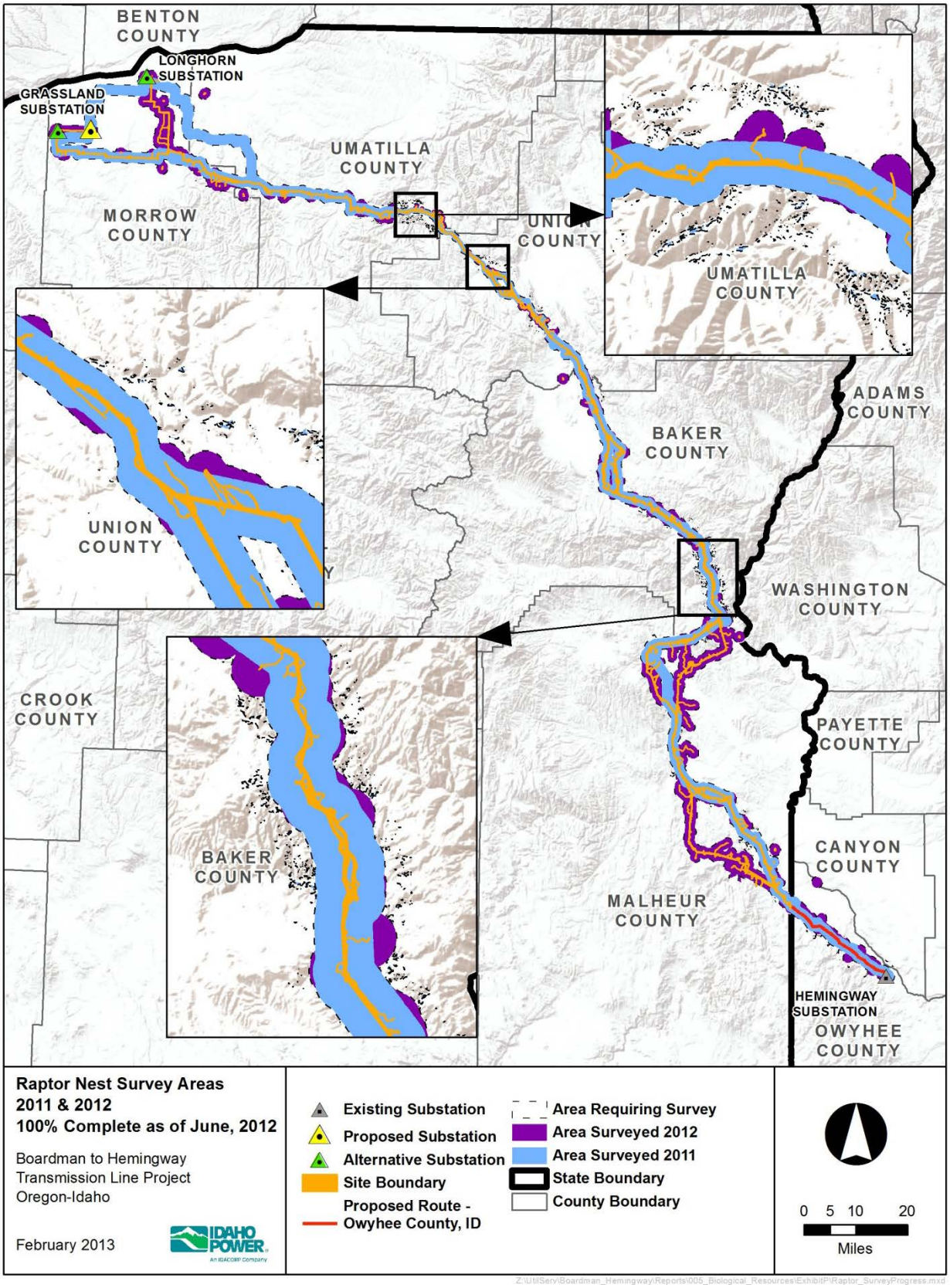


Figure P-5. Raptor Nest Survey Areas 2011 and 2012

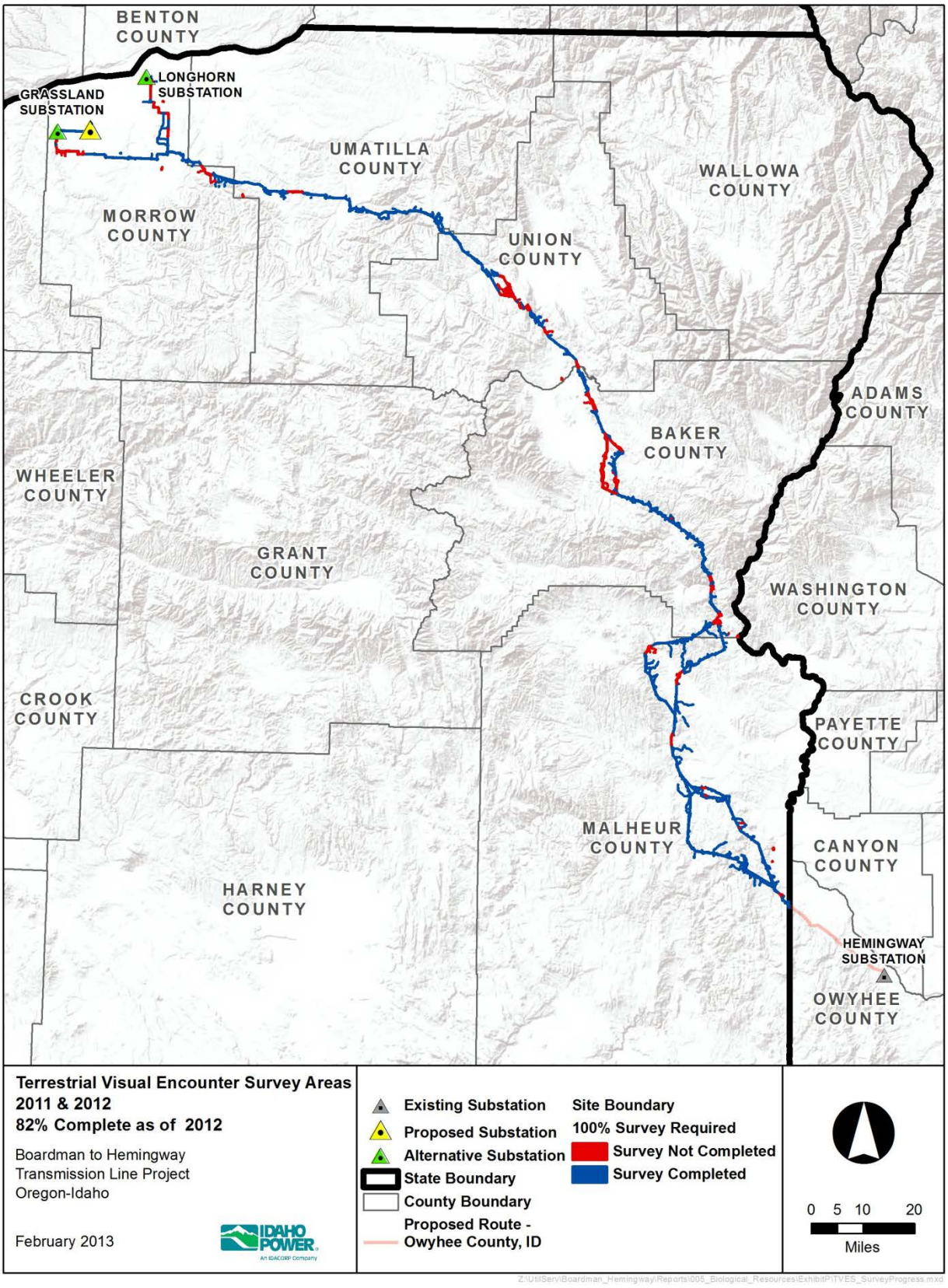


Figure P-6. Terrestrial Visual Encounter Survey Areas 2011 and 2012

Greater Sage-Grouse Surveys

The protocols used during the greater sage-grouse (sage-grouse) surveys followed the survey methods described in the ODFW Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (Hagen 2005). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the Greater Sage-grouse Aerial Surveys Technical Report (Tetra Tech 2011b; Attachment P-8A). The following is a brief summary of the timing and scope of these surveys.

The approach to delineating survey areas for sage-grouse began by identifying where the Project intersected sage-grouse habitat. This process was initially completed using known species distribution and vegetation data. A 3-mile buffer on each side of the Project's centerline was incorporated, with an additional mile to allow IPC flexibility in making siting adjustments if needed. Meetings with both state and federal biologists prior to the 2010 survey effort further refined the survey area based on the agency biologist's familiarity with the species and the quality of habitats within their management districts (see Attachment P-3).

The surveys were designed to be completed over a 2-year period in 2010 and 2011. The 2010 survey area included sections of the Project that were adjacent to known occupied leks. The 2011 survey area included the remainder of potential sage-grouse habitat not surveyed in 2010, and covered areas with lower anticipated occupied lek densities; however, additional surveys were conducted in 2012 to complete surveys in locations where changes had been made to the proposed Project routes or disturbance footprint.

The survey areas were flown by helicopter in transects spaced ¼-mile apart. The helicopter flew 20 to 30 feet above the ground at speeds ranging from 30 to 50 miles per hour (mph). Surveys typically began 15 to 20 minutes before sunrise and continued for 2 hours after sunrise. The survey area was flown twice between March 20 and May 1, 2011, in two separate survey periods. The survey crew used Global Positioning System (GPS) technology for data collection activities. A Trimble GeoXT resource-grade receiver loaded with Terrasync software was used for navigation within the survey area. Sage-grouse observations were marked using Garmin hand-held GPS units. Corresponding notes were written on ODFW paper flight logs and observation forms. Pictures were taken at each observation site. Aerial lek searches were performed using a Bell 206 Jet Ranger operated by JL Aviation out of Boring, Oregon. The lead observer was Mike Schlegel, a retired regional wildlife biologist with IDFG. Both JL Aviation and Mr. Schlegel have several years of experience flying sage-grouse and other wildlife surveys for ODFW. URS Corporation of Boise, Idaho, coordinated survey efforts and provided a second observer.

Northern Goshawk and American Three-toed Woodpecker Surveys

The protocols used during the northern goshawk and American three-toed woodpecker surveys were based on the survey methods described in Dudley and Saab (2003) and Woodbridge and Hargis (2006). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the Northern Goshawk and Three-Toed Woodpecker Surveys Technical Report (Tetra Tech 2011c; Attachment P-8B). The following is a brief summary of the timing and scope of these surveys.

Northern goshawks and American three-toed woodpeckers use similar habitat types (mature conifer and mixed-conifer forests), and protocol surveys for these two species are carried out at approximately the same time of year. Therefore, surveys for northern goshawk and three-toed woodpecker were carried out concurrently. The survey area for both birds included the Site Boundary as well as a 0.5-mile buffer on either side of the Site Boundary within suitable habitat.

As habitat requirements for the goshawk and three-toed woodpecker consist of high elevation forest, habitat was restricted to the Blue Mountains, from mileposts 85 to 125. Pre-field data collection included establishing the survey area and identifying calling stations. Calling stations were placed at least 0.1 mile away from each other, and took advantage of topography to maximize calling efficacy when possible, for example by placing stations along a ridgetop. A total of 818 calling stations were established. In the field, calling stations were visited by field staff. Field surveys took place over three survey periods during spring and summer of 2011, with each species being surveyed for twice. The first survey took place April 19–27 for three-toed woodpecker, the second June 7–14 for both species, and the third July 19–25 for northern goshawk. Recorded calls of the northern goshawk and American three-toed woodpecker were played at such a volume that they could be heard at least 650 feet away. If a response by one of the two target species was noted, a nest search immediately followed.

Great Gray and Flammulated Owl Surveys

The protocols used during the great gray owl and flammulated owl surveys were based on the survey methods described in Quintana-Coyer et al. (2004) and Smucker et al. (2008). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the Great Gray and Flammulated Owl Surveys Technical Report (Tetra Tech 2011d; Attachment P-8C). The following is a brief summary of the timing and scope of these surveys.

Because both great gray owls and flammulated owls are nocturnal and both use higher-elevation forested habitat, surveys for these two species were carried out concurrently. As habitat requirements for the gray owl and flammulated owl consist of high elevation forest, habitat was restricted to the Blue Mountains from mileposts 85 to 125. The survey area was a 0.25-mile buffer around the Site Boundary within suitable habitat. Pre-field activities included establishing the survey area and identifying calling stations. A total of 598 calling stations within suitable habitat were designated, at least 0.1 mile apart from each other. Surveys for these two owl species took place over three survey periods during spring and summer of 2011, with each species being surveyed for twice. Survey periods were March 21–30 for great gray owl, May 16–25 for both owls, and June 20–27 for flammulated owl. At each calling station, surveyors played the appropriate calls for that survey period, and listened for a response. If a great gray or flammulated owl was heard responding vocally to the call, the direction and distance to the responding owl was estimated, and a nest search was conducted the following day during daylight hours.

Washington Ground Squirrel Surveys

Washington ground squirrels are a state listed species, and are therefore addressed in Exhibit Q. However, the surveys for this species informed the Habitat Categorization process (see Section 3.3.2) and are therefore discussed in Exhibit P as well.

The protocols used during the Washington ground squirrel surveys were based on the survey methods described in Morgan and Nugent (1999). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the Washington Ground Squirrel Surveys Technical Report (Tetra Tech 2011e; Attachment P-8D). The following is a brief summary of the timing and scope of these surveys.

During surveys, a crew of 2 to 8 biologists walked meandering line transects, each spaced 165 feet (50 meters) apart, to provide survey coverage of the habitat within the Site Boundary as well as a 785-foot buffer around the Site Boundary. The surveys were conducted between

approximately 7:30 a.m. and 3:00 p.m. Surveys were not conducted when wind conditions were above 15 mph. Professional judgment was used when wind speeds were greater than 6 mph or when visibility was poor, as both of these conditions could limit the observer's ability to detect alarm calls or observe sign. Surveys commenced at least one hour after sunrise to allow for temperatures to increase sufficiently to support ground squirrel activity. The survey area was surveyed twice, once in April and once in May of 2011, to correspond with the highest Washington ground squirrel activity period when juveniles have emerged and alarm calls are most frequent.

Colonies were designated active when Washington ground squirrel activity was confirmed through visual detection of a squirrel, audio confirmations (hearing alarm or social calls), and/or fresh Washington ground squirrel scat near burrows. Scat samples were collected at active burrows for confirmation of squirrel presence. A burrow was identified as potentially active if it was a hole that was freshly dug (no vegetation or cobwebs) and was structurally sound and the appropriate size for this species, but no other Washington ground squirrel sign (scat, visual, audio) was observed. Each site was resurveyed approximately two weeks after the first survey; spacing the surveys apart by roughly two weeks ensured that ground squirrel activity would be captured despite any local differences in activity level throughout the season. During the second survey, all potential burrows identified during the first survey were revisited and any confirmed activity was documented. During the second survey, 165-foot-wide transects were walked perpendicularly to the first survey transects in order to maximize coverage of the habitat. In areas where no or few potential burrows were found during the first survey, surveyors had the option of walking offset transects parallel to, but between, the original transects (i.e., offset by roughly 82 feet). Any potential burrows identified during the first survey were approached at a 90 degree angle during the second survey to minimize the chance of missing a visual or audio detection due to landscape features or prevailing wind directions.

Raptor Nest Surveys

The protocols used during the raptor nest surveys, as well as the exact details and justifications of these protocols, are detailed in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the Raptor Nest Aerial Surveys Technical Report (Tetra Tech 2011f; Attachment P-8E). The following is a brief summary of the timing and scope of these surveys.

The initial review for raptor nest locations included analysis of raptor nest locations and habitat data from Idaho Natural Heritage Program (INHP), Oregon Biodiversity Information Center (ORBIC), and agency historical records. The survey areas were flown by helicopter carrying two observers and the pilot. The helicopter flew at a distance of approximately 0.25 mile from the Site Boundary to allow observers to see out to the 0.5-mile buffer distance and back to the Site Boundary. Another transect was flown at 0.75 mile from the Site Boundary to allow observers to see out to the 1.0-mile buffer distance and back to the 0.5-mile buffer distance. Due to the low visibility within forested habitats, transects were flown at closer intervals (typically 0.25-mile transect spacing) within these areas. When golden eagle habitat occurred within the area, an intuitive search method was used to focus on cliff, canyon, and rock outcrops out to 2 miles. Both sides of the Site Boundary were surveyed in this manner. Raptors and their nests were also documented if observed during other surveys (e.g., the Terrestrial Visual Encounter Surveys, as well as the northern goshawk and owl surveys).

Surveys were performed twice during the breeding season. The first survey occurred between March 22 and April 1, 2011. This timeframe corresponded with late courtship and incubation or hatchling/nestling stages of most raptors expected within the analysis area. Due to weather and

scheduling conflicts, the first survey was not completed in this time and had to be finished on April 16 and 17, 2011. The first survey period for raptors was flown concurrently with the 2011 sage-grouse survey within the sage-grouse survey area. The second survey took place from June 6 to June 12, 2011. This timeframe corresponded with the late nesting and early fledgling period for many raptors. It also allowed the survey crew to identify nests of later breeding species such as Swainson's hawks or any second nesting attempts of earlier nesting raptors. Surveys were conducted between sunrise and sunset. Additional surveys were conducted in 2012 in order to capture changes that were made to the Proposed Corridor as well as the alternate corridor segments.

Terrestrial Visual Encounter Survey (TVES)

The protocols used during the Terrestrial Visual Encounter Surveys (TVES) were adapted from the USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Tetra Tech 2011a; Attachment P-3), as well as the TVES Technical Report (Tetra Tech 2012; Attachment P-8F); the following is a brief summary of the timing and scope of these surveys.

The TVES are walking surveys that identify species presence through evidence of use. TVES include visual and auditory confirmation of a species, and evidence of sign such as burrows, nests, feathers, fecal material, and tracks. The focus of the TVES was on special status species (e.g., ESA listed species, state listed species, State Sensitive Species) as well as their habitat; however, all species encountered during TVES were identified to the extent practical. In addition, special status species were surveyed concurrently with other Project related protocol surveys using the TVES method (Manley et al. 2006). In addition to functioning as a general wildlife survey, TVES also recorded ecological systems, noxious weed populations, unique habitats, potential wetlands, and areas where proposed roads may cross streams or drainages.

The survey area for the TVES is the Site Boundary. To conduct the TVES, three observers systematically surveyed the Site Boundary for wildlife and their sign, and documented vegetation communities by traversing the Site Boundary along evenly spaced meandering transects. One observer walked the centerline while the other two observers walked at a distance of 150 feet to 175 feet from either side of the centerline. This methodology allowed the observers to cover the entire corridor in one pass. Three observers were used to reduce observer fatigue, improve consistency in identifications by comparing observations, and provide a second opinion for difficult identifications.

Wetland Surveys

The following is a brief summary of the timing and scope of wetland surveys; however, see Exhibit J as well as the Revised Final Biological Survey Work Plan (Tetra Tech 2011a) for more details.

Wetlands were delineated using the U.S. Army Corp of Engineers (USACE) Arid West and Mountains Delineation Supplement, while waters of the U.S. were recorded via the Oregon Streamflow Duration Assessment Method (OSDAM). The OSDAM form documents stream flow duration (i.e., if the stream is classified as perennial, intermittent, or ephemeral). This determination is largely based on the presence or absence of macroinvertebrates and wetland plant species, as well as the slope of the waterbody bed if macroinvertebrates are not present. The OSDAM forms for each of the waters of the U.S. can be found in the various wetland survey technical reports referenced in Exhibit J.

The survey area used for wetland and waters surveys was the Site Boundary. Surveys occurred from June 24 to October 7, 2011. Surveys in Oregon started in Morrow County then moved to Umatilla, Malheur, Baker, and finally Union counties. This order was used to capture the lower elevation areas in Oregon first, where wetlands would be harder to identify as the season progressed, before moving to higher elevations where wetlands would be easier to identify later in the season.

Preconstruction Surveys

Preconstruction surveys will be implemented for select species, including the State Sensitive Species addressed within this Exhibit and the nongame wildlife species listed in OAR 635-044-0130(1), to determine the on-site conditions prior to construction (see Table 1 of the Revised Final Biological Survey Work Plan [Attachment P-3 of this Exhibit] for a list of species targeted during preconstruction surveys). These surveys will aid in determining if any additional areas have become occupied by targeted species since the initial Phase 2 surveys. The results of these preconstruction surveys will be used to microsite Project components outside of occupied areas to the extent feasible. Preconstruction surveys will also be required in certain areas if the Project's route or areas of disturbance change after Phase 2 surveys have been conducted (e.g., the surveys discussed above), or where access to private lands has been previously denied.

Preconstruction surveys may also include surveys for active raptor nests, as well as migratory bird nest surveys or specific plant species as appropriate. Where possible, all vegetation clearing and grubbing will be performed prior to nesting (dates varies by region and species; but are typically between April and June), which would negate the need to conduct preconstruction nest surveys for most migratory birds.

The ODFW has provided guidance on Washington ground squirrel preconstruction surveys, and has indicated that surveys for this species are good for 3 years (i.e., the year of survey and 2 years after). Therefore, preconstruction surveys will be required for the Washington ground squirrel because construction will occur after 2013.

3.3.2 Habitat Categorization

OAR 635-415-0025 defines the ODFW Fish and Wildlife Habitat Mitigation Policy and provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The definition of each category type, as well as the mitigation goals for these category types are listed in Table P-2. Habitats located within the analysis area were classified into these six category types in accordance with OAR 635-415-0025 (see Attachment P-10). Data from the Regional Gap Analysis Project (ReGAP) were used as the base layer for this effort. ReGAP contains wetland location/spatial information; however, more accurate wetland data are available. Therefore, ReGAP data were augmented with data from the Oregon Wetland Cover (OWC) database to more accurately depict currently available wetland data. Vegetation community and habitat condition information collected during surveys (e.g., wetland data collected during wetland surveys, as well as vegetation type and exotic species percent-cover collected during TVES surveys) were used to further refine the base-layer data (e.g., the results of vegetation data collected during surveys superseded ReGAP data). Wildlife data collected during surveys were then overlaid onto this base-layer using ArcGIS.

Fish presence plays a role in the categorization of stream habitats (see Attachment P-2). Fish were assumed present in all perennial streams, while fish were assumed present in intermittent streams if the OSDAM data indicated that the stream contained macro-invertebrates, or if

ODFW and IDFG biologists indicated that an intermittent stream contained fish when water is present.

Attachment P-2 contains the metrics and habitat components used to classify habitats into these six category types, based on the presence of habitat characteristics and species observations. These metrics and habitat components were first reviewed by land managers and biologists from the ODFW, USFS, USFWS, NOAA, and the BLM during the interagency meetings (as discussed in Section 3.3.1). Additional meetings to discuss these methods as well as the preliminary habitat categorization maps were held with the ODFW in September 2011 and with the BLM, ODFW, USFS, USFWS, ODOE, and the BLM in November 2011 and September 2012.

Table P-2. Habitat Categorization Types

Category Type	Definition	Mitigation Goal
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.	The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality. (b) The Department shall act to protect Category 1 habitats described in this subsection by recommending or requiring: (A) Avoidance of impacts through alternatives to the proposed development action; or (B) No authorization of the proposed development action if impacts cannot be avoided.[1]
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.	The mitigation goal if impacts are unavoidable is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality. (b) The Department shall act to achieve the mitigation goal for Category 2 habitat by recommending or requiring: (A) Avoidance of impacts through alternatives to the proposed development action; or (B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. (c) If neither 635-415-0025(2)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Table P-1. Habitat Categorization Types (continued)

Category Type	Definition	Mitigation Goal
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	The mitigation goal is no net loss of either habitat quantity or quality. (b) The Department shall act to achieve the mitigation goal for Category 3 habitat by recommending or requiring: (A) Avoidance of impacts through alternatives to the proposed development action; or (B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. (c) If neither 635-415-0025(3)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.
4	Important habitat for fish and wildlife species.	The mitigation goal is no net loss in either existing habitat quantity or quality. (b) The Department shall act to achieve the mitigation goal for Category 4 habitat by recommending or requiring: (A) Avoidance of impacts through alternatives to the proposed development action; or (B) Mitigation of impacts, if unavoidable, through reliable in-kind or out-of-kind, in-proximity or off-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. (c) If neither 635-415-0025(4)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality. (b) The Department shall act to achieve the mitigation goal for Category 5 habitat by recommending or requiring: (A) Avoidance of impacts through alternatives to the proposed development action; or (B) Mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat. (c) If neither 635-415-0025(5)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Table P-1. Habitat Categorization Types (continued)

Category Type	Definition	Mitigation Goal
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	The mitigation goal is to minimize impacts. (b) The Department shall act to achieve the mitigation goal for Category 6 habitat by recommending or requiring actions that minimize direct habitat loss and avoid impacts to off-site habitat.

Note: Text is taken from OAR 635-415-0025.

[1] Note, however, that the Council may authorize impacts to Category 1 habitat if it determines that (1) a facility does not or cannot meet the fish and wildlife standard and (2) the overall public benefits of the facility outweigh the damage to the resources protected by the fish and wildlife habitat standard. *See* OAR 345-022-0000(b).

Because surveys have not been completed to date within all areas requiring surveys (due to limitations on access to private lands) there are areas where survey information is not currently available. In these areas, ReGAP, agency designated habitats (e.g., ODFW designated big game habitats), known occurrences of special status species, and conditions in adjacent surveyed areas were used to approximate the appropriate category type. For example, to estimate the current land conditions found in the areas that were not surveyed, aerial photo interpretation was used to compare unsurveyed areas to surveyed areas located directly adjacent to the unsurveyed area (e.g., if a survey conducted in a sagebrush habitat determines that it is of high quality with few invasive species, and an unsurveyed area directly adjacent is similar in appearance to the surveyed area based on aerial images, then the unsurveyed area would be classified in accordance with the conditions found in the surveyed area). Complete coverage of the survey areas will be required as a condition of issuance of the Site Certificate for the Project. The habitat categorization, as well as the associated impact values and mitigation requirements, will be recalculated once complete survey information is obtained.

3.3.3 Fish and Wildlife Habitats

OAR 345-021-0010(1)(p)(B)

Identification of all fish and wildlife habitat in the analysis area, classified by the habitat categories as set forth in OAR 635-415-0025 and a description of the characteristics and condition of that habitat in the analysis area.

This section describes the fish and wildlife habitats that occur within the analysis area. It first describes the general habitat types found in the area, and the general condition and composition of these habitats. It then discusses the ODFW Habitat Categories (as defined in OAR 635-415-0025), and where they occur along the Project. The acres of impact that would occur to the ODFW Habitat Category Types are disclosed in Section 3.3.6.

3.3.3.1 General Fish and Wildlife Habitat Types

The analysis area encompasses multiple general vegetation communities and waterbody types that serve as fish and wildlife habitats. The six major habitat types present are (1) grassland/shrubland, (2) forest/woodlands, (3) wetlands, (4) agricultural/developed, (5) bare ground/cliffs/talus, and (6) open water. The vast majority of the analysis area consists of grassland/shrubland. Grasslands and shrublands in the analysis area differ in structure and species composition depending on the ecoregion, elevation, soil conditions, moisture regimes, and fire history present in the area. However, these communities typically occur on dry flats and plains, rolling hills, saddles, and ridges where precipitation is low. They are dominated by forbs, grasses, and shrub species. Fire has historically played an important role in maintaining

grassland and shrubland communities, and served as a cyclical disturbance regime (ODFW 2006). Forests are rare within the analysis area and occur primarily in the Blue Mountains region. Agricultural/ developed lands are common in Morrow and Umatilla counties, and are less common in the other three Oregon counties crossed by the Project (i.e., Union, Baker, and Malheur counties). Wetlands are areas where water saturation is the dominant factor that determines the soil type/development, as well as the types of plants and animals that can inhabit these areas (Cowardin et al. 1979); wetlands are sparsely distributed in the analysis area, but are found in all counties crossed by the Project in Oregon (see Exhibit J). Waterbodies are also limited in the analysis area, which encompasses mostly arid and semiarid lands with low precipitation. Most streams in the analysis area are intermittent, and are fed by stormwater. Bare ground, cliffs, and talus cover only small areas of land at each occurrence, and are rare in the analysis area.

Each of the general vegetation communities and waterbody types, discussed above, can be further defined into subtypes based on the dominant plant species found within a vegetation community, or the hydraulic regime that controls the waterbody. Refining these general vegetation/waterbody types into subtypes is important when discussing fish and wildlife use because species composition can differ according to the specific conditions found within each subtype. For example, the wildlife species composition found in a forested wetland would likely be different from what would be found in an emergent wetland. Table P-2 describes the general vegetation/waterbody types as well as the subtypes found within the analysis area based on ReGAP and field survey data.

Note that the ReGAP data used as the initial base layer (see Section 3.3.2) identified vegetation types within the Analysis Area that were not found in the field during surveys. ReGAP data identified “Mixed Tamarack” and “Lodgepole Pine” communities within the Analysis Area. Although tamarack and lodgepole pine trees were identified in the field during surveys, their extent was not sufficient in any area for that area to be classified as a “Mixed Tamarack” or “Lodgepole Pine” community. These two species were therefore included in the “Mixed Grand Fir/Douglas Fir” communities during surveys, as these two species are often consistered a component of this vegetation type. In addition, ReGAP data identified “Rocky Mountain Aspen” and “Subalpine/Montane Forest” communities within the Analysis Area; however, surveys did not identify any areas that contained the habitat elements necessary to be classified as either of these two communities. These four habitat types are presented in Table P-3 in order to maintain consistency with the base data layer (i.e., ReGAP) and for data tracking purposes; however, they were not carried forward in the impact analysis because classifications based on field survey data superseded the ReGAP data (see Section 3.3.2).

3.3.3.2 ODFW Habitat Categorization Types

As discussed above, the ODFW has developed a Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025) that provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The vegetation and waterbody types located within the analysis area (see Section 3.3.3.1) were assigned a category type between 1 and 6, as discussed in Section 3.3.2. Table P-4 lists the acres of each category type, by habitat, located within the analysis area; however, these numbers do not directly relate to impacts because portions of the analysis area would not be impacted (the acres of impact that would occur to the ODFW Habitat Category Types are disclosed in Section 3.3.6).

Table P-3. Description and Definition of General Habitat Types within the Analysis Area

General Vegetation Type	Habitat Type	Description
Agriculture / Developed	Agriculture	Agricultural areas within Idaho and Oregon vary in composition on an annual basis. Cultivated croplands and modified grasslands are plowed and harvested seasonally, while pastures are mowed, hayed, or grazed one or more times a year.
	Developed / Disturbed	Developed areas typically contain non-native vegetation, in the form of landscaping around buildings and homes, as well as invasive-plants that have become established in disturbed landscapes.
Bare Ground	Bare Ground, Cliffs, Talus	Bare ground or areas with limited vegetation consist of lands where the endemic site conditions are unsuitable for consistent vegetative communities to develop, and where the predominant habitat features are related to geological structures as opposed to vegetative components. These areas include cliffs, rock, and talus habitats, as well as areas where soil conditions prohibit the growth of most plant species.
Open Water / Unvegetated Wetland	Ponds and Lakes	Ponds and lakes are permanently flooded lands lying below the deep-water boundary of wetlands, which do not fall into the river and stream classifications.
	Perennial Streams	Perennial streams consist of waterbodies that have a year-round flow of water.
	Intermittent Streams	Intermittent streams consist of waterbodies that do not have a year-round flow of water.
Forest / Woodland	Mixed Grand Fir/Douglas Fir	The mixed grand fir / Douglas-fir community is the most common forest community found within the analysis area. As the name implies, this community is dominated by grand fir (*Abies grandis*) and Douglas-fir (*Pseudotsuga menziesii*). Douglas-fir is typically the most dominant species, but begins to decrease in abundance as elevations increase; ultimately being replaces by *Abies* and *Pinus* species at higher elevations (Franklin and Dyrness 1988).
	Mixed Tamarack	Mixed tamarack stands are fairly common within the Blue Mountains ecoregion, and this is the third most common forest type crossed by the Project. Stands are dominated by western larch (*Larix occidentalis*). Very young stands can appear to consist entirely of western larch; however, other species are typically in the understory. Other tree species typically found within these communities consist of Douglas-fir, ponderosa pine (*Pinus ponderosa*), grand fir, lodgepole pine (*Pinus contorta*), and mountain hemlock (*Tsuga mertensiana*; USFS 2011).
	Lodgepole Pine	The lodgepole pine community is both an early seral on recently disturbed sites as well as a climax community typically found on broad, level, pumice flats. Lodgepole pine is the dominant tree species in this community, and typically occurs in pure or near pure stands, regardless of seral stage. Lodgepole pine is capable of growing throughout a wide range of moisture regimes from the edge of the shrub steppe zone to seasonally flooded wetlands; thus, the understory vegetation varies widely along with moisture regime (Franklin and Dyrness 1988).

Table P-3. Description and Definition of General Habitat Types within the Analysis Area (continued)

General Vegetation Type	Habitat Type	Description
Forest/Woodland (cont.)	Ponderosa Pine	The ponderosa pine community is typically an open woodland, and contains a variety of common tree species that vary based on elevation and moisture regime. This community is common in much of the Blue Mountains, and is the second most common forest type crossed by the Project. Ponderosa pine forests are found in the arid transition zone between shrub steppe and higher elevation forests. The ponderosa pine zone in the analysis area is typically dominated by ponderosa pine, Douglas-fir, grand fir, lodgepole pine, western larch, western juniper, and quaking aspen (*Populus tremuloides*; Franklin and Dyrness 1988).
	Rocky Mountain Aspen	This community is found within the montane and subalpine zones. It is dominated by aspen, and lack a significant conifer component (CNHP 2005).
	Subalpine/Montane Forest	Dominant species within this forest community are subalpine fir (*Abies lasiocarpa*), Engelman's spruce (*Picea engelmannii*), and lodgepole pine; however, species compositions often vary based on variations in stand age, elevation, and individual site characteristics. Additional tree species that may be found in this community include western larch and grand fir (Franklin and Dyrness 1988).
	Western Juniper/Mountain Mahogany Woodland	This community could be described as a transition zone between shrubland and woodland/forest communities, as it is often found within the ecotone between the lower edge of the ponderosa pine forest community and the shrub-steppe community, often in very dry areas. The structure of this woodland type is widely spaced trees, a discontinuous shrub layer, and an herbaceous layer dominated by grasses. The overstory is dominated by western juniper (*Juniperus occidentalis*) and mahogany species (*Cercocarpus* spp.) with scattered ponderosa pine as well (Franklin and Dyrness 1988). Dominant shrubs may include big sage, antelope bitterbrush, rabbitbrush (*Chrysothamnus nauseosus*), and wax currant (*Ribes cereum*). The herbaceous layer is dominated by wheatgrass and Idaho fescue (Franklin and Dyrness 1988).
	Forested-Other	This broadly defined vegetation type includes a variety of plant communities present in the analysis area that either represents a small percentage of the total geographic area studied, or have been disturbed and do not fit into other vegetation classifications. It includes recently burned forests (stand replacing burns), as well as recently harvested areas.
Shrub / Grass	Native Grasslands	Grassland communities (or steppe communities lacking a major shrub component) are not common in the analysis area. Poor soil conditions, as well as a short fire return interval, often prevent these grassland communities from transitioning into a shrub dominated community (Franklin and Dyrness 1988). Various species of Poa, Festuca, and Agropyron dominate these communities.
	Desert Shrub	Desert shrub communities contain saline and very alkaline soils that support various saltbrush species (*Atriplex* spp.), as well as grasses such as Sandberg bluegrass (*Poa secunda*) and basin wildrye (*Elymus cinereus*; Franklin and Dyrness 1988).

Table P-3. Description and Definition of General Habitat Types within the Analysis Area (continued)

General Vegetation Type	Habitat Type	Description
Shrub / Grass	Shrub-Steppe with Big Sage	Shrub-steppe communities are widespread in the analysis area. These communities are dominated by bunchgrasses such as wheatgrass (*Agropyron spicatum*), Idaho fescue, and Sandberg bluegrass, as well as shrub species. Within this particular shrub-steppe community, the dominant shrub species is big sage (*Artemisia tridentata*; Franklin and Dyrness 1988).
	Shrub-Steppe without Big Sage	This shrub-steppe community is similar to the community described previously, except that it is typically dominated by shrub species such as curl-leaf mountain-mahogany (*Cercocarpus ledifolius*) or antelope bitterbrush (*Purshia tridentata*) instead of big sage (Franklin and Dyrness 1988).
	Other	This broadly defined shrubland type includes a variety of plant communities present in the analysis area that either represents a small percentage of the total geographic area studied, or have been disturbed and do not fit into other vegetation classifications.
Wetland	Emergent Wetland	Emergent wetlands are defined by the lack of significant shrub or tree cover (Cowardin et al. 1979). This wetland type is variable and can occur over a variety of locales, including arid-climate ephemeral depressions, wet alpine meadows, and bogs. Vegetation is also variable based on the locale, but includes species adapted to prolonged inundation or soil saturation. Vegetation found in emergent wetlands may include grasses, sedges, rushes, and other forbs adapted to wet conditions.
	Scrub-Shrub Wetland	Scrub-shrub wetlands are identified by the dominance of woody vegetation less than 20 feet in height, which may include both shrubs and sapling trees (Cowardin et al. 1979). This wetland type can also occur over a wide range of elevations. Willows often dominate scrub-shrub wetlands.
	Forested Wetland	Forested wetlands are identified by the dominance of woody vegetation more than 20 feet in height (Cowardin et al. 1979). Common species found in forested wetlands include black cottonwood (*Populus trichocarpa*), quaking aspen, and hawthorn (*Crataegus douglasii*).
	Wetland-Other	This category encompasses areas that meet the criteria for being a wetland, but do not fit into the definitions for any of the other three wetland types.

Table P-4. Acres of Habitat Category Types within the Analysis Area[1]

General Vegetation Type	Habitat Type	ODFW Habitat Category Types (acres)						
		1	**2**	**3**	**4**	**5**	**6**	**Total**
Agriculture / Developed	Agriculture[2/]	0.2	275.5	80.7	155.8	-	3,634.4	**4,146.6**
	Developed / Disturbed[2/]	6.0	77.0	3.1	-	-	78.3	**164.4**
Bare Ground	Bare Ground, Cliffs, Talus	22.9	23.6	-	-	-	-	**46.5**
Open Water / Unvegetated Wetland	Ponds and Lakes	0.5	0.5	-	-	0.3	-	**1.3**
	Perennial Streams	-	12.2	-	-	-	-	**12.2**
	Intermittent Streams	0.1	5.3	-	3.2	-	-	**8.6**
Forest / Woodland	Mixed Grand Fir/Douglas Fir	-	632.3	741.6	-	-	-	**1,373.9**
	Mixed Tamarack	-	-	-	-	-	-	**-**
	Lodgepole Pine	-	-	-	-	-	-	**-**
	Ponderosa Pine	-	502.3	307.4	-	-	-	**809.7**
	Rocky Mountain Aspen	-	-	-	-	-	-	**-**
	Subalpine/Montane Forest	-	-	-	-	-	-	**-**
	Western Juniper/Mountain Mahogany Woodland	-	117.4	-	-	-	-	**117.4**
	Forested-Other	-	-	6.9	-	-	-	**6.9**
Shrub / Grass	Native Grasslands	214	3,000.1	1,195.3	215.7	3.1	-	**4,628.2**
	Desert Shrub	1.5	399.0	39.1	206.5	42.2	-	**688.2**
	Shrub-Steppe with Big Sage	3,991.7	7,253.9	599.6	728.4	258.7	-	**12,832.2**
	Shrub-Steppe without Big Sage	194.2	305.8	8.1	45.4	2.7	-	**556.3**
	Other	179.9	2,476.0	48.8	-	3,065.7	-	**5,770.3**
Wetland	Emergent Wetland	6.9	80.0	20.4	-	-	-	**107.2**
	Scrub-Shrub Wetland	0.4	3.9	-	-	-	-	**4.3**
	Forested Wetland	6.8	92.3	21.1	-	-	-	**120.2**
	Wetland-Other	-	-	0.2	-	-	-	**0.2**

[1] The analysis area is defined in Section 3.1 and consists of the Project's Site Boundary. Note the analysis area is greater than the total area disturbed by the Project.

[2] Some agricultural and developed areas are included as Category 1 and 2 habitats due to the wildlife overlays (e.g., sage-grouse Core areas encompase agricultural and disturbed areas).

3.3.4 Map Showing the Location of Species Habitat

OAR 345-021-0010(1)(p)(C)

A map showing the locations of the habitat identified in (B).

Attachment P-10 contains a map-book that displays the location of the various habitat category types along the Project. The underlying vegetation/waterbody type determined during field surveys, the habitat categorization based on the vegetation/waterbody type alone, as well as the final categorization (when wildlife habitat metrics are considered; see Section 3.3.2) are shown in these maps for each area crossed by the Project.

3.3.5 State Sensitive Species

OAR 345-021-0010(1)(p)(D)

Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.

OAR 345-021-0010(1)(p)(E)

A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.

This section addresses species that have been designated by the State of Oregon as State Sensitive Species. State Sensitive Species are defined by the ODFW as "naturally-reproducing fish and wildlife species, subspecies, or populations which are facing one or more threats to their populations and/or habitats" (OAR 635-100-0040). The ODFW further defines State Sensitive Species as either Sensitive Critical (SC) or Sensitive Vulnerable (SV). SC means the species is imperiled with extirpation from a specific geographic area because of small population sizes, habitat loss or degradation, and/or immediate threats. Species that are SV face threats, but are not currently imperiled with extirpation (ORBIC 2010). Note that some State Sensitive Species have also been listed under the ESA; therefore, these species are addressed in Exhibit Q (e.g., the Snake River Basin steelhead is a State Sensitive Species; however, it is also listed as threatened under the ESA and therefore is addressed in Exhibit Q).

The list of State Sensitive Species that could potentially occur within the analysis area was determined through a review of pertinent literature and databases (including recent ORBIC data), consultation with applicable land-management agencies, and the results of Project specific field surveys (as discussed in Section 3.3.1). Baseline surveys were conducted to better determine habitats that could support State Sensitive Species within the analysis area (as discussed in Section 3.3.1; also see the Revised Final Biological Survey Work Plan in Attachment P-3). Table P-5 lists the State Sensitive Species that could occur within the analysis area, if the species is listed as a SC or an SV, as well as whether or not they have been documented to occur within the analysis area. This includes 6 mammals (1 of which has been documented in the analysis area), 23 birds (15 of which have been documented in the analysis area), 5 reptiles/amphibians (1 of which has been documented in the analysis area), and 3 fish (none of which have been documented in the analysis area). Further details regarding the locations of State Sensitive Species detected during surveys can be found in the various survey technical reports (Tetra Tech 2011a through 2011f, 2012, and Attachment P-8).

This page intentionally left blank.

Table P-5. State Sensitive Species Potentially Present within the Analysis Area (excluding federal or state endangered and threatened species)

Common name Scientific name	Oregon Status	Habitat Requirements	Found within the Analysis Area[1]	Likely Use of the Analysis Area/General Impacts
Mammals				
Fringed myotis *Myotis thysanodes*	SV	Wide variety of habitats, especially dry oak, pinyon-juniper, and ponderosa pine woodlands, as well as desert scrub.	No database records, or survey observations	Could potentially breed and hibernate in analysis area. Disturbances at roosts and hibernacula sites.
Spotted bat *Euderma maculatum*	SC	Variety of habitat types, especially deserts, canyons, grasslands, riparian areas, shrub-steppe, and pinyon-juniper woodlands; requires large cliffs and water.	No database records, or survey observations	Could potentially breed and hibernate in analysis area. Disturbances at roosts and hibernacula sites.
Pallid bat *Antrozous pallidus*	SV	Variety of habitat types, including rocky, arid deserts and canyon lands, shrub-steppe, grasslands, karst formations, and coniferous forests under 2,000 feet.	No database records, or survey observations	Could potentially breed and hibernate in analysis area. Disturbances at roosts and hibernacula sites.
Townsend's big-eared bat *Corynorhinus townsendii*	SC	Variety of habitat types, including coniferous forests, deserts, native prairies, riparian areas, agriculture fields, and coastal areas; require caves, rock crevices, or other roosts.	1 ORBIC record of a hibernating individual in a train tunnel, southeastern Baker County (dated 1985)	Breeds and hibernates in analysis area. Disturbances at roosts and hibernacula sites.
Pygmy rabbit *Brachylagus idahoensis*	SV	High plains with large, dense stands of sagebrush in loose, deep soil.	No database records, or survey observations	Could potentially be present in the analysis area year-round.
American marten *Martes americana*	SV	Mature, unfragmented conifer or mixed-conifer forests with coarse woody debris and intermediate canopy closure.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Forest removal and fragmentation.
Birds				
Bald eagle *Haliaeetus leucocephalus*	SV	Forested areas in association with aquatic environments in this part of the country (typically near rivers or lakes); however, they have been known to nest on the ground (e.g., in Alaska) or along cliffs as well.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Habitat loss through forest removal.
Greater Sage-Grouse *Centrocercus urophasianus*	SV	Sagebrush obligate species, found in foothills, plains, and mountain slopes where sagebrush is present, or in mixtures of sagebrush, aspen, and open meadows	Multiple records of leks and sage-grouse located within the analysis area (from existing databases and survey results); See Attachment P-1s and P-8.	Potential disturbances to adjacent leks; likely loss of nesting and brood rearing habitat. Loss of both Core Area and Low Density habitats.
Northern goshawk *Accipiter gentilis*	SV	Coniferous and deciduous forests, woodlands, or along tree-lines adjacent to open areas; mature forest for nesting; require sufficient prey populations.	3 individuals recorded but no nests found during field surveys.	Found in the analysis area year-round. Habitat loss through forest removal and fragmentation. Potential disturbances to nesting attempts in adjacent habitats.
Swainson's hawk *Buteo swainsoni*	SV	Open, grass-dominated areas, sparse shrublands, open woodlands, agricultural fields, and pastureland.	16 observations and 4 nests were recorded during surveys.	Breeds in analysis area. Disturbances during nesting.
Ferruginous hawk *Buteo regalis*	SC (Columbia Basin), SV (elsewhere)	High-desert sagebrush and bunchgrass prairies, canyon shrublands, desert playa, agricultural fields, and pastureland.	2 known nests within the analysis area (based on existing databases). 8 individuals were recorded during TVES.	Breeds in analysis area. Disturbances during nesting.
Mountain quail *Oreortyx pictus*	SV	Shrublands 2,300–9,800 feet elevation, occasionally forests, woodlands, and riparian areas.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Disturbances during nesting.
Long-billed curlew *Numenius americanus*	SV	Short- and mixed-grass prairies with flat to rolling topography.	1 nesting area identified in the analysis area (based on existing databases). 1 nest and 114 observations were recorded during field surveys	Breeds in analysis area. Disturbances during nesting.
Upland sandpiper *Bartramia longicauda*	SC	Obligate grassland species found in native prairies with little bare ground, 3,400–5,060 feet elevation.	No database records, or survey observations	Could potentially breed in analysis area. Disturbances during nesting.
Great gray owl *Strix nebulosa*	SV	Deciduous or coniferous forests up to 9,000 feet elevation interspersed with bogs, muskets, or meadows that support rodent prey.	No database records, or survey observations	Likely utilizes the analysis area year-round. Habitat loss through forest removal and fragmentation. Potential disturbances to nesting attempts in adjacent habitats.
Flammulated owl *Otus flammeolus*	SV	Cool, dry, mid-elevation forests with limited understory and high densities of insect prey.	No database records, or survey observations	Likely utilizes the analysis area year-round. Habitat loss through forest removal and fragmentation. Potential disturbances to nesting attempts in adjacent habitats.
Western burrowing owl *Athene cunicularia hypugea*	SV (Northern Basin and Range), SC (elsewhere)	Variety of arid and semiarid environments with well drained soils, level to gentle slopes, and short vegetation with a high percentage of bare ground.	2 burrows within the analysis area (based on existing databases). 16 burrows recorded during surveys.	Breeds in analysis area. Disturbances during nesting.

Table P-5. State Sensitive Species Potentially Present within the Analysis Area (excluding federal or state endangered and threatened species) (continued)

Common name Scientific name	Oregon Status	Habitat Requirements	Found within the Analysis Area[1/]	Likely Use of the Analysis Area/ General Impacts
Common nighthawk *Chordeiles minor*	SC	Habitat generalists; nest in open areas with little cover.	No database records. During field surveys, 47 individuals were recorded.	Breeds in analysis area. Disturbances during nesting.
White-headed woodpecker *Picoides albolarvatus*	SC	Open ponderosa pine or mixed-conifer forests dominated by ponderosa pine and containing snags, sometimes in riparian wetlands.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Removal of snags. Disturbances during nesting.
Lewis's woodpecker *Melanerpes lewis*	SC	Open ponderosa pine woodlands, riparian areas dominated by cottonwood, or logged or burned pine forest.	No database records, 3 survey observations, but no nests found during field surveys.	Could potentially breed in analysis area. Removal of snags. Disturbances during nesting.
American three-toed woodpecker *Picoides dorsalis*	SV	Mature forests dominated by spruce, fir, and lodgepole pine, often recently burned.	No database records. 4 survey observations , but no nests found during field surveys.	Found in the analysis area year-round. Removal of snags. Disturbances during nesting.
Black-backed woodpecker *Picoides arcticus*	SV	Boreal and montane coniferous forests, recently burned and containing many dead trees.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Removal of snags. Disturbances during nesting.
Pileated woodpecker *Dryocopus pileatus*	SV (Blue Mountains only)	Dense, mature mixed-conifer forests with large-diameter trees, snags, and logs for nesting and foraging.	No database records. 2 individuals were recorded during field surveys.	Found in the analysis area year-round. Removal of snags and down wood. Disturbances during nesting.
Olive-sided flycatcher *Contopus cooperi*	SV	Montane mixed-conifer forests interspersed with natural openings up to 7,000 feet elevation; require prominent perches for singing and flycatching.	No database records. 15 individuals were recorded during field surveys.	Breeds in analysis area. Disturbances during nesting.
Willow flycatcher *Empidonax trailii adastus*	SV	Moist, shrubby areas with standing or running water.	No database records. 6 individuals were recorded during field surveys.	Breeds in analysis area. Disturbances during nesting.
Loggerhead shrike *Lanius ludovicianus*	SV	Open areas with short vegetation and hunting perches, for example juniper-mountain mahogany woodlands, shrub-steppe, agricultural fields, and pastureland.	No database records. 13 individuals were recorded during field surveys.	Breeds in analysis area. Disturbances during nesting.
Sage sparrow *Amphispiza belli*	SC	Big sagebrush and other shrub species 3–6 feet high with open areas in between.	No database records. 25 individual was recorded during field surveys.	Breeds in analysis area. Disturbances during nesting.
Grasshopper sparrow *Ammodramus savannarum*	SV	Moderately open, unfragmented grasslands with patches of bare ground, sometimes with light cover of shrubs.	No existing records within the analysis area. 233 individuals were recorded during field surveys.	Could potentially breed in analysis area. Disturbances during nesting.
Bobolink *Dolichonyx oryzivorus*	SV	Historically tall- and mixed-grass prairie; today, also agricultural fields and pastureland.	No database records, or survey observations	Could potentially breed in analysis area. Disturbances during nesting.
Reptiles and Amphibians				
Northern sagebrush lizard *Sceloporus graciosus graciosus*	SV	Big sagebrush and antelope bitterbrush with small perches such as rocks or logs, and burrows of other animals.	No database records. 4 individuals were recorded during field surveys.	Found in the analysis area year-round (hibernates during winter). Alterations to sagebrush habitats.
Western toad *Anaxyrus boreas*	SV	Lakes, rivers, streams, and wetlands during breeding; variety of grassland, shrubland, woodland, and forests at other times of year.	No database records, or survey observations	Could potentially be present in the analysis area year-round (hibernates during winter). Alterations to wetland habitats or hydrology.
Rocky Mountain tailed frog *Ascaphus montanus*	SV	Cold, rocky streams at 3,600–7,000 feet elevation.	No database records, or survey observations	Could potentially be present in the analysis area year-round.
Northern leopard frog *Lithobates pipiens*	SC	Swampy cattail marshes, beaver ponds, and other aquatic environments up to 11,000 feet elevation.	No database records, or survey observations	Could potentially be present in the analysis area year-round (hibernates during winter). Alterations to wetland habitats or hydrology.
Columbia Spotted Frog *Rana luteiventris*	SV (Blue Mountains) SC (Elsewhere)	Areas near bodies of slow-moving water including lakes, ponds, sluggish streams, and marshes.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Alterations to wetland habitats or hydrology.
Fish				
Inland Redband Trout *Oncorhynchus mykiss gairdneri*	SV	Cool streams with clean, well oxygenated water.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Sedimentation and blockage of movement
Pacific Lamprey *Lampetra tridentata*	SV	During birth, rearing, and spawning: freshwater streams. Migration: streams with free passage. Adulthood: ocean.	No database records, or survey observations	Could potentially be present in the analysis area year-round. Sedimentation and blockage of movement
Western Brook Lamprey *Lampetra richardsoni*	SV	Riffles and side channels for spawning, silty backwater habitats for rearing.	No database records, or survey observations	Could potentially be present in the analysis area year-round (dormant in stream substrate during winter). Sedimentation and blockage of movement

SC = State Sensitive Critical; SV = State Sensitive Vulnerable

1/ Based on results of Project-specific surveys, as well as the databases discussed in Section 3.3.1 (e.g., ORBIC data)

3.3.5.1 ODFW Greater Sage-Grouse Guidance

During the initial development of the Project, the ODFW was managing sage-grouse habitats under the August 7, 2009, Recommendations for Greater Sage-Grouse Habitat Classification under Oregon Department of Fish and Wildlife's Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000). As part of this policy, the ODFW initially recommended that the Project avoid all sage-grouse leks by at least 2 miles, unless the Project could be placed within an existing right-of-way (ROW).

As requested by the ODFW, sage-grouse leks were avoided to the extent practical during initial Project design layout, with efforts made to avoid all leks by at least 2 miles (ODFW 2010; IPC 2010). After initial siting proposals for the Project had been developed under the 2-mile lek buffer guidance, the ODFW developed a new conservation plan for the protection of sage-grouse and their habitat within Oregon (i.e., an updated Greater Sage-Grouse Conservation Assessment Strategy for Oregon), and this plan was adopted by the Oregon Fish and Wildlife Commission in April 2011 (ODFW 2011). The plan utilizes a core area approach, as developed by Doherty et al. (in press, as cited in ODFW 2011), to protect sage-grouse habitats by establishing Core Areas and Low-Density Areas based on metrics that assess sage-grouse populations and habitat abundance. ODFW (2011) has stated that the goal of the Core Areas is to "assist in identifying the most productive habitat areas for sage-grouse and those areas that should be protected from habitat loss and fragmentation." When this is not possible, ODFW recommends that actions be identified to minimize the impacts to sage-grouse and their habitats within the analysis area (ODFW 2011). Because Core Areas are established around high densities of sage-grouse, they protect about 90 percent of the population while encompassing only about 38 percent of the species' range within Oregon. In 2012, IPC adopted ODFW's new conservation plan and began to utilize the core area approach to inform Project siting. Attachment P-1 contains tables that list the acres of Core and Low-Density Areas that would be impacted by the Project; note that these areas have been incorporated into the Habitat Categorization calculations (see Table P-6). Figure P-7 shows the location of the Oregon Core and Low-Density Areas, as designated by ODFW, in relation to the Project.

Core Area / Low-Density Area Classification

This section describes IPC's habitat categorization process under the core area approach.

Although Core Areas are typically classified as Category 1 habitats under the core area approach, Core Areas are designated at a landscape level and as a coarse filter to guide development; therefore, they are subject to site-specific refinements to determine appropriate habitat categorization. The ODFW is working closely with IPC to evaluate the site specific conditions in Core Areas along the Project to determine if these areas should be classified as Category 1 or Category 2 habitats under the core area approach. The three criteria the ODFW applies to determine if Core Areas would be classified as Category 1 under the core area approach include:

- are the habitats those upon which sage-grouse depend?
- is there evidence of sage-grouse presence?
- is the site-specific habitat both essential and irreplaceable?

If the Core Area does not fulfill all three elements, then it would be classified as Category 2 by the ODFW under the core area approach.

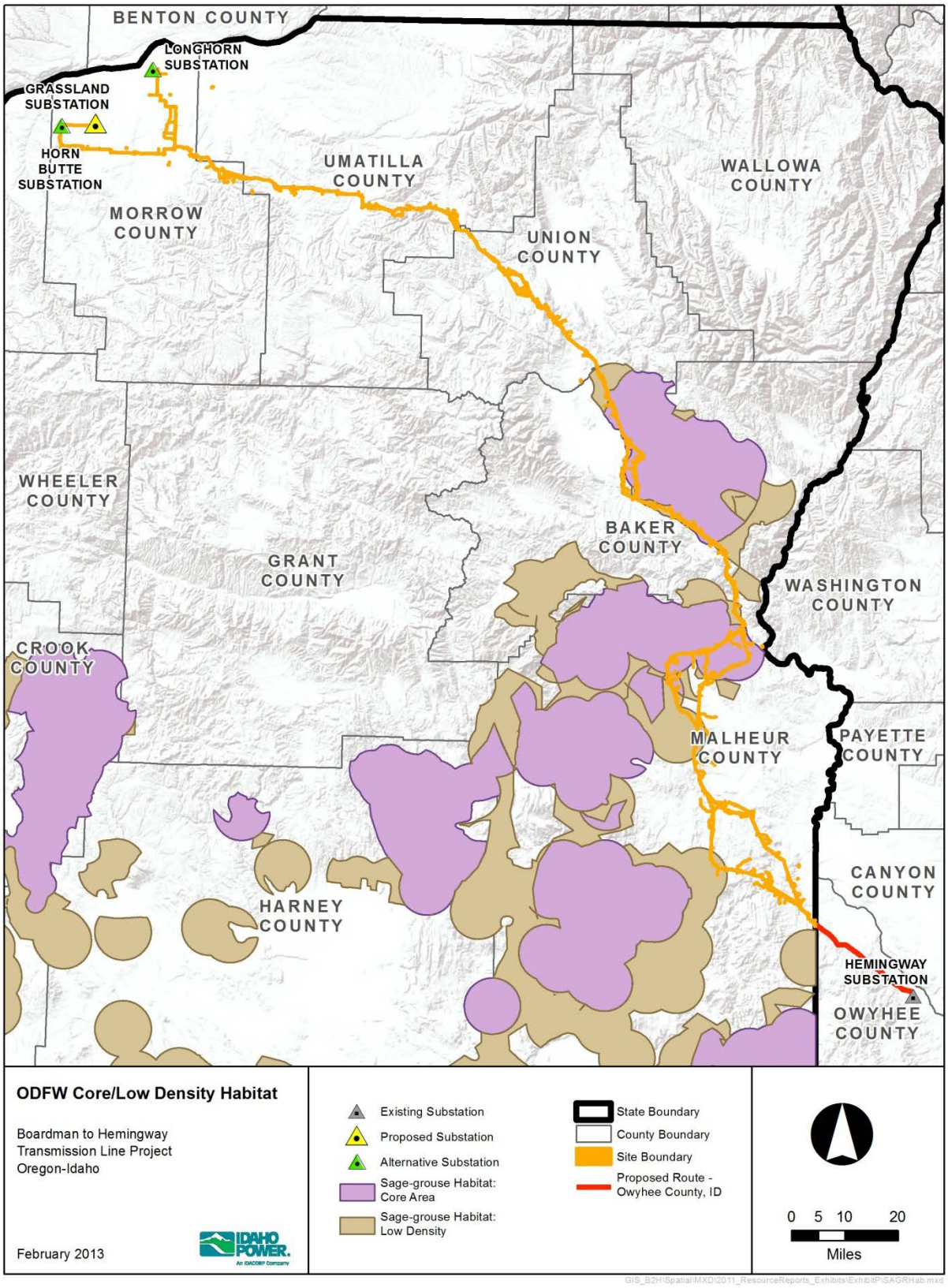


Figure P-7. Greater Sage Grouse ODFW Core and Low Density Areas

A desktop assessment of Core Areas along the Project was conducted by the ODFW (with support from IPC's contractor) on November 30, 2012. The ODFW determined during this assessment that some portions of the Core Area crossed by the Project did not contain the necessary elements required for that area to be classified as Category 1. As a result, these areas have been classified as Category 2 habitats for this Project. Attachment P-9 contains a record of this ODFW assessment, as well as maps of the Core Areas that have been classified as Category 2 habitats. The remaining portions of the Core Area have been classified as Category 1 habitats (i.e., those areas not included in Attachment P-9). This process is ongoing at this time, and more information will be provided as it becomes available.[5]

All Low-Density Areas will be classified as Category 2 habitats, regardless of the vegetation community present, as recommended by the Core Area approach.

BLM Regulatory Context related to Sage-Grouse and the State Process

In addition to Oregon's Core and Low-Density areas, the BLM is in the process of designating nationwide sage-grouse habitats as a result of recent federal directions and the USFWS sage-grouse determination. In March 2010, the USFWS published its decision on the petition to list the sage-grouse as "warranted but precluded" (75 *Federal Register* 13910). In its "warranted but precluded" listing decision, the USFWS concluded that existing regulatory mechanisms were inadequate to protect the species. As a result, in August 2011, the BLM supplemented its existing *National Sage-Grouse Habitat Conservation Strategy* by releasing the *National Greater Sage-Grouse Planning Strategy* (BLM 2011), as well as Instructional Memorandum (IM) 2012-044. The goal of the *National Greater Sage-Grouse Planning Strategy* and IM 2012-044 is to review existing regulatory mechanisms and to implement new or revised regulatory mechanisms through the land use planning process to conserve and restore the sage-grouse and their habitat. Until the applicable BLM Resource Management Plans are amended, BLM IM 2012-043 (i.e., the BLM's *Greater Sage-Grouse Interim Management Policies and Procedures*) directs BLM management regarding the national sage-grouse policy. The primary emphasis of BLM IM 2012-043 is the: 1) protection of unfragmented habitats, 2) minimization of habitat loss and fragmentation, and 3) management of habitats to maintain, enhance, or restore conditions that meet greater sage-grouse life history needs. BLM IM 2012-043 requires the BLM to define Preliminary Priority Habitats (PPH) and Preliminary General Habitats (PGH) in order to: 1) identify Priority Habitat and analyze actions within Priority Habitat Areas to conserve sage-grouse habitat functionality, or where possible, improve habitat functionality, and 2) identify General Habitat Areas and analyze actions within General Habitat Areas that provide for major life history function (e.g., breeding, migration, or winter survival) in order to maintain genetic diversity needed for sustainable sage-grouse populations. PPH and PGH are defined by the BLM in coordination with respective state wildlife agencies as follows:

- PPH—Areas that have the highest conservation value to maintaining sustainable sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. The currently-designated PPHs are identical in distribution to the ODFW Core Areas.
- PGH—Areas of occupied seasonal or year-round habitat outside of priority habitat. PGH are similar in distribution to the ODFW Low-Density areas, except that the PGH typically have a broader distribution (i.e., they cover a broader areas).

[5] In the event that the Project impacts Category 1 habitat following ODFW's refinement of the habitat categorization in Core Areas, IPC will either refine the Project location to avoid Category 1 habitats or ask the Council to exercise balancing authority under OAR 345-022-0000(2). Should the Council elect to exercise its balancing authority and allow the Project to impact Category 1 habitat, IPC will work with the Council and ODFW to develop a mitigation proposal for impacts to Category 1 habitat.

BLM IM 2012-043 further states that: "[t]he BLM field offices do not need to apply the conservation policies and procedures described in this IM in areas in which (1) a state and/or local regulatory mechanism has been developed for the conservation of the Greater Sage-Grouse in coordination and concurrence with the FWS…; and (2) the state sage-grouse plan has subsequently been adopted by the BLM through the issuance of a state-level BLM IM." As the State of Oregon has established a state regulatory mechanism for the conservation of the sage-grouse (i.e., the Oregon core area approach), it is possible that the BLM will ultimately adopt the ODFW core area approach through the issuance of a state-level BLM IM. However, until the state's plan is adopted by the BLM, the currently designated PPH and PGH would apply to federal planning[6]. Figure P-8 shows the location of the currently designated PPH and PGH, as well as sage-grouse leks, in relation to the Project. The tables in Attachment P-1 list the acres of PPH and PGH that would be impacted by the Project.

3.3.6 Potential Impacts to Fish and Wildlife

OAR 345-021-0010(1)(p)(F)

A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility.

3.3.6.1 Definition of Temporary and Permanent Impacts

Both temporary and permanent impacts would occur from the construction, operations, and retirement of the Project.

Temporary impacts during construction include direct impacts, such as ground disturbance to areas that would be restored to preconstruction conditions following completion of the Project; these include temporary access roads, multi-use areas, fly yards, pulling and tensioning sites, and construction areas around tower pads. Temporary impacts from construction would also include indirect impacts, such as general disturbance of wildlife resulting from noise, dust, and/or the presence of workers and construction equipment in and near wildlife habitats. Temporary impacts during operation would result from the periodic disturbance associated with inspection and maintenance of the line, while temporary impacts associated with retirement of the Project would be similar to those described for construction. These impacts would result in a temporary loss of habitat quality or utility, which would last for the duration of the disturbance, as well as the length of the recovery period for ground disturbances. For example: the recovery period for agricultural areas that were directly disturbed could be as short as 1 to 3 years; grasslands and herbaceous wetlands would generally recover within 3 to 7 years; shrublands may require 30 to 100 years to recover (with the longer recovery periods associated with disturbances in mature sage-brush habitats located in arid regions or for specific sage-brush species; e.g., *Artemisia tridentata* ssp. *wyomingensis*); and forested and woodland areas could take anywhere from 50 to many hundreds of years to reach preconstruction conditions (depending on the condition of the area prior to construction). Arid sites with naturally sparse vegetation, as well as those with saline or alkaline soils, shallow soils, compacted soils, or areas that have a high erosion potential may be difficult to restore and could require special techniques or repeated revegetation efforts by IPC.

[6] The extent of Core and PPH are currently coincident; however, Low-Density Areas and PGH differ in their extent (with PGH covering more area than Low-Density Areas).

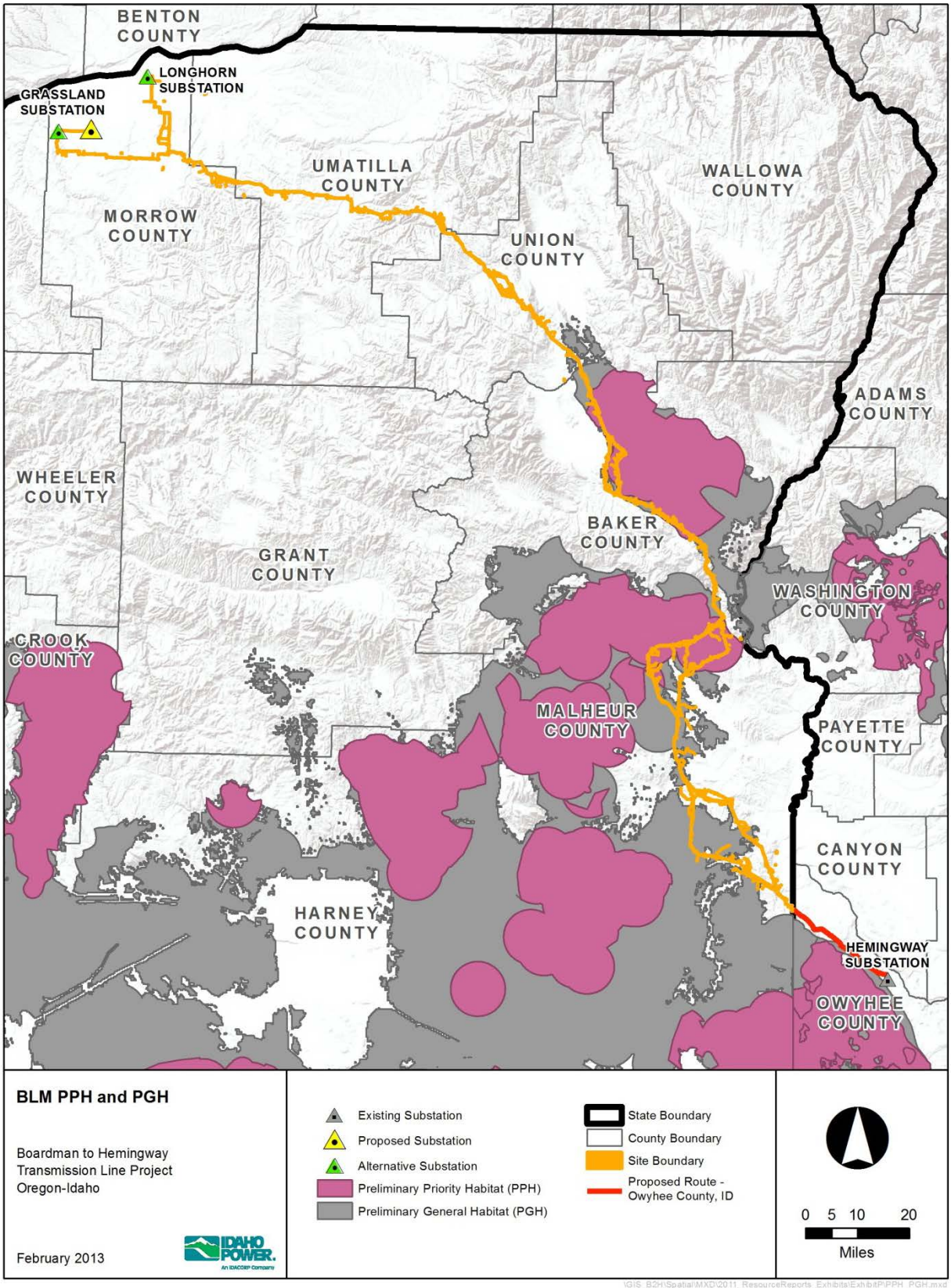


Figure P-8. Greater Sage Grouse BLM Priority and General Habitats

Permanent impacts are associated with areas that are disturbed during construction (by both direct and indirect impacts), but which will not be restored to preconstruction conditions. Permanent indirect impacts would include an increased risk for the spread or establishment of invasive-plant species (which can degrade habitats and exclude native species from areas), and increased access to areas previously inaccessible to the public due to the construction of project-related roads (which can further degrade habitats as a result of increased human presence). Permanent direct impacts would be primarily associated with ground disturbances that are not restored to preconstruction conditions (e.g., areas under tower bases and the footprint of substations). Permanent impacts would occur along new access roads, communication sites, new or expanded substations, and tower bases, as well as within a 100-foot or 250-foot-wide permanent maintenance ROW along portions of the Project that cross forested/woodland habitats (100-foot-wide area used for the 138-kV portions of the line and the 250-foot-wide area used for the 500-kV portion of the line). These impacts would either result in a loss of habitat utility (e.g., in areas occupied by tower bases) or a conversion of one habitat type to another (e.g., conversion of forested habitats to shrub and grass habitats under the transmission line). The draft Vegetation Management Plan (see Attachment P-5 contains a detailed description of the types of impacts that would occur within the portion of the ROW located in forested and woodland habitats. Exhibit B describes the Project in detail, as well as the associated construction and operational activities that could result in soil disturbance and habitat impacts.

3.3.6.2 Potential Impacts to ODFW Habitat Category Types

Table P-6 lists the acres of impact that would occur to each of the six ODFW Habitat Category Types as a result of the Project. As discussed above, the permanent impacts reported in this table relate to areas that would not return to preconstruction conditions, while the temporary impacts include those that would be restored to preconstruction conditions. Therefore, the total acreage of impacts that would occur during construction, prior to restoration, is equal to the sum of the temporary and permanent impacts reported in this table.

Table P-6. Impacts to ODFW Habitat Category Types from Construction and Operations

ODFW Category Type	Habitat Type	Acres Disturbed															
		Proposed Corridor		Horn Butte Alternate		Longhorn Alternate		Glass Hill Alternate		Flagstaff Alternate		Malheur S Alternate		Double Mountain Alternate		Willow Creek Alternate	
		Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
1	Agriculture	0.1	0.0	0.1	0.0	-	-	-	-	-	-	-	-	-	-	-	-
	Bare Ground Cliffs Talus	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desert Shrub	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Developed/Disturbed	0.6	0.4	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0
	Emergent Wetland[1]	0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.1
	Forested Wetland[1]	0.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.7
	Intermittent Streams[1]	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Native Grasslands	25.8	7.2	0.1	0.0	1.7	0.4	-	-	-	-	-	-	-	-	24.8	0.8
	Other (Introduced Upland Vegetation)	11.9	6.0	-	-	-	-	-	-	-	-	-	-	-	-	20.1	4.8
	Ponds and Lakes[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scrub-Shrub Wetland[1]	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrub-Steppe with Big Sage	629.3	167.6	-	-	1.3	0.1	-	-	55.8	0.7	-	-	-	-	204.0	47.2
	Shrub-Steppe without Big Sage	28.9	12.4	-	-	-	-	-	-	-	-	-	-	-	-	1.3	0.2
	Western Juniper/Mountain Mahogany Woodland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Category 1 Subtotal	***697.7***	***196.2***	***0.2***	***0.0***	***3.1***	***0.5***	***-***	***-***	***55.8***	***0.7***	***-***	***-***	***-***	***-***	***250.5***	***53.7***
2	Agriculture	90.9	4.9	0.5	0.3	3.8	0.9	0.0	0.0	0.0	-	-	-	-	-	44.3	2.3
	Bare Ground Cliffs Talus	2.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desert Shrub	48.3	14.8	0.2	0.2	-	-	-	-	-	-	49.0	16.5	-	-	-	-
	Developed/Disturbed	15.2	1.3	-	-	-	-	-	-	13.3	0.4	-	0.3	-	-	0.0	0.0
	Emergent Wetland[1]	48.6	1.1	4.5	-	-	-	0.1	0.0	-	-	0.0	-	0.0	-	0.1	0.0
	Forested Wetland[1]	3.4	32.7	-	-	-	0.0	-	1.6	-	-	0.0	1.5	-	-	0.0	0.0
	Intermittent Streams[1]	0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
	Mixed Grand Fir/Douglas Fir	29.8	204.8	-	-	-	-	14.6	68.4	-	-	-	-	-	-	-	-
	Native Grasslands	542.7	124.3	28.7	7.7	6.7	2.1	84.5	23.9	-	-	13.7	3.8	6.7	0.1	11.9	-
	Other (Introduced Upland Vegetation)	370.6	81.9	1.1	0.8	14.4	1.8	19.9	3.2	9.6	1.0	145.6	41.3	16.4	-	34.8	6.4
	Perennial Streams[1]	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine	26.4	194.0	-	-	-	-	0.6	9.8	-	-	-	-	-	-	-	-
	Ponds and Lakes	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scrub-Shrub Wetland[1]	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrub-Steppe with Big Sage	1,102.5	272.4	11.0	2.9	19.8	2.9	-	-	122.0	24.8	249.5	56.4	1.0	0.2	72.4	31.8
	Shrub-Steppe without Big Sage	53.9	15.0	-	-	-	-	-	-	-	-	0.1	0.1	0.8	0.3	-	-
	Western Juniper/Mountain Mahogany Woodland	13.3	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Category 2 Subtotal	***2,347.8***	***953.4***	***46.1***	***12.0***	***44.7***	***7.8***	***119.7***	***106.9***	***144.9***	***26.2***	***458.0***	***119.9***	***24.9***	***0.6***	***163.8***	***40.6***

Table P-6. Impacts to ODFW Habitat Category Types from Construction and Operations (continued)

ODFW Category Type	Habitat Type	Acres Disturbed															
		Proposed Corridor		Horn Butte Alternate		Longhorn Alternate		Glass Hill Alternate		Flagstaff Alternate		Malheur S Alternate		Double Mountain Alternate		Willow Creek Alternate	
		Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
3	Agriculture	52.5	1.2	5.5	0.3	-	-	-	-	-	-	-	-	-	-	-	-
	Desert Shrub	0.9	0.8	-	-	-	-	-	-	-	-	5.9	2.8	-	-	-	-
	Developed/Disturbed	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Emergent Wetland[1]	0.0	0.0	-	-	0.1	0.1	-	-	-	-	-	-	-	-	3.9	0.3
	Forested Wetland[1]	0.5	2.5	-	-	0.3	4.3	-	-	-	-	-	-	0.0	0.0	-	-
	Forested-Other	1.9	1.6			-	-	-	-	-	-	-	-	-	-	-	-
	Mixed Grand Fir/Douglas Fir	40.4	327.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Native Grasslands	248.7	58.1	18.3	2.5	3.2	1.2	-	-	-	-	9.5	0.9	-	-	-	-
	Other (Introduced Upland Vegetation)	1.6	1.2	-	-	-	-	-	-	-	-	0.0	0.0	3.9	0.9	-	-
	Ponderosa Pine	15.2	144.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrub-Steppe with Big Sage	32.0	8.5	11.1	4.9	0.1	0.0	-	-	66.4	19.0	15.7	5.4	4.3	0.2	-	-
	Shrub-Steppe without Big Sage	1.1	1.0	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-
	Wetland-Other[1]	-	-	-	-	0.0	0.0	-	-	-	-	-	-	-	-	-	-
	Category 3 Subtotal	***394.6***	***546.9***	***34.9***	***7.7***	***3.6***	***5.6***	***-***	***-***	***66.4***	***19.0***	***31.3***	***9.1***	***8.3***	***1.1***	***3.9***	***0.3***
4	Agriculture	33.7	4.6	15.6	0.8	0.9	0.8	-	-	-	-	-	-	-	-	-	-
	Desert Shrub	23.1	2.1	-	-	-	-	-	-	-	-	23.2	6.5	32.9	5.9	-	-
	Developed/Disturbed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Forested-Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Intermittent Streams[1]	0.1	0.0	-	-	0.0	0.0	-	-	0.0	0.0	-	-	-	-	0.0	0.0
	Mixed Grand Fir/Douglas Fir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Native Grasslands	45.2	7.0	0.2	0.2	5.0	4.4	-	-	-	-	8.8	0.9	-	-	-	-
	Other (Introduced Upland Vegetation)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrub-Steppe with Big Sage	51.6	9.7	10.2	2.1	-	-	-	-	9.1	3.0	68.6	19.7	18.7	3.6	0.6	0.5
	Shrub-Steppe without Big Sage	-	-	-	-	12.0	2.2	-	-	-	-	0.4	0.2	-	-	-	-
	Category 4 Subtotal	***153.7***	***23.5***	***26.0***	***3.0***	***17.9***	***7.5***	***-***	***-***	***9.1***	***3.0***	***101.0***	***27.3***	***51.7***	***9.4***	***0.6***	***0.5***
5	Desert Shrub	-	-	-	-	-	-	-	-	-	-	6.2	2.6	-	-	-	-
	Native Grasslands	0.1	0.1	-	-	0.4	0.3	-	-	-	-	-	-	-	-	-	-
	Other (Introduced Upland Vegetation)	456.7	69.0	102.6	7.4	198.3	26.6	-	-	20.3	2.0	86.8	25.6	54.8	18.3	32.7	2.2
	Shrub-Steppe with Big Sage	16.7	3.1	29.4	21.8	5.2	1.5	-	-	-	-	5.1	2.5	4.3	1.4	-	-
	Shrub-Steppe without Big Sage	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Category 5 Subtotal	***473.6***	***72.2***	***132.0***	***29.2***	***203.8***	***28.4***	***-***	***-***	***20.3***	***2.0***	***98.1***	***30.7***	***59.2***	***19.7***	***32.7***	***2.2***
6	Agriculture	549	92.0	267.9	48.7	120.9	29.4	-	-	30.1	4.1	-	-	-	-	21.4	1.9
	Developed/Disturbed	2.5	1.7	0.3	0.1	15.2	0.1	-	-	4.9	2.5	-	-	-	-	0.2	0.2
	Category 6 Subtotal	***551.5***	***93.7***	***268.2***	***48.8***	***136.1***	***29.5***	***-***	***-***	***35.0***	***6.6***	***-***	***-***	***-***	***-***	***21.6***	***2.1***

[1] Please see Exhibit J for more details as well as assessment of impacts on waters and wetlands.
"Temp" = temporary impacts. "Perm" = permanent impacts.
A "0.0" indicates a value less than 0.1, while a "-"indicates a null or zero value.

Category 1 Habitat

The ODFW's mitigation goal for Category 1 habitats is no loss of either habitat quantity or quality. Furthermore, the ODFW's Habitat Mitigation Policy does not consider mitigation as an option to compensate for impacts to Category 1 habitats. ODFW mitigation goals require the ODFW to recommend to the Council that impacts to Category 1 habitats be avoided through alternatives to the proposed development action, or that the proposed development not be authorized if impacts cannot be avoided (OAR 635-415-0025). Table P-6 includes preliminary estimates of impacts to Category 1 habitats, which conservatively includes impacts to Category 1 habitat for sage-grouse and for Washington ground squirrel.

Impacts to Sage-grouse Category 1 Habitat

As discussed in Section 3.3.5.1, the Proposed Corridor and alternate corridor segments assessed in this Exhibit were developed prior to the implementation of the ODFW 2011 sage-grouse conservation plan, which includes the core area approach. As a result, the Proposed Corridor and alternate corridor segments pass through Core Areas that are classified as Category 1 habitats without further site-specific information. The ODFW is working closely with IPC to evaluate the site-specific conditions in Core Areas along the Project to determine if these areas should be classified as Category 1 or Category 2 habitats under the core area approach (see Section 3.3.5.1 as well as Attachment P-9). IPC will continue to work with the ODFW to avoid and minimize impacts to Category 1 habitats.[8]

Impacts to Washington Ground Squirrel Category 1 Habitat

Washington ground squirrel habitats (which have been classified as Category 1 habitats) are located within the Site Boundary and the preliminary design for the Project would result in impacts to these habitats. IPC will attempt to avoid impacts to Washington ground squirrel Category 1 habitat.

Category 2 Habitat

Category 2 habitats are the most common category type impacted by the Project. The vast majority of these areas were categorized as Category 2 habitats due to wildlife data overlays (see Attachments P-2 and P-10). In fact, approximately 95 percent of the Category 2 habitats within the analysis area were categorized as Category 2 due to the presence of Sage-Grouse Low-Density Areas and ODFW Big Game Winter Range in the area, with only 5 percent classified as Category 2 habitats due to vegetation alone. It is possible that additional areas will become classified as Category 2 habitats once the ODFW has finalized the evaluation of site-specific conditions in Core Areas (see Section 3.3.5.1 as well as Attachment P-9), thereby increasing the acreage of reported impacts to Category 2 habitats in Table P-6.

Category 3 Habitat

The vast majority of Category 3 habitats impacted by the Project were classified as Category 3 due to vegetation alone, with only a small portion categorized as Category 3 due to the presence of ODFW Big Game Summer Range (see Attachment P-10). No major changes are expected to occur to the extent of Category 3 habitats between now and the final ASC.

[8] In the event that the Project impacts Category 1 habitat following ODFW's refinement of the habitat categorization in Core Areas, IPC will either refine the Project location to avoid Category 1 habitats or ask the Council to exercise balancing authority under OAR 345-022-0000(2). Should the Council elect to exercise its balancing authority and allow the Project to impact Category 1 habitat, IPC will work with the Council and ODFW to develop a mitigation proposal for impacts to Category 1 habitat.

Category 4 Habitat

All Category 4 habitats impacted by the Project were classified as Category 4 due to vegetation components alone, with no wildlife data overlay affecting the categorization (see Attachment P-10). No major changes are expected to occur to the extent of Category 4 habitats between now and the Final ASC.

Category 5 Habitat

All Category 5 habitats impacted by the Project were classified as Category 5 due to vegetation components alone, with no wildlife data overlay affecting the categorization (see Attachment P-10). No major changes are expected to occur to the extent of Category 5 habitats between now and the Final ASC.

Category 6 Habitat

All Category 6 habitats impacted by the Project were classified as Category 6 due to vegetation components alone, with no wildlife data overlay affecting the categorization (see Attachment P-10). No major changes are expected to occur to the extent of Category 6 habitats between now and the Final ASC.

3.3.6.3 Potential Impacts to State Sensitive Species

This section discusses the impacts that could occur to wildlife species. It first addresses general impacts that could be expected to occur to all species, and then discusses impacts specific to certain taxa, such as mammals, birds, reptiles/amphibians, and fish. These potential impacts would be avoided or minimized by the measures discussed in Section 3.3.7 as well as the measures discussed in the Species Conservation Plan (Attachment P-6).

General Impacts Applicable to All Species

Construction

Potential Project-related impacts to wildlife during construction would include direct loss of habitat, alterations to habitat quality, disturbance, and direct mortality.

Vegetation located within the Site Boundary would be cleared as necessary for the construction of the Project. A permanent 250-foot-wide area would be used for the construction of the 500-kV portions of the line, and a 100-foot-wide area for the 138-kV portions of the line (vegetation management would occur within these same widths during operation; see the discussion in the "Operations" section below). These widths were determined based on 1) ensuring sufficient clearance is maintained during high-wind events when conductors could be blown towards the Site Boundary's edge and 2) allowing sufficient room to perform necessary transmission line maintenance; however, because the vast majority of the Project passes through vegetative communities dominated by low-growing plants (e.g., agricultural areas, shrublands, and grasslands), clearing of vegetation within the Site Boundary would be limited to certain areas. With the exception of forested/woodland areas, construction clearing would be limited to the footprint of Project facilities (e.g., tower bases, substations), access road footprints (i.e., 14 feet wide along straight segments and 16 to 20 feet wide at corners), areas directly adjacent to Project facilities (i.e., about a 25-foot perimeter around tower bases), and extra work spaces required for construction (e.g., staging areas, fly yards, pulling/tensioning sites). In forested/woodland areas, however, the entire 250- or 100-foot-wide maintenance area would be cleared of trees during construction and the heights of any future tree recruiting into this area would be maintained in accordance with the wire-border zone method (see discussion of the wire-border zone method for vegetation maintenance in the "Operations" section below), with the

exception of areas where the distance between the conductor and the top of the tallest mature tree is greater than 50 feet (e.g., in areas where the line spans a canyon or ravine). This initial loss of vegetation would result in the direct loss of forested/woodland habitats utilized by wildlife species. Table P-6 lists the acres of habitat that would be impacted during construction.

Construction of the Project would also alter the quality of habitats within and adjacent to the Site Boundary. The initial clearing of vegetation and resulting soil disturbance during construction could create optimal conditions for the establishment of invasive-plant species. The establishment of invasive-plant species can affect the quality of wildlife habitat through competition with, and the eventual replacement of desirable native plant species (Westbrook 1998). The replacement of native plant species can have various environmental effects on wildlife habitat, including changes in fire regime (e.g., increasing the frequency and severity of fires), changes in the nutrient regime of soils (thereby reducing the quality of forage species), increased soil erosion (resulting in additional loss of vegetated areas, as well as sedimentation to aquatic habitats), or reductions in the abundance of important forage species (due to invasive species excluding them from the area). These alterations to habitat quality can extend beyond the area of initial impacts (e.g., fires and/or invasive-plant species can spread to areas far beyond the initial disturbance/ignition). However, the risk of invasive-plant species spread or establishment would be minimized through the measures described in IPC's draft Reclamation and Revegetation Plan (Attachment P-4) the draft Vegetation Management Plan (Attachment P-5), and the Species Conservation Plan (Attachment P-6).

Construction of the Project could also result in general disturbance to habitats in the form of noise, visual disturbance from heavy equipment and traffic, fugitive dust dispersing from the immediate construction area, and small amounts of air pollution from construction equipment's exhaust. Noise would likely have the farthest reaching effect (i.e., the effect of noise would extend farther from construction sites than dust or other disturbances). Ambient noise in forested habitats generally ranges from 25 to 44 decibels (USFWS 2006), and is usually lower in open and shrub habitats such as those found along the majority of the analysis area. Some construction activities would likely result in sound levels beyond baseline ambient levels, with a maximum instantaneous predicted noise level of 80 to 90 A-weighted decibels at 50 feet from the work site. These increases in noise would be concurrent with any disturbance associated with the presence of humans and their activities (e.g., dust, visual disturbances, etc.). These disturbances could render habitats unsuitable for a limited period of time, with disturbances ceasing once construction or maintenance activities have ceased. However, agency-designated spatial and timing windows would be imposed on the Project near sensitive resources (e.g., near or within big game habitats, sage-grouse leks, raptor nests, instream work fish windows, etc.), which would limit the construction window to time periods when wildlife species are less sensitive to disturbances (e.g., to times outside of the breeding season; see Section 3.3.7). IPC will seek exceptions to restrictions if site conditions allow; for example, if big game are not using winter habitats, IPC may request permission to start work in the area sooner than what would normally be allowed (see Attachment P-6).

Direct mortality would be rare within the Site Boundary, as most wildlife species would avoid the work sites due to the disturbance related to construction activities. However, species or individuals that are less mobile or less sensitive to these disturbances could be directly threatened by construction activities. For example, species living underground, injured individuals, fish, and nesting birds may not be able to avoid construction equipment, and as a result, would be vulnerable to direct mortality. These mortality events are not expected to be common or result in substantial impact to the species, as construction windows would be timed to avoid or minimize disturbances when species may be less mobile (e.g., to times outside of the typical breeding season; see Section 3.3.7).

Operations

Potential Project-related impacts to wildlife during operations may include habitat fragmentation, altered predation rates, disturbance, and direct mortality.

As discussed above, all areas not encompassed by Project facilities or not needed for normal transmission line maintenance would be restored to preconstruction conditions. However, not all areas would be revegetated and some impacts would remain during the operational phase (see Table P-6); in some areas, revegetation would either be limited or non-existent. A wire-border zone method will be used during maintenance of the ROW to control vegetation and to ensure adequate ground-to-conductor clearances (see the draft Vegetation Management Plan; Attachment P-5). This method results in two zones of clearing and revegetation. The wire zone includes the linear area along the ROW located under the wires as well as the area extending 10 feet outside of the outermost phase-conductor. After initial clearing, vegetation in the wire zone would be maintained to consist of native grasses, legumes, herbs, ferns, and other low-growing vegetation that remain under 20 feet tall at maturity. The border zone is the linear area along each side of the ROW extending from the edge of the wire zone to the edge of the ROW. Vegetation in the border zone would be maintained to consist of tall shrubs or short trees (up to 34 feet high at maturity), grasses, and forbs. These cover plants along the border zone benefit the ROW by competing with and excluding undesirable plants. During operations, vegetation growth will be monitored and managed on a routine cyclical clearing schedule (i.e., every 3 to 6 years) to maintain the wire-border zone objectives. In addition, hazard trees (i.e., trees that pose a risk of falling onto conductors, structures, or Project personnel) would be removed as needed. Maintenance efforts would be conducted around project structures, substations, and communication sites. Permanent access roads, which would have an 8-foot-wide footprint, would be maintained and repaired as needed; however, they would not be routinely graded. Any tall vegetation that encroaches onto roads and may interfere with safe operation (e.g., tall shrubs and trees) would be removed as necessary; however, grasses would be allowed to establish within the road's footprint, and vehicles would be expected to drive over this vegetation.

The permanent loss or alteration of habitats, described above, would result in some limited habitat fragmentation. Habitat fragmentation would be minimal as most of the Project crosses through low-lying vegetation that would not be permanently cleared. However, vegetative clearing and maintenance in forested/woodland areas (mostly found in the Blue Mountains region) would result in undisturbed forest/woodland patches separated by 250- or 100-foot-wide areas around the line, and 14- to 16-foot-wide areas around access and service roads (when considering the initial width of disturbance along roads in forested/woodland areas). This would result in habitat fragmentation in forested and woodland habitats.

Regarding the low-lying vegetation (e.g., grasslands and shrublands) which make up most of the habitat crossed by the Project, for habitat fragmentation that has a biological effect to occur within these areas, a species would have to perceive either the 8-foot-wide grass-covered permanent access roads (with adjacent lands containing grasses and shrubs), or the suspended transmission line itself as an appreciable break in the habitat continuity. The access roads would be only infrequently used (once or twice a year during Project inspections), thereby reducing their contribution to fragmentation in the form of general disturbance. Furthermore, as the grass/shrubland habitats in the area are naturally patchy, it is likely that the access roads would not substantially contribute to most wildlife's perceptions of habitat fragmentation. However, the transmission line itself could be perceived as a form of habitat fragmentation by raptor and raven prey species in low-lying shrub and grassland habitats, due to the increased predation rates near the line. Based on observations at existing power lines, it is possible that the Project could become an attractant to raptor and ravens for nesting and perching habitats

(Gilmer and Wiehe 1977; Knight and Kawashima 1993; Steenhof et al. 1993; Connelly et al. 2004; Manzer and Hannon 2005; Coates and Delehanty 2010). The numbers of ravens and raptors that use existing transmission lines for perching habitat can become quite substantial. For example, a study conducted along a 500-kV transmission line that spanned from south-central Idaho to south-central Oregon found approximately 2,100 ravens at a single roost that spanned approximately 4 miles of the line and 15 towers (Engel et al. 1992). Although the presence of this 500-kV transmission line resulted in an increase in the number of ravens within the roosts, Engel et al. (1992) concluded that each of the major roosts found during the study were situated in an area where ravens had roosted communally before the line was constructed. If the Project's transmission line and structures becomes an attractant to raptor and raven, and their numbers increase along the Project, this factor coupled with the reduced shrub cover in areas recovering from construction disturbances (i.e., a reduction in hiding cover for small animals) could result in increased predation rates on prey species. This effect would be most prominent where the Project is located in areas that do not contain other tall structures, such as existing transmission lines or trees. Of the 177 miles of the Proposed Corridor that are not located within 1 mile of an existing line, about 125 miles are located within shrubland/grassland habitats. It is in these areas that the effects of potential consolidation of raptor and raven populations on prey species would be most substantial. Below is a list of the miles of each alternate corridor segments that are not located within 1 mile of an existing line, and how much of this length is in shrubland/grassland habitats.

- About 23 miles of the Horn Butte Alternate Corridor Segment are not within 1 mile of an existing line, 6 miles of which are located in shrubland/grassland habitats;
- About 14 miles of the Longhorn Alternate Corridor Segment are not within 1 mile of an existing line, 9 miles of which are located in shrubland/grassland habitats;
- About 7 miles of the Glass Hill Alternate Corridor Segment are not within 1 mile of an existing line, 5 miles of which are located in shrubland/grassland habitats.
- All of the Flagstaff Alternate Corridor Segment is located within 1 mile of an existing line;
- About 21 miles of the Malheur S Alternate Corridor Segment are not within 1 mile of an existing line, 21 miles of which are located in shrubland/grassland habitats;
- About 7 miles of the Double Mountain Alternate Corridor Segment are not within 1 mile of an existing line, all of which are located in shrubland/grassland habitats; and
- About 22 miles of the Willow Creek Alternate Corridor Segment are not within 1 mile of an existing line, 21 miles of which are located in shrubland/grassland habitats.

Direct mortality during operation of the Project is expected to be low. Mortality would be related to collisions between Project vehicles and wildlife (e.g., big game hit by vehicles during line inspections) as well as collisions with Project structures (e.g., birds flying into wires); however, electrocutions are not expected to occur due to the design of the structures and location of the conductors (see further discussion under the "Avian Species" section). IPC will establish construction speed limits on access roads to limit the risk of vehicular collisions with wildlife when applicable (see Section 3.3.7). If IPC constructed roads are found to provide deleterious access to areas on federally managed lands, IPC will work with the land-managing agency to install gates or other barriers to control access. Access on private lands is at the discretion of the land owner.

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Big Game

Construction

There is a risk of big game mortalities occurring due to wildlife-vehicle collisions; however, the risk of vehicle collisions would be minimized by speed limits that would be imposed on construction vehicles within the Site Boundary (see Section 3.3.7). Displacement of big game from both winter and parturition area can affect winter survival by causing animals to use energy reserves that are needed to survive the winter. However, appropriate construction timing windows would be applied to ODFW designated big game areas during the appropriate season and would minimize the risk of disturbing big game during sensitive periods.

Operations

The Project would cross through big game winter, calving/fawning, migration, and general ranges, resulting in some loss of habitat. Furthermore, ROW clearing in forested/woodland habitats would remove thermal and hiding cover for big game; however, this clearing of vegetation has the potential to benefit big game species in some situations by providing clearings for use in foraging or traveling (Rowland et al. 1983; Stewart et al. 2000). In addition, transmission line structures and access roads are not expected to limit the movement or distribution of big game species through fragmentation, as big game are expected to readily cross a double-track road or pass under a transmission line. To minimize disturbance due to increased use of Project-related roads, IPC will work with the land management agency to install gates or other barriers to control access, where appropriate.

Retirement

Retirement of the Project would involve activities and equipment similar to those used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Small Furbearing Mammals

Construction / Operations

Potential impacts of the Project's construction and operation to small furbearers (e.g., pygmy rabbit and American martin) would be similar to those discussed above for general wildlife species,except that this taxa could be more sensitive to direct and indirect mortality. As small furbearers are more likely to be fossorial animals (i.e., living underground) they have a higher risk of mortality due to construction activities. Construction equipment could result in the crushing of burrows and underground tunnels which could contain small mammals, resulting in direct mortality. Furthermore, the disturbance of soils and loss of vegetative cover can make these species more obvious to predators (i.e., removing hiding cover), thereby indirectly increasing their predation rates. This taxa may also experience a higher predation rate during operation, as they are likely to be a prey source for raptors and ravens, which as discussed above, could consolidate along the transmission line due to increased perching opportunities. However, the measures proposed in Section 3.3.7 would avoid or minimize these risks to small furbearers.

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Bats

Construction

Impacts to bats were minimized by routing the Project to avoid mines, caves, and known bat hibernacula. However, bats will utilize habitats outside of these structures/areas as well, and the sensitive bat species in the analysis area can utilize trees and snags as habitat. Direct mortality during construction is expected to be low, as bats would likely flush from trees and snags during construction. However, flushing of bats from day roosts or maternity colonies could result in the bats using up their bodily energy reserves, exposing themselves to predation, and potentially causing them to permanently abandon a suitable site. If disturbance occurs near winter hibernacula, bats may leave their roost and venture out to find a new one. This could result in mortality of the bats as bodily energy reserves are often low during winter and they may not find another suitable hibernaculum before their reserves are spent; however, all known bat hibernacula were avoided during Project routing so no direct impacts are expected. Disturbance at maternity colonies could have a negative impact if the bats are induced to abandon the colony, as suitable maternity colony structures have specific characteristics and another suitable structure may not exist nearby. However, agency-designated construction timing windows would be imposed on the Project, which would limit the construction window to time periods when wildlife species are less sensitive to disturbances (see Section 3.3.7).

Operations

There is a record of a single bat mortality resulting from a collision with a transmission line (Dedon et al. 1989); indicating that some adverse impacts could occur during operations. However, potential mortalities are expected to be low to non-existent, based on the one known bat mortality on record.

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Avian Species (All Birds)

Construction

Potential impacts of the Project's construction and operations to bird species would be similar to those discussed above for general wildlife species; except that birds might be more sensitive to direct mortality and disturbance during nesting than other species. In order to limit this potential impact, construction clearing would be limited to time periods outside of the typical breeding period (April to June) to the extent practical (i.e., where possible, construction clearing would occur prior to the start of the typical nesting season to remove the potential for bird nests within the construction area).

Operations

There is a potential risk of avian collisions with transmission lines or other Project-related structures, which could result in elevated mortality rates for some avian species. A variety of factors influence avian transmission line collisions, such as: configuration and location of transmission lines; the tendency of specific species to collide with transmission lines; and environmental factors such as weather, topography, and habitat (APLIC and USFWS 2005). Line placement with respect to other structures and topography can influence the collision rate of avian species at a given transmission line. Collisions usually occur near water or migration corridors, and occur more often during inclement weather. Less agile birds, such as heavy-bodied birds or birds that travel in flocks, are more likely to collide with overhead lines because

they lack the ability to quickly negotiate obstacles. IPC has an existing Avian Protection Plan (IPC 2008b); this plan is in compliance with Avian Power Line Interaction Committee (APLIC) suggested practices, and includes measures that would be taken if avian mortalities are discovered (either as an incidental observation or during routine maintenance and monitoring), and modification and/or additions to the line that can be made if elevated mortalities of avian species are discovered. For example, if collisions are documented, a site-specific evaluation will be conducted and measures to reduce collision hazard will be implemented, such as marking the line by installing bird flight diverters or possibly removing the static line (i.e., overhead ground or optical ground wire) from a specific span (IPC 2008a).

There is also concern regarding the risk of bird electrocutions (especially raptors) along electrical lines. However, the risk of avian mortalities occurring as a result of electrocutions is negligible for transmission lines. This is because the spacing between phases of the Project's transmission lines is much larger than the wing span of any North American bird (i.e., a bird would not be able to contact two phases of the line simultaneously). Therefore, electrocution due to the transmission line is not considered likely. The distribution lines that serve the substations could also provide an electrocution hazard to avian species, although this hazard would be low to negligible because the Grassland Substation would be the only new substation requiring new distribution lines (i.e., limiting the area of exposure), and the distribution line's design would be consistent with APLIC guidelines which limit the risk of avian electrocutions.

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Upland Game Birds

Construction / Operations

Impacts to sensitive upland game birds (e.g., the sage-grouse) would be similar to those discussed above for general wildlife species as well as general avian species, with some exceptions (outlined below).

As discussed for other wildlife species, upland game birds may experience increased predation pressures near the transmission line, due to the consolidation of raptors and ravens along the line. However, upland game birds may experience a greater risk of impact from this increased predation compared to other species. For example, Coates et al. (2008) found that ravens were one of the most common predators of sage-grouse in northeastern Nevada, and that the presence of ravens can inhibit females from leaving their nests to forage, thereby resulting in nest failure and mortality. During a study conducted in Elko, Nevada, Coates and Delehanty (2010) found that an increase of one raven per 10 kilometers resulted in a 7.4 percent increase in the odds of nest failure. They further found that the probability of nest failure increased in areas with reduced shrub cover (Coates and Delehanty 2010). As a result, the increase in raptor and raven numbers along the transmission line, coupled with the reduced shrub cover in areas recovering from construction disturbances, could result in increased predation rates on sage-grouse as well as increased nest failures. However, the Project's Habitat Mitigation Plan (see Attachment P-7) would contain measures to compensate for these indirect impacts.

The risk of upland game birds collisions with transmission structures is very low due to these species' flight behaviors, which generally involve short, low flights; however, they are generally poor flyers due to their heavy bodies and small wings compared to their body size indicating that they may not be able to avoid structures in flight. Mortalities of sage-grouse resulting from collisions have been reported at other facilities, including three mortalities in Utah (Borell 1939),

two mortalities in Idaho (Beck et al. 2006), and two in California (75 Federal Register 13910). Therefore, there is a very small chance that some greater sage-grouse mortalities resulting from collisions may occur as a result of Project operations. However, IPC's existing Avian Protection Plan (IPC 2008b), would be implemented to reduce potential risks of avian mortalities resulting from collisions (see the discussion found in the "Avian Species" section).

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Reptiles and Amphibians

Construction / Operations

Potential impacts of the Project's construction and operations to reptile and amphibian species would be similar to those discussed above for general wildlife species, except that they may be more susceptible than other taxa to direct mortality due to some reptile and amphibian species' defense method of holding still when threatened (i.e., they may not flee from construction equipment). The impact of individual mortalities would vary depending on the reproductive strategy of the species and the robustness of the population. Mortality of an individual could have no discernible effect on a large, quickly reproducing population, but could have an effect that lasts generations on a small, vulnerable, or slowly reproducing population (e.g., State Sensitive Species such as the northern sagebrush lizard). Most reptiles produce a moderate number of young per year (e.g., a few to a dozen, occasionally two dozen or more), do not reach maturity until their second or third year, and do not always reproduce every year (Storm and Leonard 1995). Amphibians may not reproduce until their second year, but can lay up to 1,000 eggs. Therefore, both reptiles and amphibians are moderate in their ability to recover from population perturbations such as the death of individuals, but amphibians are likely better able to recover than reptiles due to the greater number of young that they produce. A small population, however, would experience a greater impact than a large one, regardless of the species, due to the number of reproductive individuals remaining after the impact. In addition, amphibians may be affected by impacts to waterbodies. Potential impacts to waterbodies and their effects to aquatic species are addressed below for the "Fish" taxa. IPC has proposed measures to avoid and minimize impacts to wildlife species, as well as wetland habitats (see Section 3.3.7).

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

Fish

Construction / Operations

Impacts to fish species would occur at locations where the Project either crosses areas that contain fish, at crossings directly upstream of occupied areas (approximately 200 feet upstream[8]), as well as occupied areas that are not directly crossed but which are located

[8] Ritter (1984) developed a model estimating downstream distance and concentration of suspended sediment from construction of a pipeline from wet bottom trenching (i.e., a very significant form of stream bottom disturbance). This form of bottom disturbance is likely much greater than what would occur from normal stream crossing related to transmission line construction activities (including road and culvert construction). Transmission line disturbance is likely more similar to "dry" crossing pipeline construction type, in which bottom disturbance is isolated from flowing

adjacent to general soil disturbance and vegetative clearing. The amount of soil disturbance adjacent to waterbodies, as well as the number of waterbody crossings, the types of waterbodies crossed (e.g., intermittent or seasonally dry ephemeral, versus perennial streams), and the methods used to cross these waterbodies (i.e., transmission line spanning waterbodies versus access roads directly crossing them), would affect the type and magnitude of impacts that could occur to fish species and their habitats. Potential Project related impacts to fish species/habitats include alterations to large woody debris (LWD) input, temperature, suspended sediment, sedimentation, as well as the toxic effect of spills and use of chemicals adjacent to or within waterbodies. As currently proposed, the transmission line will span fish-bearing streams and no new road crossings are proposed for any fish-bearing streams. Therefore, impacts to fish passage, as well as impacts related to fish salvage, are not likely to occur.

Removal of riparian vegetation can have several potential adverse effects to aquatic systems, including an increase in erosion, reduced filtration of run-off, destabilization of stream banks, reduction of stream shade, reduced input of important terrestrial food source (i.e., allochthonous input), and a decrease in the availability of LWD. Riparian vegetation loss would initially occur during construction; however, ongoing vegetation maintenance in forested habitats would result in a permanent loss of taller trees within the Site Boundary of the transmission line. As the Project crosses through mostly low-lying shrubland vegetation, and forested/woodland habitats are mostly restricted to the Blue Mountains region, removal of trees in riparian areas is expected to be low. Furthermore, in areas spanned by the transmission line, trees would not be removed as long as the height of the tree (once mature) would not come within 50 feet of the wires (see Appendix P-5; Vegetation Management Plan). Construction of new access roads across forested riparian areas would, however, result in removal of trees within the extent of the road bed. These roads would typically consist of a 14- to 16-foot-wide cleared area on flat ground, but may be up to 30 feet wide in some sloping areas to accommodate cut or fill; however, no new road crossings are proposed for any fish-bearing streams (as all proposed crossings of fish-bearing streams would utilize existing access roads).

Stream temperature can be affected by removal of streamside vegetation. For example, cool stream temperatures are required for proper completion of the life cycle functions of some fish species (e.g., salmon and trout in Northwest streams), while warm water temperatures can limit rearing, spawning, egg incubations, and migration of salmon and trout (ODEQ 1995; McCullough 1999; McCullough et al. 2001; Sauter et al. 2001; Ecology 2002; EPA 2003). Temperatures changes from loss of riparian vegetation are likely to be varied among streams. Generally, the larger the relative area exposed to solar radiation the greater the magnitude of temperature change. Total temperature change across a cleared area, however, would be greater in small streams than large ones, due largely to shallower depth and lower volume of water in smaller streams. However, as most of the riparian areas in the Site Boundary currently consist of shrubs and grasses, and much of this vegetation would not be permanently cleared by the Project, retained streamside vegetation is likely to be suitable to maintain adequate shade to prevent substantial temperature increases. DeWalle (2010) examined models of the effect of buffer height, width, and vegetation density on maintaining adequate shade on

water (e.g., empirical suspended sediment data by Reid et al. [2002] found that dry, open-cut pipeline installation produced about one-seventh the amount of sediment produced by wet cut pipeline methods). Adjusting the Ritter (1984) wet bottom trenching model for the lower suspended sediment concentration (in proportion to estimates for dry crossing method) suggests that noticeable increases in suspended sediment (e.g., over 20 milligrams per liter [mg/L]) would not likely occur within 100 feet downstream for small perennial streams and possibly about 200 feet for large perennial streams crossed by roads or transmission lines where actions actually disturb the stream bank or bottom. This estimate is likely still higher than what is likely to occur from most stream crossings that would occur as a result of the Project. It should be noted that turbidity levels (as measured in nephelometric turbidity units) are strongly correlated with suspended sediment levels (Lloyd et al. 1987; Rosetta 2005) and would follow similar patterns of change in magnitude.

streams. He concluded that for a moderate to high density of canopy thickness, a ratio of buffer height to stream width of five would maintain adequate stream shade. This suggests that streams in the range of about 3 to 7 feet wide, with a vegetation buffer of 15 and 35 feet high or wide, may be adequately buffered to maintain temperature if the density of vegetation is high, indicating even moderate retention of vegetation could help moderate stream water temperatures crossed by the Project. As a result, Project actions would not likely result in a substantial temperature increase that could result in a biological effect at most locations that contain fish resources.

The clearing of vegetation, installation of culverts, as well as the presence and use of access roads can increase the input of sedimentation into adjacent waterbodies. Increased turbidity and sedimentation can impact fish behavior and physiological processes (e.g., blood chemistry, gill trauma, immune system resistance), and can result in reduced growth, health, and an increase in the risk of mortality. Sediment entering the water column can be redeposited on downstream substrates, which could bury aquatic macroinvertebrates (an important food source for some fish species). Additionally, downstream sedimentation could impact spawning habitat, spawning activities, eggs, larvae, and juvenile fish survival, as well as benthic community diversity and health. Because the impacts of increased sedimentation and turbidity are often limited to the period of work / soil disturbance, the duration of these impacts is expected to be relatively short. However, specific site characteristics including flow, substrate composition, relative disturbance, and other factors could extend the duration of construction impacts. Construction of access roads across waterbodies and culvert installation, as well as any other in-water work, is typically a major contributor to waterbody sedimentation; however, no new access roads across fish-bearing streams are proposed for this Project. Use of existing access roads, soil disturbance adjacent to waterbodies, as well as clearing of vegetation in areas where the line would span waterbodies would, however, contribute to the risk of erosion and sedimentation. IPC has developed measures to limit the risk of erosion and sedimentation; these measures are contained in the draft Reclamation and Revegetation Plan (Attachment P-4), the draft Vegetation Management Plan (Attachment P-5), the Spill Prevention, Control, and Countermeasures Plan (see the draft Species Conservation Plan in Attachment P-6), as well as Exhibit J.

Unrestricted access to habitat is important for both resident and anadromous salmonids. Upstream-migrating fish require access to suitable spawning gravel and juvenile fish must be able to disperse upstream and downstream to take advantage of available rearing habitat. If culverts are poorly designed, constructed, or maintained, they can affect the population of entire stream drainages. Currently, no culverts are proposed for fish-bearing streams and no new access roads across fish-bearing streams are proposed for this Project; however, if culvert installation is required, IPC would install all culverts in accordance with ODFW fish passage rules and approvals. In addition, culverts (if required) would be installed in accordance with BLM and USFS requirements on federally managed lands (see Section 3.3.7). As a result of these requirements, recommendations, and project designs, the Project is unlikely to adversely affect fish passage.

Another potential impact to fish habitat during construction is the risk of hazardous materials entering surface water supplies. For example, petroleum products entering streams can have direct toxic effects to fish and indirect effects by impacting aquatic macroinvertebrates (i.e., a major food source for fish). With the use of heavy and light equipment within the Site Boundary, there is the potential for spills of fuel and oils from storage containers, equipment working in or near streams, and fuel transfers. In addition, the construction of the tower footings would require the pouring of concrete. If wet concrete or concrete cleaning water enter streams, it could have an adverse effect on fish and other aquatic organisms from elevation of pH levels (e.g., stress, injury). Herbicides used near waterbodies (used to control invasive-plant species) can leach into

waterbodies, or run off into waterbodies during rain events. These herbicides can have adverse effects on fish species, resulting in reduced fitness or mortality. To reduce the risk of oils, wet concrete, or wash water entering streams, IPC would follow the avoidance and minimization measures outlined in the Storm Water Pollution Prevention Plan (SWPPP; see Attachment I-4 in Exhibit I, which contains some of the preliminary measures that would be followed), and the Spill Prevention, Containment, and Countermeasure Plan, which will developed and submitted to ODOE prior to commencing construction of the Project. Both plans contain measures which would prevent hazardous substances from entering fish-bearing streams. Use of herbicides would be restricted to applicable agency / landowner approved methods and herbicide types (see the draft Reclamation and Revegetation Plan in Attachment P-4, and the draft Species Conservation Plan in Attachment P-6), which would include restrictions on where herbicides could be used (e.g., restriction on use near waterbodies).

Fish salvage (i.e., removal or exclusion of fish from an area) is often necessary during installation of culverts in perennial streams. Potential adverse effects of fish salvage include fish injury, stress, and direct mortality. Injury and stress could result in the individual fish becoming more susceptible to infection or predation, thereby resulting in mortality. However, as no culvert installation is currently proposed for fish-bearing streams, no fish salvage is expected to occur for this Project.

Retirement

Retirement of the Project would involve activities and equipment similar to those that would be used during construction. Therefore, potential impacts during retirement of the Project would be similar to those described for construction.

3.3.7 Measures to Reduce or Avoid Adverse Effects

OAR 345-021-0010(1)(p)(G)
A description of any measures proposed by the applicant to avoid, reduce or mitigate the potential adverse impacts described in (F) in accordance with the ODFW mitigation goals described in OAR 635-415-0025 and a discussion of how the proposed measures would achieve those goals.

This section describes the avoidance, minimization, and mitigation measures that have been and would be implemented to reduce potential adverse impacts to non-listed wildlife and fish as well as their habitat, and discusses how the proposed measures achieve ODFW habitat mitigation goals.

3.3.7.1 Avoidance and Minimization Prior to Construction

During initial routing of the Project, avoidance of sensitive resources was taken into consideration by IPC. Sensitive resource areas that were avoided to the extent practical during the initial siting process included, but were not limited to, BLM-designated areas of critical environmental concern (ACECs), BLM-designated wilderness study areas, all waterbodies (including wetlands, wild and scenic rivers, special status streams), ESA-listed critical habitats, areas with sensitive wildlife resources (e.g., sage-grouse leks, Washington ground squirrel colonies, raptor nests), visually sensitive areas (e.g., USFS designated visual resource retention and preservation lands), USFS designated inventoried roadless areas, city and town boundaries, the Boardman Bombing Range, and irrigated cropland. Furthermore, the Project was designed to follow existing developments and utility corridors, such as existing roads and power lines, to the extent practical in order to consolidate impacts of the proposed line in areas that have already been disturbed, as opposed to impacting undisturbed areas. IPC also conducted extensive public outreach, in the form of the CAP, as well as consulting with land-managing agencies regarding possible route locations for the Project. A route that completely

avoided impacts to all sensitive resources was not possible due to the distribution of sensitive resources across the landscape, and as avoidance of one sensitive resource can often result in the route becoming located within range of another sensitive resource (e.g., avoiding forested habitats can results in the route passing through more shrubland habitats) input from the public and land-managing agencies has resulted in alternate corridor segments that weight avoidance of one resource against another. Details regarding the siting process and the constraints considered during the development of the proposed and alternate corridor segments are presented in the Project Siting Studies (IPC 2010, 2012; Attachments B-1 and B-2 in Exhibit B).

To the extent feasible, IPC has attempted to avoid fish and wildlife habitat, especially Category 1 and 2 habitats. However, due to siting constraints imposed by other sensitive resources (discussed in detail in Exhibit B, Section 3.1), avoidance of fish and wildlife habitat has required balancing various sensitive resources. For example:

- The Proposed Corridor in Baker County, between State Route 203 and State Route 84, was routed east of the NHOTIC to minimize visual impacts of the Project on the interpretive center (see Exhibit R). However, routing the Project to the east of the NHOTIC would result in the Project passing through an area between State Route 66 and State Route 84 that contains extensive sage-grouse Core (i.e., Category 1 Habitat based on the current categorization) and Low-Density Areas (i.e., Category 2 habitats). As a result, the BLM–sponsored Flagstaff Alternate was developed, which passes west of the NHOTIC and outside of these Category 1 and Category 2 sage-grouse habitats.
- Washington ground squirrel colonies (as well as a 785-foot buffer around the colony in suitable habitat) are designated as Category 1 habitats. These colonies are present along the portion of the Project located near the Boardman Bombing Range. This area also contains lands owned by The Nature Conservancy that are managed with the goal of protecting the Washington ground squirrel. The Proposed Corridor near the Boardman Bombing Range has been altered multiple times based on survey results and known occupied habitats in this area in order to avoid this Category 1 habitat, The Nature Conservancy grasslands, the Boardman Bombing Range, and to address private landowner concerns regarding future potential development of their property in the area.

In addition to routing the Project to avoid sensitive resources to the extent practical, IPC designed the Project in accordance with the APLIC suggested practices (APLIC and USFWS 2005) to minimize the potential impact of the Project on avian species.

Preconstruction surveys will be implemented for select species (see Table 1 of the Revised Final Biological Survey Work Plan; Attachment P-3). Preconstruction surveys would aid in determining if any additional areas have become occupied by targeted species since the initial Phase 2 surveys. The results of these preconstruction surveys may be used to microsite Project components outside of occupied areas to the extent feasible.

3.3.7.2 Avoidance and Minimization during Construction

To avoid and minimize impacts to sensitive wildlife and fish species during construction, all agency-required spatial and timing restrictions would be followed on the lands that they manage unless the agencies approve an exception (see Attachment P-6). These restrictions have been designated by federal and state agencies for various resources (such as ODFW designated big game habitats, raptor nests, sage-grouse habitats, and in-stream work windows) and include restrictions on when and where disturbance activities can occur. Adherence to these agency-required spatial and timing restrictions would minimize the potential impact of Project-related disturbances on sensitive resources. The agencies would approve an exception to these restrictions (through their established exception process) only if they determine that activities

would not impact the sensitive resource that year (e.g., the area is not utilized by the targeted resource during that season). ODFW does not have required spatial and timing restrictions (with some exceptions), but instead provides recommended spatial and timing restrictions; IPC would take ODFW recommendations and guidelines (i.e., measures that are not legally required) into consideration when developing their conservation plan (see Attachment P-6).

In addition to agency-required timing restrictions, IPC intends to schedule vegetative clearing to times outside of the typical avian breeding season (April through June) to the extent practical. This would reduce the impact that construction clearing may have on nesting species.

IPC will develop a set of maps, which would be reviewed by ODFW and ODOE, that depict the extent of sensitive resources (e.g., raptor nests, wetlands, big game habitats, sage-grouse lek buffers, special status plant species populations, etc.) within the Site Boundary. These maps will be provided to construction crews and other contractors, and will show applicable buffer zones and temporal restrictions on disturbances near or within sensitive areas. Sensitive areas will be flagged on-site (when applicable) to ensure avoidance during construction. Construction personnel will attend mandatory training on the importance of protecting sensitive resources and the need to adhere to all applicable restrictions and permit requirements.

No culverts are proposed for installation within fish-bearing streams at this time. However, if culverts are needed, they would be installed in accordance with ODFW fish passage rules, and would require ODFW approval, in order to minimize impacts to water and fish resources (see Exhibit J). On federally managed lands, BLM and USFS requirements regarding culvert installation would also be followed (see Exhibit J).

Areas that are not needed for permanent Project maintenance and/or operation would be restored to preconstruction conditions, to the extent practical. In addition, measures would be taken to minimize the introduction or spread of noxious and invasive-plant species during construction. Revegetation efforts and the measures to reduce the risk of noxious and invasive-plant species introduction and/or spread are outlined in IPC's draft Reclamation and Revegetation Plan (Attachment P-4) and the draft Vegetation Management Plan (Attachment P-5).

Furthermore, best management practices (BMPs) and EPMs would be implemented during construction in order to minimize erosion, reduce the risk of fire, minimize disturbance to wildlife, minimize harassment or accidental vehicular collisions with wildlife, as well as to ensure successful reclamation of temporarily disturbed areas following construction. These measures are listed in the draft Reclamation and Revegetation Plan (Attachment P-4) and the draft Species Conservation Plan (Attachment P-6).

3.3.7.3 Minimization and Mitigation during Operation

After construction is complete, IPC will restore habitat to preconstruction conditions. IPC has developed multiple EPMs that would be implemented during the Project's operation, including measures to ensure successful reclamation of temporarily disturbed areas, reduce the risk of introducing or spreading noxious- and invasive-plant species, minimize unauthorized use of access roads, requirements for reporting any wildlife mortalities to the applicable agencies, and measures to ensure compliance with the Migratory Bird Treaty Act as well as the Bald and Golden Eagle Protection Act. These measures are listed in the draft Species Conservation Plan (Attachment P-6).

Attachment P-7 contains IPC's draft Habitat Mitigation Plan. Impacts to fish and wildlife habitats that cannot be avoided or minimized would be mitigated for in compliance with the methods outlined in Attachment P-7.

3.3.7.4 Compliance with ODFW Mitigation Goals (OAR 635-415-0025)

As discussed previously, IPC will continue to work with the ODFW to avoid and minimize impacts to Category 1 habitats. Furthermore, IPC has attempted to avoid and minimize impacts to habitat Categories 2 through 5 where feasible (see Section 3.3.7.1). Where impacts to habitat are unavoidable, IPC will provide mitigation. A Habitat Mitigation Plan (see Attachment P-7) would be implemented in order to compensate for impacts to Category 2 through 5 habitats that cannot be avoided or minimized. To ensure compliance with ODFW wildlife habitat mitigation goals and standards, IPC will work with ODOE and ODFW to ensure that the Habitat Mitigation Plan is sufficient to meet the ODFW habitat mitigation goals and standards described in OAR 635-415-0025 (i.e., IPC assumes that the ODFW will review and comment on the currently proposed Habitat Mitigation Plan, as well as subsequent versions of the plan). Furthermore, all temporary impacts to wildlife habitat would be restored in a manner consistent with OAR 635-415-0025.

Before beginning construction, IPC will determine the final habitat mitigation requirements in consultation with ODFW and the affected federal land managers; mitigation requirements will be subject to the approval of ODOE. In compliance with expected conditions of the Site Certificate, all impact values and mitigation requirements reported in this Exhibit would be updated with any new information collected during surveys conducted after the publication of this Exhibit. The final mitigation area(s) will develop habitat suitable to fulfill ODFW criteria for Category 2 through 5 habitats (see further discussion and commitments in the Habitat Mitigation Plan; i.e., Attachment P-7).

3.3.8 Monitoring Plan

OAR 345-021-0010(1)(p)(H)

A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).

The draft Reclamation and Revegetation Plan (Attachment P-4) and the draft Habitat Mitigation Plan (Attachment P-7) contain a description of the monitoring plan that would be implemented to determine whether the revegetation and mitigation efforts are successful. As described in these plans, IPC will conduct post-construction surveys for a 3-year period following the conclusion of ground-disturbing activities; if pre-designated success criteria are not met after 3 years, monitoring and any necessary re-vegetation efforts (as applicable) would be conducted until pre-designated success criteria are met. Successful revegetation will be determined by monitoring reclaimed areas and comparing them to preconstruction conditions. Species and relative density will be assessed annually and compared to baseline data collected prior to the start of ground-disturbing activities. Reclamation will be determined successful if the seeded areas have germinated and are demonstrating that they will, over time, achieve a distribution and diversity similar to preconstruction conditions. If after a second growing season problem areas have been identified (e.g., seed germination is lower than expected, or there is a prevalence of noxious-weed species present that were not there prior to construction), the area will be treated and re-seeded. Treatment may include additional seedbed preparation, control of noxious- or invasive-plant species, use of soil amendments, and/or use of another appropriate seed mix.

The Species Conservation Plan and the (Attachment P-6 of Exhibit P) and the Habitat Mitigation Plan (Attachment P-7) discuss monitoring plans directly related to wildlife and their habitats.

4.0 CONCLUSION

Exhibit P contains evidence upon which the Council can make the required findings under OAR 345-022-0060 and conclude that the design, construction, and operations of the Project, taking into account mitigation, will be consistent with ODFW's Habitat Mitigation Goals and Standards contained in OAR 635-415-0025.[10]

5.0 SUBMITTAL AND APPROVAL COMPLIANCE MATRICES

Tables P-7 and P-8 provide cross references between Exhibit submittal requirements of OAR 345-021-0010 and the Council's Approval standards of OAR 345-022-0000 and where discussion can be found in the Exhibit.

Table P-7. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010(1)(p)	
(p) **Exhibit P.** Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection (q) that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060. The applicant shall include:	
(A) A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.	Section 3.3.1; Attachments P-3 and P-8
(B) Identification of all fish and wildlife habitat in the analysis area, classified by the habitat categories as set forth in OAR 635-415-0025 and a description of the characteristics and condition of that habitat in the analysis area.	Section 3.3.2 and 3.3.3; Attachment P-2
(C) A map showing the locations of the habitat identified in (B).	Section 3.3.4; Attachment P-10
(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.	Section 3.3.5
(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.	Sections 3.3.1 and 3.3.5; Attachments P-3 and P-8
(F) A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility.	Section 3.3.6

[10] IPC's preliminary analysis shows that Project impacts on fish and wildlife habitat are not consistent with the ODFW fish and wildlife habitat mitigation goals and standards. In order to achieve consistency with applicable standards, IPC will either propose mitigation, refine the Project location to avoid sensitive habitat, or ask the Council to exercise balancing authority under OAR 345-022-0000(2). For additional discussion regarding mitigation, see Section 3.3.6 and Attachment P-7, Habitat Mitigation Plan.

Table P-7. Submittal Requirements Matrix (continued)

Requirement	Location
(G) A description of any measures proposed by the applicant to avoid, reduce or mitigate the potential adverse impacts described in (F) in accordance with the ODFW mitigation goals described in OAR 635-415-0025 and a discussion of how the proposed measures would achieve those goals.	Section 3.3.7; Attachments P-4, P-5, P-6, P-7
(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).	Section 3.3.8; Attachments P-4, P-5, P-6, P-7

Table P-8. Approval Standard

Requirement	Location
OAR 345-022-0060	
OAR 345-022-0060 Fish and Wildlife Habitat To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.	Section 4

6.0 RESPONSE TO COMMENTS FROM REVIEWING AGENCIES AND THE PUBLIC

Table P-9 provides cross references between comments cited in the Project Order from reviewing agencies and the public and where discussion can be found in this Exhibit.

Table P-9. Reviewing Agency and Public Comments

Reviewing Agency Comments	Location in Exhibit
TBD	
Public Comments	
Potential impacts to species and habitats include habitat fragmentation and loss of connectivity (especially between summer and winter range for big game); disruption of migratory patterns; stream impacts from sedimentation, vegetation clearing, and herbicide use; introduction of invasive species; and impacts to vegetation important for forage and browsing (especially winter range areas).	Sections 3.3.6 and 3.3.7
Potential impacts to species and habitats include disruption of elk, mule deer, bighorn sheep, and pronghorn migration routes, breeding areas, and feeding areas.	Sections 3.3.6 and 3.3.7
The project may impact fish (steelhead, bull trout, and salmon), birds (sage-grouse, owls, bald eagle, golden eagle, swans, cranes, and waterfowl), and bat species. Exhibit P must address temporary and permanent impacts to fish, birds, bats, and other wildlife species.	Sections 3.3.6 and 3.3.7
Long-term maintenance of the transmission line corridor would result in the need for early detection and rapid response procedures to limit establishment of invasive species, control invasive species, and respond to wildfires.	Sections 3.3.6 and 3.3.7

Table P-9. Reviewing Agency and Public Comments (continued)

Reviewing Agency Comments	Location in Exhibit
The ASC should include a revegetation and weed control plan both for construction activities and for long-term operation of the proposed facility. This information may be included in Exhibit P, or as part of soil protection measures discussed in Exhibit I.	Attachments P-4 and P-5

7.0 REFERENCES

APLIC (Avian Power Line Interaction Committee) and FWS (U.S. Fish and Wildlife Service). 2005. Avian Protection Plan Guidelines: A Joint Document Prepared by The Edison Electric Institute's Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. April.

Beck, J.L., K.P. Reese, J.W. Connelly, and M.B. Lucia. 2006. Movement and Survival of Juvenile Greater Sage-grouse in Southwestern Idaho. *Wildlife Society Bulletin* 34:1070–1078.

BLM (Bureau of Land Management). 2008. State Director's Special Status Species List. USDA Bureau of Land Management – Oregon and Washington. January.

BLM. 2011. Bureau of Land Management National Greater Sage-Grouse Planning Strategy. Charter August 22, 2011.

BLM. 2012. GeoBOB database for Oregon and Washington. Database provided to IPC by the Bureau of Land Management.

Borell, A.E. 1939. Telephone Wires Fatal to Sage-grouse. *Condor* 41:85-86.

CNHP (Colorado Natural Heritage Program). 2005. Rocky Mountain Aspen Forest and Woodland. Available online at http://www.cnhp.colostate.edu/download/projects/eco_systems/pdf/RM_Aspen_Forest_and_Woodland.pdf

Coates, P., and D. Delehanty. 2010. Nest Predation of Greater Sage-Grouse in Relation to Microhabitat Factors and Predators. *Journal of Wildlife Management* 74(2):240-248

Coates, P.S., J.W. Connelly, and D.J. Delehanty. 2008. Predators of Greater Sage-Grouse Nests Identified by Video Monitoring. *Journal of Field Ornithology* 79:421–428.

Connelly, J., S. Knick, M. Schroeder, and S. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies.

Cowardin, L., V. Cater, F. Golet, and E. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service. Washington D.C.

Dedon, M., S. Byrne, J. Aycrigg, and P. Hartman. 1989. Bird mortality in relation to the Mare Island 115-kV transmission line: progress report 1988/1989. Department of the Navy, Western Division, Naval Facilities Engineering Command, Office of Environmental Management, San Bruno, California. Report 443-89.3. 150pp.

DeWalle, D.R. 2010. Modeling Stream Shade: Riparian Buffer Height and Density as Important as Buffer Width. *Journal of the American Water Resource Association* 46(2):323-333.

Doherty, K.E., D.E. Naugle, H.E. Copeland, A. Pocewicz, and J.M. Kiesecker. 2011. Energy development and conservation tradeoffs: systematic planning for greater sage-grouse in their eastern range. Pages 505-516 in S.T. Knick and J.W. Connelly, editors. *Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and Its Habitats.* Studies in Avian Biology 38. University of California Press, Berkeley, California, USA.

Dudley, J., and V. Saab. 2003. A field protocol to monitor cavity-nesting birds. Res. Pap. RMRS-RP-44. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 16 pp.

Ecology (Washington Department of Ecology). 2002. Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria. Draft Discussion Paper and Literature Summary. Pub. No. 00-10-070. Water Quality Program, Washington Department of Ecology, Watershed Management Section, Olympia, WA.

Engel, K.A., L.S. Young, K. Steenhof, J.A. Roppe and M.N. Kochert. 1992. Communal Roosting of Common Ravens in Southwestern Idaho. *Wilson Bulletin* 104: 105-121.

EPA (U.S. Environmental Protection Agency). 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA.

Franklin, J.F., and C.T. Dyrness. 1988. *Natural Vegetation of Oregon and Washington*. Oregon State University Press: Corvallis, Oregon.

FWS (U.S. Fish and Wildlife Service). 2006. Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California. Memorandum. Arcata Fish and Wildlife Office, Arcata, California.

Gilmer, D., and J. Wiehe. 1977. Nestling by Ferruginous Hawk and Other Raptors on High Voltage Powerline Towers. *Prairie Naturalist* 9:1-10

Hagen, C.A. 2005. Greater Sage-grouse Conservation Assessment and Strategy for Oregon: a Plan to Maintain and Enhance Populations and Habitat. Oregon Department of Fish and Wildlife, Salem, OR, USA.

IPC (Idaho Power Company). 2008a. Transmission Line Clearing Specifications. 12-100-01. September.

IPC. 2008b. Idaho Power Avian Protection Plan.

IPC. 2010. Siting Study. Boardman to Hemingway Transmission Line Project. August.

IPC. 2011. Revised Plan of Development. Boardman to Hemingway Transmission Line Project. November.

IPC. 2012. Boardman to Hemingway Transmission Line Project Supplemental Siting Study. June.

Knight, R., and J. Kawashima. 1993. Response of Ravens and Red-tailed Hawk Populations to Linear Right-of-Ways. *Journal of Wildlife Management* 57:266-271

Lloyd, D.S., J.P. Koenings, , and J.D. LaPerriere. 1987. Effects of Turbidity in Fresh Waters of Alaska. North American Journal of Fisheries Management 7:18–33.

Manley, P., B. Van Horne, J. Roth, W. Zielinski, M. McKenzie, T. Weller, F. Weckerly, and C. Vojta. 2006. Multiple species Inventory and Monitoring Technical Guide. Gen. Tech. Rep. WO-73. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 204p.

Manzer, D.L., and S.J. Hannon. 2005. Relating Grouse Nest Success and Corvid Density to Habitat: A Multi-scale Approach. *Journal of Wildlife Management* 69:110–123.

McCullough, D.A. 1999. A Review and Synthesis of Effects of Alterations to the Water Temperature Regime on Freshwater Life Stages of Salmonids, with Special Reference to Chinook Salmon. Environmental Protection Agency, Region 10. Seattle, WA.

McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. Issue Paper 5 – Summary of technical literature examining the physiological effects of temperature on salmonids. Prepared as part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA 910-D-01-005. Region 10 office of Water, Seattle, WA.

Morgan, R.L., and M. Nugent. 1999. Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtoni*) on State of Oregon Lands, South Boeing, Oregon in 1999. Report to the Oregon Department of Fish and Wildlife.

NOAA Fisheries (National Oceanic and Atmospheric Administration Fisheries Division). 2009. Office of Protected Resources. NOAA Fisheries. http://www.nmfs.noaa.gov/pr/species/

ODA (Oregon Department of Agriculture). 2008. Oregon listed plants. Available online at: http://www.oregon.gov/ODA/PLANT/CONSERVATION/statelist.shtml

ODEQ (Oregon Department of Environmental Quality). 1995. 1992-1994 Water Quality Standards Review, Temperature. Portland, Oregon.

ODFW (Oregon Department of Fish and Wildlife). 2005. Oregon Native Fish Status Report. Available online at http://www.dfw.state.or.us/fish/ONFSR/

ODFW. 2006. Oregon Conservation Strategy. Available online at http://www.dfw.state.or.us/conservationstrategy/contents.asp#a

ODFW. 2008. Threatened, Endangered, and Candidate Fish and Wildlife Species in Oregon. Available online at http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp

ODFW. 2009. Recommendations for Greater Sage-grouse Habitat Classification under Oregon Department of Fish and Wildlife's Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000). Wildlife Division. August.

ODFW. 2010. Letter from Craig Ely (NE Region Manager of the Oregon Department of Fish and Wildlife) to Doug Dockter (Idaho Power Project Manager of the Boardman to Hemingway Transmission Line Project). August 9, 2010.

ODFW. 2011. Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat.

ODFW. 2012. Implementing Habitat Mitigation for Greater Sage-Grouse under the Core Area Approach

ORBIC (Oregon Biodiversity Information Center). 2008. Portland State University Oregon Biodiversity Information Center. http://orbic.pdx.edu/

ORBIC. 2010. Rare, Threatened and Endangered Species in Oregon. Oregon Biodiversity Information Center Instituted for Natural Resources, Portland State University. Portland Oregon.

ORBIC. 2012. Portland State University Oregon Biodiversity Information Center data. Available online at: http://orbic.pdx.edu/

Quintana-Coyer, D., R. Gerhardt, M. Broyles, J. Dillion, C. Friesen, S. Godwin, S. Kamrath, and K. Garvey. 2004. Survey Protocol for the Great Gray Owl Within the Range of the Northwest Forest Plan, USDA Forest Service and USDI Bureau of Land Management, Version 3.0, January 12, 2004.

Reid, S.M., S. Stoklosar, S. Metikosh, and J. Evans. 2002. Effectiveness of Isolated Pipeline Crossing Techniques to Mitigate Sediment Impacts on Brook Trout Streams. Water Quality Research Journal of Canada 37:473-488.

Ritter, P.W. 1984. Water Quality Concerns Associated with Pipeline Stream Crossings. Pages 447-456 in A.E. Crabtree (editor). Proceedings of the Third International Symposium on Environmental Concerns in Rights-of-Way Management. Mississippi State University, MS.

Rosetta, T. 2005. Draft – Technical Basis for Revising Turbidity Criteria. Water Quality Division, Oregon Department of Environmental Quality.

Rowland, M.M., A.W. Alldredge, J.E. Ellis, B.J. Weber, and G.C. White. 1983. Comparative winter diets of elk in New Mexico. *Journal of Wildlife Management* 47:924-932.

Sauter, S.T., J. McMillan, and J. Dunham. 2001. Issue Paper 1 – Salmonid Behavior and Water Temperature. Prepared as part of EPA Region 10 temperature water quality criteria guidance development project. EPA 910-D-01-001. Region 10 office of Water, Seattle, WA.

Smucker, K., A. Cilimburg, and M. Fylling. 2008. 2008 Flammulated Owl Surveys Final Report. Northern Region Landbird Monitoring Program. Avian Science Center. University of Montana: Missoula, MT.

StreamNet. 2011. Fish distribution and critical habitat map data for Oregon. Portland, Oregon. Available online at: http://www.streamnet.org/mapping_apps.cfm (Accessed April - May 2011).

Steenhof, K., M. Kochert, and J. Roppe. 1993. Nesting by Raptors and Common Raven on Electrical Transmission Line Towers. *Journal of Wildlife Management* 57:271-281

Stewart, K.M., T.E. Fulbright, and D.L. Drawe. 2000. White-tailed Deer Use of Clearings Relative to Forage Availability. *Journal of Wildlife Management* 64:733-741.

Storm, R.M., and W.P. Leonard. 1995. *Reptiles of Washington and Oregon*. Seattle Audubon Society, Seattle, WA.

USFS (U.S. Department of Agriculture, Forest Service). 2008. Regional Forester's special status species lists.

USFS. 2011. *Larix occidentalis* Nutt. Western Larch. Available online at http://www.na.fs.fed.us/pubs/silvics_manual/Volume_1/larix/occidentalis.htm

Westbrook, R. 1998. Invasive Plants, Changing the Landscape of America: Fact Book. Federal Interagency Committee for the Management of Noxious and Exotic Weeds. Washington D.C.

Woodbridge, B., and C.D. Hargis. 2006. Northern goshawk inventory and monitoring technical guide, Gen. Tech. Rep. WO-71, Washington, D.C: U.S. Department of Agriculture, Forest Service, 80 pp.

ATTACHMENT P-1
SAGE-GROUSE LEK NUMBERS, AND IMPACTS TO CORE / LOW DENSITY / PPH/ PGH

Table P-1-1. Agency Designated Greater Sage-Grouse Habitat Crossed by the Project

Facility	County	Oregon Core Areas			Oregon Low-Density Areas			PPH			PGH		
		Miles Crossed	Acres Impacted[2]		Miles Crossed	Acres Impacted[2]		Miles Crossed	Acres Impacted[2]		Miles Crossed	Acres Impacted[2]	
			Temp	Perm		Temp	Perm		Temp	Perm		Temp	Perm
Proposed Corridor	Morrow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Umatilla	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Union	0.0	0.0	0.0	0.4	2.9	1.2	0.0	0.0	0.0	1.7	5.9	39.5
	Baker	36.9	625.7	158.1	22.5	366.3	100.9	36.9	625.7	158.1	23.4	107.7	383.5
	Malheur	13.7	279.9	79.8	16.5	217.3	47.7	13.7	279.9	79.8	24.8	89.7	380.1
Proposed 138/69-kV Rebuild	Baker	0.0	0.0	0.0	1.6	9.3	4.5	0.0	0.0	0.0	1.6	4.5	9.3
Total Proposed Corridor		**50.6**	**905.6**	**237.9**	**41**	**595.8**	**154.3**	**50.6**	**905.6**	**237.9**	**51.5**	**207.8**	**812.4**
Alternate Corridor Segments													
Horn Butte[1]	Morrow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longhorn[1]	Morrow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Glass Hill	Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flagstaff	Baker	2.3	114.5	8.4	1.3	31.7	2.7	2.3	114.5	8.4	4.4	10.0	73.6
Malheur S	Malheur	0.0	0.0	0.0	5.4	103.6	17.5	0.0	0.0	0.0	15.7	78.8	297.2
Double Mountain	Malheur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willow Creek	Malheur	14.7	264.0	54.2	2.7	38.5	12.9	14.7	264.0	54.2	6.4	30.3	97.1

Temp = Temporary impacts. Perm = Permanent impacts.
PPH = Preliminary Priority Habitats; PGH = Preliminary General Habitats
[1] Includes acres impacted due to new substation/substation expansion site footprint.
[2] Acres of impact calculated by overlaying the Projects disturbance footprint onto the agency designates sage-grouse habitat via ArcGIS software.

Table P-1-2. Number of Greater Sage-grouse Leks with an Occupied[3] Status within Varying Distances of the Project Centerline

Facility	County	Leks within 0.5 mile	Leks within 1 mile	Leks within 2 miles	Leks within 4 miles
Proposed Corridor	Morrow County	0	0	0	0
	Umatilla County	0	0	0	0
	Union County	0	0	0	0
	Baker County	0	0	0	3
	Malheur County	0	0	0	1
Proposed 138/69-kV Rebuild	Baker County	0	0	0	0
Total Lek Count Along Proposed Corridor[1]		***0***	***0***	***0***	***4***
Alternate Corridor Segments					
Horn Butte[2]	Morrow County	0	0	0	0
Longhorn[2]	Morrow County	0	0	0	0
Glass Hill	Union County	0	0	0	0
Flagstaff	Baker County	0	0	0	2
Willow Creek	Malheur County	0	0	0	0
Malheur S	Malheur County	0	0	0	0
Double Mountain	Malheur County	0	0	0	0

[1] Where the Proposed Corridor crosses county lines and intersects a lek buffer, the lek is counted for the portions of the route in each county. These leks are counted only once, regardless of county in the total overall lek count.
[2] Includes areas related to the new substation footprint.
[3] "Occupied Lek": is a regularly visited lek that has had ≥1 male counted in the last 7 years (ODFW 2011).

Table P-1-3. Number of Greater Sage-grouse Leks with an Occupied-Pending[3] Status within Varying Distances of the Project Centerline

Facility	County	Leks within 0.5 mile	Leks within 1 mile	Leks within 2 miles	Leks within 4 miles
Proposed Corridor	Morrow County	0	0	0	0
	Umatilla County	0	0	0	0
	Union County	0	0	0	0
	Baker County	0	1	5	19
	Malheur County	0	0	0	14
Proposed 138/69-kV Rebuild	Baker County	0	0	0	0
Total Along Proposed Corridor[1]		***0***	***1***	***5***	***26***
Alternate Corridor Segments					
Horn Butte[2]	Morrow County	0	0	0	0
Longhorn[2]	Morrow County	0	0	0	0
Glass Hill	Union County	0	0	0	0
Flagstaff	Baker County	0	0	0	3
Willow Creek	Malheur County	0	0	1	9
Malheur S	Malheur County	0	0	0	1
Double Mountain	Malheur County	0	0	0	0

[1] Where the Proposed Corridor crosses county lines and intersects a lek buffer, the lek is counted for the portions of the route in each county. These leks are counted only once, regardless of county in the total overall lek count.
[2] Includes areas related to the new substation footprint.
[3] "Occupied-Pending": is a lek not counted regularly in the last 7 years, but where birds were present at the last visit (ODFW 2011).

Table P-1-4. Number of Greater Sage-grouse Leks with an Unoccupied-Pending[3] Status within Varying Distances of the Project Centerline

Facility	County	Leks within 0.5 mile	Leks within 1 mile	Leks within 2 miles	Leks within 4 miles
Proposed Corridor	Morrow County	0	0	0	0
	Umatilla County	0	0	0	0
	Union County	0	0	0	0
	Baker County	1	2	5	11
	Malheur County	0	1	1	1
Proposed 138/69-kV Rebuild	Baker County	0	0	0	0
Total Along Proposed Corridor[1]		***1***	***3***	***6***	***12***
Alternate Corridor Segments					
Horn Butte[2]	Morrow County	0	0	0	0
Longhorn[2]	Morrow County	0	0	0	0
Glass Hill	Union County	0	0	0	0
Flagstaff	Baker County	0	0	2	4
Willow Creek	Malheur County	0	0	0	1
Malheur S	Malheur County	0	0	0	3
Double Mountain	Malheur County	0	0	0	0

[1] Where the Proposed Corridor crosses county lines and intersects a lek buffer, the lek is counted for the portions of the route in each county. These leks are counted only once, regardless of county in the total overall lek count.
[2] Includes areas related to the new substation footprint.
[3] "Unoccupied-Pending": is a lek not counted regularly in a 7 year period, but where birds were not present at last visit (ODFW 2011).

Table P-1-5. Number of Greater Sage-grouse Leks with an Unoccupied Status[3] within Varying Distances of the Project Centerline[1]

Facility	County	Leks within 0.5 mile	Leks within 1 mile	Leks within 2 miles	Leks within 4 miles
Proposed Corridor	Morrow County	0	0	0	0
	Umatilla County	0	0	0	0
	Union County	0	0	0	0
	Baker County	0	0	0	0
	Malheur County	0	0	0	0
Proposed 138/69-kV Rebuild	Baker County	0	0	0	0
Total Lek Count Along Proposed Corridor[1]		***0***	***0***	***0***	***0***
Alternate Corridor Segments					
Horn Butte[2]	Morrow County	0	0	0	0
Longhorn[2]	Morrow County	0	0	0	0
Glass Hill	Union County	0	0	0	0
Flagstaff	Baker County	0	0	0	0
Willow Creek	Malheur County	0	0	0	0
Malheur S	Malheur County,	0	0	0	0
Double Mountain	Malheur County	0	0	0	0

[1] Where the Proposed Corridor crosses county lines and intersects a lek buffer, the lek is counted for the portions of the route in each county. These leks are counted only once, regardless of county in the total overall lek count.
[2] Includes areas related to the new substation footprint.
[3] "Unoccupied": is a lek that has been counted annually and has had zero birds for 8 or more consecutive years (ODFW 2011).

ATTACHMENT P-2
HABITAT CATEGORIZATION MATRIX

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Applicable to All Habitat Types[4]	Applicable to All Habitat Types[3]	Applicable to All Habitat Types[3]	-Trees or structures which contain a special status raptor nest; -Occupied Washington ground squirrel colony (with a 785-foot buffer around the colony, buffer extent restricted to suitable squirrel habitat[4]); or -Sage-grouse Core Areas that contain the following elements: 1) habitats upon which sage-grouse depend; 2) there is evidence of sage-grouse presence; and 3) the site-specific habitat is both essential and irreplaceable.	-ODFW designated big game winter range (area to be included in Cat 2 consists of the extent of the designated winter range); -ODFW designated Low Density Greater Sage-Grouse Habitats; -Greater sage-grouse winter and brood rearing habitat; -Areas that are considered rare or limited on the landscape and are documented to provided habitat for a special status wildlife species (i.e., for special status wildlife species with established Limited Operating Period buffer distances); -Intact ground squirrel habitat adjacent to the 785-foot buffer of an active colony (this area will extend out to 4,921 feet beyond the Category 1 habitat, or until the habitat reaches one of the following habitat breaks: a road, a tilled agriculture field, an area of rim-rock habitat, or other unsuitable habitat features), or -Sage-grouse Core Areas that **do not** contain one of the following elements: 1) habitats upon which sage-grouse depend; 2) there is evidence of sage-grouse presence; and 3) the site-specific habitat is both essential and irreplaceable.	ODFW Designated big game summer range			
Conservation Reserve Program (CRP) Pasture/Hay Cultivated Cropland High Structure Agriculture	Agriculture / Developed	Agriculture			Lands enrolled in the CRP that contain later seral stage vegetation and which could provide important habitat for special status wildlife species (e.g., areas similar to natural conditions prior to agricultural development)	Irrigated-grazed pastures and hay meadows, as well as lands enrolled in the CRP that lack later seral stage vegetation or are less important for special status wildlife species due to land management or location		All other agricultural lands with low potential to become productive wildlife habitat
Developed, Open Space Developed, Low Intensity Developed, Medium Intensity Developed, High Intensity Quarries, Mines and Gravel Pits		Developed / Disturbed						All developed areas
Inter-Mountain Basins Volcanic Rock and Cinder Land Rocky Mountain Cliff, Canyon and Massive Bedrock Rocky Mountain Alpine Bedrock and Scree Inter-Mountain Basins Active and Stabilized Dune Inter-Mountain Basins Cliff and Canyon	Bare Ground	Bare Ground, Cliffs, Talus	Bat hibernacula or maternity colonies	Bat colonies	Cliffs, talus slopes, and rock outcrops that do not contain sensitive raptor nests, or bat hibernacula-colonies			Bare ground and developed areas (excluding cliffs, talus slopes, and rock outcrops; see Cat 3 description)

1

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Open Water Lacustrine (OWC and NWI) Palustrine Aquatic Bed (OWC and NWI) Palustrine Unconsolidated Bottom (OWC and NWI) Palustrine Unconsolidated Shore (OWC and NWI)	Open Water / Unvegetated Wetland	Ponds and Lakes		Lakes and ponds with high quality habitat that is dominated by native species	Lakes and ponds with lower quality habitat (compared to Category 2) which contains a mix of native and non-native species; or highly degraded open water habitats (permanent or seasonal) that are located in areas where water is limited on the landscape.	Highly degraded permanent open water areas that are almost completely dominated by non-native plant species or otherwise highly degraded, and which are not limited on the landscape	Highly degraded seasonal open water areas that are almost completely dominated by non-native plant species or otherwise highly degraded.	
Riverine (OWC and NWI)		Perennial Streams (stream mapped by USGS as permanent {year-round} flow)		All fish-bearing streams will be classified as Category 2 habitats. Fish presence is assumed in all perennial streams.				
Riverine (OWC and NWI)		Intermittent Streams (stream mapped by USGS as intermittent)		Intermittent fish-bearing streams. Fish presence is determined in intermittent streams via input from agency biologists, or through the presence of macro-invertebrates (assessed via OSDAM surveys)	Intermittent non-fish-bearing streams. The absence of fish in intermittent streams is determined via input from agency biologists, or through the lack of macro-invertebrates in these streams (assessed via OSDAM surveys)	Artificial man-made intermittent waterbodies without fish		
Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	Forest / Woodland	Mixed Grand Fir/Douglas Fir		Old forest multi-strata or old forest single strata (defined by the Umatilla National Land and Resource Forest Plan as > 21 inches dbh).	Understory reinitiation forests (defined by the Umatilla National Land and Resource Forest Plan as from 9 inches dbh to 20.9 inches dbh)	Stem exclusion forests (defined by the Umatilla National Land and Resource Forest Plan as 1 inch to 4.9 inches dbh for saplings and 5 to 8.9 inches dbh for pole stands).	Stand initiation forests (i.e., clearcuts, seedlings, and areas dominated by grass-forbs)	
Northern Rocky Mountain Western Larch Savanna		Mixed Tamarack		Old forest multi-strata or old forest single strata (defined by the Umatilla National Land and Resource Forest Plan as > 21 inches dbh).	Understory reinitiation forests (defined by the Umatilla National Land and Resource Forest Plan as from 9 inches dbh to 20.9 inches dbh)	Stem exclusion forests (defined by the Umatilla National Land and Resource Forest Plan as 1 inch to 4.9 inches dbh for saplings and 5 to 8.9 inches dbh for pole stands).	Stand initiation forests (i.e., clearcuts, seedlings, and areas dominated by grass-forbs)	
Rocky Mountain Lodgepole Pine Forest Rocky Mountain Poor-Site Lodgepole Pine Forest		Lodgepole Pine			Lodgepole pine forest/woodlands dominated by native species, and located in relatively undisturbed surroundings	Lodgepole pine forest/woodlands dominated by non-native species, or located in relatively disturbed surroundings (e.g., located near trails or other human disturbances)	Clearcuts, seedlings, and areas dominated by grass-forbs.	

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Northern Rocky Mountain Ponderosa Pine Woodland and Savanna East Cascades Oak-Ponderosa Pine Forest and Woodland	Forest / Woodland	Ponderosa Pine		Old forest multi-strata or old forest single strata (defined by the Umatilla National Land and Resource Forest Plan as > 21 inches dbh).	Understory reinitiation forests (defined by the Umatilla National Land and Resource Forest Plan as from 9 inches dbh to 20.9 inches dbh)	Stem exclusion forests (defined by the Umatilla National Land and Resource Forest Plan as 1 inch to 4.9 inches dbh for saplings and 5 to 8.9 inches dbh for pole stands).	Stand initiation forests (i.e., clearcuts, seedlings, and areas dominated by grass-forbs)	
Rocky Mountain Aspen Forest and Woodland Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland		Rocky Mountain Aspen		Moist areas dominated by aspen				
North Pacific Mountain Hemlock Forest Northern Rocky Mountain Subalpine Woodland and Parkland Northern Rocky Mountain Mesic Montane Mixed Conifer Forest Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland		Subalpine/Montane Forest		Subalpine/Montane forests dominated by native species, and located in relatively undisturbed surroundings	Subalpine/Montane forests dominated by non-native species, or located in relatively disturbed surroundings (e.g., located near trails or other human disturbances); Understory reinitiation forests (defined by the Umatilla National Land and Resource Forest Plan as from 9 inches dbh to 20.9 inches dbh)	Stem exclusion forests (defined by the Umatilla National Land and Resource Forest Plan as 1 inch to 4.9 inches dbh for saplings and 5 to 8.9 inches dbh for pole stands) and areas dominated by grass-forbs.	Stand initiation forests (i.e., clearcuts, seedlings, and areas dominated by grass-forbs)	
Columbia Plateau Western Juniper Woodland and Savanna Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland		Western Juniper/Mountain Mahogany Woodland		Columbia Basin Area: Woodlands dominated by old-growth juniper trees with rounded tops	Columbia Basin Area: Woodlands with few old-growth junipers Intermountain Basin Area: Woodlands that are not invading sage brush habitats, or which could not be converted into sage brush habitats		Intermountain Basin Area: Shrub-steppe and grassland areas that are being invaded by young juniper woodlands.	
Introduced Upland Vegetation - Treed Recently burned forest Harvested forest-tree regeneration Harvested forest-shrub regeneration Harvested forest-grass regeneration		Forested-Other		Old forest multi-strata or old forest single strata (defined by the Umatilla National Land and Resource Forest Plan as > 21 inches dbh).	Understory reinitiation forests (defined by the Umatilla National Land and Resource Forest Plan as from 9 inches dbh to 20.9 inches dbh)	Stem exclusion forests (defined by the Umatilla National Land and Resource Forest Plan as 1 inch to 4.9 inches dbh for saplings and 5 to 8.9 inches dbh for pole stands).	Stand initiation forests (i.e., clearcuts, seedlings, and areas dominated by grass-forbs)	

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland Columbia Plateau Steppe and Grassland Columbia Basin Foothill and Canyon Dry Grassland Inter-Mountain Basins Semi-Desert Grassland Northern Rocky Mountain Subalpine-Upper Montane Grassland Columbia Basin Palouse Prairie Rocky Mountain Subalpine-Montane Mesic Meadow	Shrub / Grass	Native Grasslands		Columbia Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% ground cover is native), or moderately disturbed habitat (i.e., between 50 to 75% ground cover is native) that contains a sage brush componentIntermountain Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% ground cover is native)	Columbia Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 50 to 75% ground cover is native), or highly disturbed habitat (i.e., between 15 to 50% ground cover is native) that contains a sage brush componentIntermountain Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 50 to 75% ground cover is native)	Columbia Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., between 15 to 50% ground cover is native), or very highly disturbed habitats (i.e., less than 15% ground cover is native) that contain a sage brush component Intermountain Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., between 15 to 50% ground cover is native)	Columbia Basin Area: Very highly disturbed habitats with a high percentage of non-native plant species (i.e., less than 15% ground cover is native), but which do not contain a sage brush componentIntermountain Basin Area: Very highly disturbed habitats with a high percentage of non-native plant species (i.e., less than 15% ground cover is native)	
Inter-Mountain Basins Mixed Salt Desert Scrub Inter-Mountain Basins Greasewood Flat		Desert Shrub		Columbia Basin Area: Undisturbed habitat dominated by native shrubs (i.e., greater than 75% of the shrub cover is native).	Columbia Basin Area: Moderately disturbed habitat with a mix of natives and non-native shrubs (i.e., between 25 to 75% of the shrub cover is native) Intermountain Basin Area: Undisturbed habitat dominated by native shrubs (i.e., greater than 75% of the shrub cover is native).	Columbia Basin Area: Highly disturbed habitat with a high percentage of non-native shrub species (i.e., less than 25% of the shrub cover is native) Intermountain Basin Area: Moderately disturbed habitat with a mix of natives and non-native shrubs (i.e., between 25 to 75% of the shrub cover is native), may contain juniper encroachment into habitat	Intermountain Basin Area: Highly disturbed habitat with a high percentage of non-native shrub species (i.e., less than 25% of the shrub cover is native)	
Inter-Mountain Basins Big Sagebrush Shrubland Inter-Mountain Basins Big Sagebrush Steppe Inter-Mountain Basins Montane Sagebrush Steppe Inter-Mountain Basins Semi-Desert Shrub-Steppe		Shrub-Steppe with Big Sage		Columbia Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% cover is native).	Columbia Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 25 to 75% cover is native) Intermountain Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% cover is native).	Columbia Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., less than 25% cover is native) Intermountain Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 25 to 75% cover is native), may contain juniper encroachment into habitat	Intermountain Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., less than 25% cover is native)	

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Columbia Plateau Ash and Tuff Badland	Shrub / Grass	Shrub-Steppe without Big Sage		Columbia Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% cover is native).	Columbia Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 25 to 75% cover is native) Intermountain Basin Area: Undisturbed habitat dominated by native species (i.e., greater than 75% is native).	Columbia Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., less than 25% cover is native) Intermountain Basin Area: Moderately disturbed habitat with a mix of natives and non-natives (i.e., between 25 to 75% cover is native), may contain juniper encroachment into habitat	Intermountain Basin Area: Highly disturbed habitat with a high percentage of non-native plant species (i.e., less than 25% cover is native)	
Columbia Plateau Scabland Shrubland								
Great Basin Xeric Mixed Sagebrush Shrubland								
North Pacific Montane Shrubland								
Rocky Mountain Lower Montane-Foothill Shrubland								
Northern Rocky Mountain Montane-Foothill Deciduous Shrubland								
Northern Rocky Mountain Subalpine Deciduous Shrubland								
Columbia Plateau Low Sagebrush Steppe								
Introduced Upland Vegetation - Shrub	Shrub / Grass	Other					Low quality habitat	
Introduced Upland Vegetation - Forbland								
Introduced Upland Vegetation - Annual Grassland								
Introduced Upland Vegetation - Perennial Grassland								
Recently burned grassland								
Recently burned shrubland								

ReGAP Ecological Systems, NWI categories, and OWC[1]	General Vegetation Type	Habitat Type	ODFW Habitat Category Types[2]					
			Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Inter-Mountain Basins Playa Rocky Mountain Alpine-Montane Wet Meadow North American Arid West Emergent Marsh Columbia Plateau Vernal Pool Rocky Mountain Subalpine-Montane Fen Inter-Mountain Basins Alkaline Closed Depression Palustrine Emergent Wetland (OWC and NWI)	Wetland	Emergent Wetland		High quality habitat dominated by native species	Area consists of a mix of native and non-native plants with a low to moderate level of disturbance		Farmed or previously filled wetland that is highly disturbed and dominated by non-native species	
Columbia Plateau Silver Sagebrush Seasonally Flooded Shrub-Steppe North Pacific Shrub Swamp Rocky Mountain Subalpine-Montane Riparian Shrubland Temperate Pacific Subalpine-Montane Wet Meadow Palustrine Scrub-Shrub Wetland (OWC and NWI)		Scrub-Shrub Wetland		High quality habitat dominated by native species	Area consists of a mix of native and non-native plants with a low to moderate level of disturbance		Farmed or previously filled wetland that is highly disturbed and dominated by non-native species	
Northern Rocky Mountain Conifer Swamp Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland Rocky Mountain Lower Montane Riparian Woodland and Shrubland Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland Columbia Basin Foothill Riparian Woodland and Shrubland Rocky Mountain Subalpine-Montane Riparian Woodland Palustrine Forested Wetland (OWC and NWI)		Forested Wetland		High quality habitat dominated by native species; forested wetlands that are part of a large wetland complex, old forest, or riparian area.	Area consists of a mix of native and non-native plants with a low to moderate level of disturbance (e.g., area is predominately sapling to pole-sized timber, evidence of fire, insects or other disease)			
Introduced Riparian and Wetland Vegetation		Wetland-Other		High quality habitat dominated by native species	Area consists of a mix of native and non-native plants with a low to moderate level of disturbance		Farmed or previously filled wetland that is highly disturbed and dominated by non-native species	

[1] Unless otherwise indicated, the entries in this column corresponding to ReGAP Ecological Systems. Entries corresponding to the National Wetland Inventory (NWI) or Oregon Wetland Cover (OWC) database are indicated in brackets following the entries' name.
[2] The term "Special Status Wildlife Species" refers to federal or state listed and Candidate species, or federal Species of Concern.
[3] The modifiers in the "Applicable to All Habitat Types" row can only move the category type up to a high level, not down (e.g., if the category type is a 1 based on vegetation; however, if the area overlaps with big game summer range [i.e., a Category 3 modifier] the area remains a Category 1 habitat type).
[4] The extent of a WAGS buffer is confined to areas between the colony and any break in suitable habitat, up to 785 feet (e.g., if a paved road or farmland exists 200 feet from the colony, the buffer will only extent out to that road or farmland, not to the full extent of the 785-ft buffer).
*Some of the habitat types are classified differently depending on if they are located in the Columbia Basin or the Intermountain Basin ReGAP Ecological Systems. Because some habitats are less common/limited, they may be more important in one region compared to another (e.g., sage brush habitats are less common in the Columbia Basin Area compared to the Intermountain Basin Area within the analysis area)

ATTACHMENT P-3
REVISED FINAL BIOLOGICAL SURVEY WORK PLAN

Revised
Final Biological Survey Work Plan
Volume I

Boardman to Hemingway Transmission Line Project

Prepared for:

Idaho Power Company

1221 West Idaho Street
Boise, Idaho 83702

Prepared by:

3380 Americana Terrace, Suite 201
Boise, ID 83706
(208) 389-1030
www.tetratech.com

Tetra Tech Project No. 8540146

April 2011

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1

1.1 Biological Survey Phases 3
1.2 Survey Area 14
1.3 Data Collection and Reporting 15
1.4 Right of Entry for Private Lands 15

2.0 PHASE 1 DATA COLLECTION AND ANALYSIS 17

2.1 Existing Resource Data 17
2.1.1 Wildlife 19
2.1.2 Fish 19
2.1.3 Bats 20
2.1.4 Plants 20
2.1.5 Waters of the United States 20
2.2 Vegetation Mapping 21
2.2.1 Land Cover and Vegetation Classification 21
2.2.2 Mapping Methods 22
2.2.3 ODFW Habitat Categories 24

3.0 PHASE 2 DATA COLLECTION AND ANALYSIS 25

3.1 Wildlife Field Surveys 25
3.1.1 Washington Ground Squirrel 26
3.1.2 Greater Sage-Grouse and Columbian Sharp-Tailed Grouse 26
3.1.3 Ferruginous Hawk, Bald Eagle, Golden Eagle, Swainson's Hawk, Peregrine Falcon, and Other Raptor Nests 28
3.1.4 Northern Goshawk 29
3.1.5 Great Gray Owl 30
3.1.6 Flammulated Owl 31
3.1.7 Three-toed Woodpecker 31
3.1.8 Columbia Spotted Frog 32
3.1.9 Terrestrial Visual Encounter Surveys 33
3.2 Plant Field Surveys 35
3.2.1 Agency Survey Requirements 35
3.2.2 Vegetation Survey Timing 36
3.2.3 Howell's Spectacular Thelypody 36
3.2.4 Slickspot Peppergrass 36
3.2.5 Survey Methods 36
3.2.6 Noxious Weeds Surveys 37
3.3 Waters of the United States 38
3.3.1 Field Surveys to Determine Presence of Wetlands and other Waters of the U.S. 38
3.3.2 Wetland Functions and Value Assessment 39
3.3.3 Sensitive Fish Habitat 40
3.4 Habitat Surveys 40
3.4.1 Unique Habitats 41
3.4.2 Vegetation Cover and Species Dominance 41
3.4.3 Final Habitat Category Maps 41

TABLE OF CONTENTS (continued)

4.0 PHASE 3 – PRECONSTRUCTION SURVEYS AND MODIFICATIONS TO PROJECT FEATURES 43

4.1 Active Raptor Nest Survey 43
4.2 General Avian Species 43
4.3 Waters of the United States 43
4.4 Surveys of Modifications to the Proposed Alternative or Project Features 44

5.0 REFERENCES 45

LIST OF TABLES

Table ES-1. B2H Timeframe for Performing Pre-Field Mapping/Preparation and Biological Field Surveys ES-6
Table 1. Phased Biological Surveys Approach 5
Table 2. Project Fetatures Associated with the B2H Transmission Line 14
Table 3. Flora and Fauna Occurrence and Habitat Data 18
Table 4. Wildlife Species, Survey Timeframe, and Mileposts Identified for Field Surveys along the B2H Routes 25

LIST OF FIGURES

Figure 1. Location Map 2

LIST OF APPENDICES

Appendix A Data Collection and Reporting for all Surveys
Appendix B-1 2011 Protocol for Washington Ground Squirrel Surveys
Appendix B-2 Sage-Grouse Lek Monitoring, Population Estimation, and Hunting Season Procedures/Guidelines
Appendix B-3 Raptor Nest Survey Protocol
Appendix B-4 Northern Goshawk Survey Protocol
Appendix B-5 Great Gray Owl Survey Protocol
Appendix B-6 Flammulated Owl Survey Protocol
Appendix B-7 Three-Toed Woodpecker Survey Protocol
Appendix B-8 Columbia Spotted Frog Survey Protocol
Appendix B-9 Terrestrial Visual Encounter Surveys
Appendix B-10 Burrowing Owl Survey Protocol
Appendix B-11 Pygmy Rabbit Survey Protocol
Appendix C-1 Federally Listed Plant Descriptions
Appendix C-2 Oregon State Listed and Idaho BLM Sensitive Plant Descriptions
Appendix C-3 Noxious Weeds List
Appendix C-4 Cover and Species Dominance Protocols and Worksheets
Appendix C-5 Oregon and Idaho Rare Plant Observation Forms
Appendix D-1 Wetland Determination Data Form Arid West Region
Appendix D-2 Wetland Determination Data Form Western Mountains, Valleys, and Coast Region
Appendix D-3 Oregon Rapid Wetland Assessment Protocol
Appendix E B2H Special Status Species List
Appendix F Preliminary Habitat Categorization Based on ODFW Habitat Categories
Appendix G Agency Comments and Responses

VOLUME II – BIOLOGICAL SURVEY MAP BOOK (Under Separate Cover)

Section 1 Land Cover Classifications Map Book
Section 2 Washington Ground Squirrel Survey Map Book
Section 3 Sage-Grouse Survey Map Book
Section 4 Raptor Aerial Survey Area Map Book
Section 5 Northern Goshawk and Three-toed Woodpecker Survey Map Book
Section 6 Great Gray and Flammulated Owl Survey Map Book
Section 7 Special Status Plant Survey Map Book

ABBREVIATIONS AND ACRONYMS

ACECs	areas of critical environmental concern
API	aerial photo interpretation
ASC	Application for Site Certificate
B2H	Boardman to Hemingway Transmission Line Project
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CAP	Community Advisory Process
CRP	Conservation Reserve Program
EFSC	Energy Facility Siting Council
EFU	Exclusive Farm Use
EIS	Environmental Impact Statement
ES	Ecological Systems
ESA	Endangered Species Act
GeoBOB	Geographic Biotic Observations
GIS	Geographic Information System
IDFG	Idaho Department of Fish and Game
IFWIS	Idaho Fish and Wildlife Information System
IDWR	Idaho Department of Water Resources
INFISH	Inland Native Fish Strategy
INHP	Idaho Natural Heritage Program
IPC	Idaho Power Company
kV	kilovolt
MIS	Management Indicator Species
NAIP	National Agriculture Imagery Program
NEPA	National Environmental Policy Act
NLC	National Land Cover Data
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NVCS	National Vegetation Classification System
NWI	National Wetland Inventory
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife

ABBREVIATIONS AND ACRONYMS (continued)

ODOE	Oregon Department of Energy
ODSL	Oregon Department of State Lands
ONHP	Oregon Natural Heritage Program
ORNHIC	Oregon Natural Heritage Information Center
PACFISH	Pacific Anadromous Fish Strategy
PNW	Pacific Northwest
ReGAP	Regional Gap Analysis Project
RHCA	Riparian Habitat Conservation Areas
ROW	right-of-way
TVES	Terrestrial Visual Encounter Survey
UTM	Universal Transverse Mercator
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
WSA	wilderness study area

This page is intentionally left blank.

EXECUTIVE SUMMARY

The Boardman to Hemingway Transmission Line Project (B2H) will require biological surveys to support the evaluation of potential impacts under the National Environmental Policy Act (NEPA) and to demonstrate compliance with Oregon Department of Energy (ODOE)-Energy Facility Siting Council (EFSC) standards. The comprehensive lists of federal- and state-listed species, designated as Sensitive by the Bureau of Land Management (BLM) and USDA Forest Service (USFS), as well as the USFS Management Indicator Species, were considered for project surveys (these species will be referred to as special status species). Representatives of Oregon Department of Fish and Wildlife (ODFW), Idaho Department of Fish and Game (IDFG), USFS, U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration Fisheries Division (NOAA Fisheries), and BLM have participated in planning meetings regarding which species from these lists could potentially occur near the project area (Appendix E lists the special status species that could occur within the project area), and this list has been updated throughout the development of this Work Plan.

Section 1 of this Biological Survey Work Plan (Work Plan) describes a three-phased biological survey process and includes specific protocols that will be used to meet data adequacy requirements for NEPA and ODOE-EFSC. The phased approach is based on species that have the potential to occur in previously identified routes between the proposed Boardman Substation (Boardman, Oregon) and the Hemingway Substation (Melba, Idaho) (Figure 1).

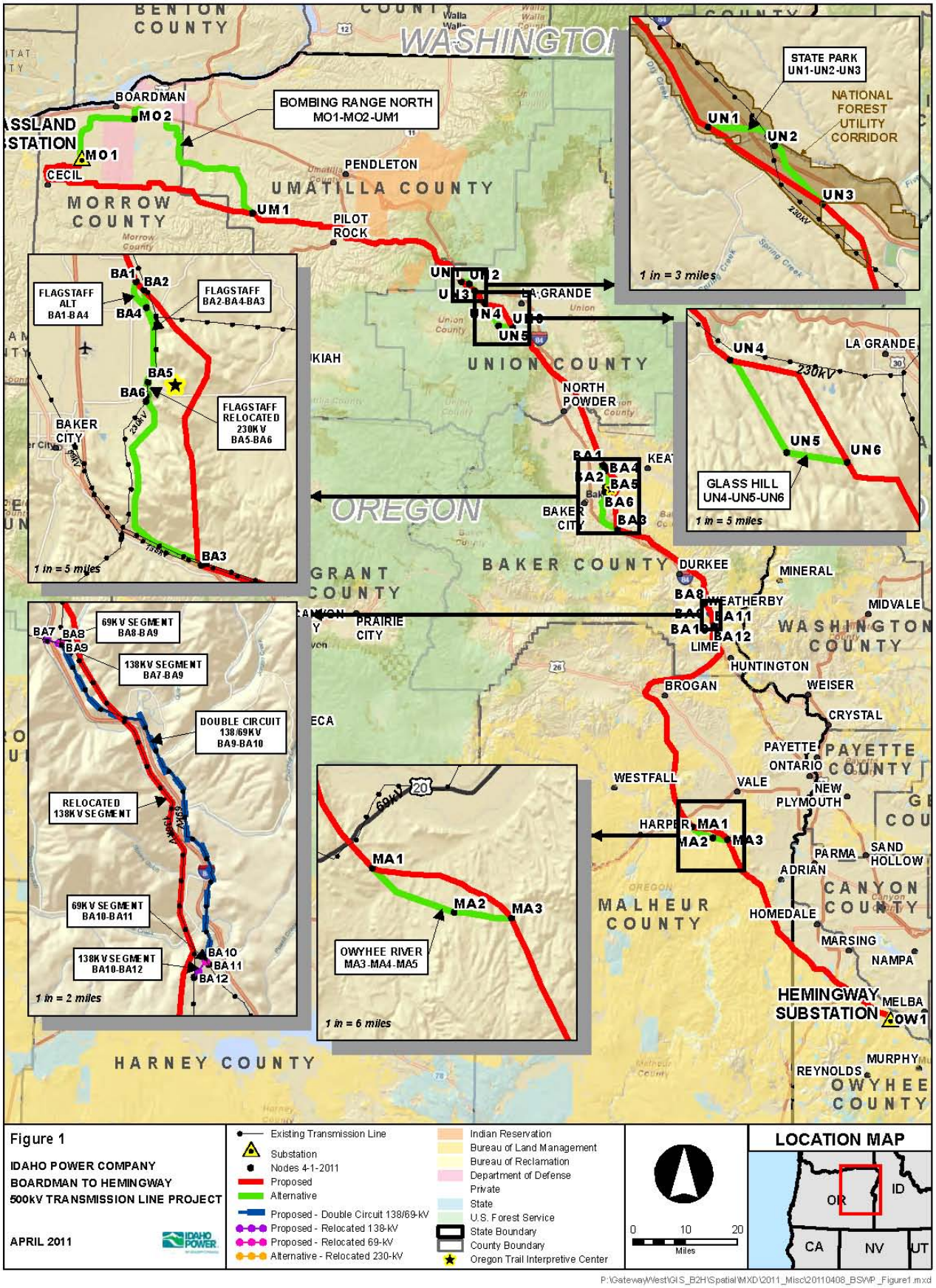
Biological Survey Phases

The objective for Phase 1 is to obtain adequate and equal biological information for all route alternatives to be considered in the Draft Environmental Impact Statement (EIS), and included Idaho Power Company's (IPC's) Application for Site Certificate (ASC) to ODOE-EFSC and subsequent Draft Proposed Order. Phase 2 involves additional comprehensive survey efforts specific to the Draft EIS BLM "preferred alternative" and IPC's Proposed Route contained in the ODOE-EFSC Proposed Order. Phase 3 includes pre-construction surveys that may be necessary to identify special status species locations for avoidance and mitigation compliance with temporal or spatial restrictions, micro-siting route changes, or close data gaps in areas where access was previously denied.

Phase 1

Phase 1 provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC as complete and issue the Draft Proposed Order. Phase 1 will gather existing data to create vegetation maps that identify the potential for occurrence of special status plant and animal species within the survey areas of the NEPA alternatives and IPC's Proposed Route contained in the ASC. Phase 2 data collection (Section 3) will focus on BLM's "Preferred Alternative" and IPC's Proposed Route contained in the ASC[1].

[1] IPC assumes that if the BLM Preferred Alternative and IPC Proposed Route under EFSC review differ, IPC, BLM, and ODOE would engage in a collaborative process to reconcile route differences and allow the NEPA and EFSC processes to continue concurrently.


BENTON COUNTY
WASHINGTON
BOARDMAN
MO2
MO1
CECIL
MORROW COUNTY
BOMBING RANGE NORTH
MO1-MO2-UM1
PENDLETON
UMATILLA COUNTY
UM1
PILOT ROCK
UNION COUNTY
LA GRANDE
NORTH POWDER
OREGON
BAKER CITY
BAKER COUNTY
DURKEE
MINERAL
WEATHERBY
MIDVALE
WASHINGTON COUNTY
LIME
HUNTINGTON
BROGAN
WEISER
CRYSTAL
PAYETTE
ONTARIO
PAYETTE COUNTY
WESTFALL
VALE
NEW PLYMOUTH
HARPER
PARMA
SAND HOLLOW
ADRIAN
CANYON COUNTY
HOMEDALE
MARSING
NAMPA
MALHEUR COUNTY
HEMINGWAY SUBSTATION
MELBA
OW1
HARNEY COUNTY
MURPHY
REYNOLDS
OWYHEE COUNTY
PRAIRIE CITY
GRANT COUNTY
STATE PARK
UN1-UN2-UN3
NATIONAL FOREST UTILITY CORRIDOR
UN1
UN2
UN3
230kV
1 in = 3 miles
UN4
UN5
UN6
GLASS HILL
UN4-UN5-UN6
1 in = 5 miles
FLAGSTAFF ALT
BA1-BA4
FLAGSTAFF
BA2-BA4-BA3
BA1
BA2
BA4
BA5
BA6
BA3
FLAGSTAFF RELOCATED 230KV
BA5-BA6
1 in = 5 miles
69KV SEGMENT
BA8-BA9
138KV SEGMENT
BA7-BA9
DOUBLE CIRCUIT
138/69KV
BA9-BA10
RELOCATED
138KV SEGMENT
69KV SEGMENT
BA10-BA11
138KV SEGMENT
BA10-BA12
BA7
BA8
BA9
BA10
BA11
BA12
1 in = 2 miles
MA1
MA2
MA3
OWYHEE RIVER
MA3-MA4-MA5
1 in = 6 miles
Figure 1
IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
APRIL 2011
Existing Transmission Line
Substation
Nodes 4-1-2011
Proposed
Alternative
Proposed - Double Circuit 138/69-kV
Proposed - Relocated 138-kV
Proposed - Relocated 69-kV
Alternative - Relocated 230-kV
Indian Reservation
Bureau of Land Management
Bureau of Reclamation
Department of Defense
Private
State
U.S. Forest Service
State Boundary
County Boundary
Oregon Trail Interpretive Center
0 10 20
Miles
LOCATION MAP
OR
ID
CA
NV
UT
P:\GatewayWest\GIS_B2H\Spatial\MXD\2011_Misc\20110408_BSWP_Figure1.mxd

Existing Resource Data

The description of the affected environment and environmental effects in the Draft EIS are based on existing data. Examples of existing data include land use and species management plans (BLM Resource Management Plans, Greater Sage-Grouse Conservation Assessment and Strategy for Oregon), vegetation maps (Northwest Regional Gap, 1-foot color imagery), species occurrence data from Oregon Natural Heritage Information Center (ORNHIC), Idaho Fish and Wildlife Information System (IFWIS), and wetland data from Pacific Northwest (PNW) Hydrography Clearinghouse, National Wetland Inventory (NWI), and National Hydrography Dataset.

Analysis of these data will allow each alternative to be treated equally in the Draft EIS, while providing sufficient information to understand the differences between alternatives and potential resource effects.

Vegetation Mapping

Vegetation mapping developed during Phase 1 of this Work Plan created a land cover dataset that will be applied across the entire project area, including both public and private lands. Vegetation mapping provides the basis for identifying habitat and the occurrence of special status species (Volume II-Final Biological Survey Map Book). This task includes the following:

- Incorporating elements of Geographic Information System (GIS) modeling and classification in combination with aerial photo interpretation of 1-foot color imagery (3Di West) and 1.6- to 6.6-foot color imagery of the National Agriculture Imagery Program (NAIP) to identify National Vegetation Classification System (NVCS) vegetation community types;
- Providing a mechanism for identifying suitable habitat for special status plant and animal species;
- To the extent practical, evaluating the quality of habitat for special status species using remote sensing, and incorporating substantial agency input and limited systematic field verification sampling; and
- Providing baseline information to categorize B2H habitats in accordance with ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000 through -0025).

Phase 2

Phase 2 supplements the Draft EIS analysis and provides protocol level information about BLM's Preferred Alternative and IPC's Proposed Route contained in the ASC. The focus of Phase 2 will be specific wildlife and plant surveys that will identify, in detail, the biological resources that occur within the survey areas described in this Work Plan. These surveys will be the basis for final vegetation mapping, wetland delineations, habitat mapping, and categorization as described herein.

Wildlife Field Surveys

The following special status species were identified during coordination meetings with the BLM, USFS, USFWS, NOAA Fisheries, ODFW, and IDFG, and will require site-specific field surveys:

- Washington ground squirrel and associated burrows;
- all raptors, including these special status species: the northern goshawk, ferruginous hawk, golden eagle, bald eagle, Swainson's hawk, peregrine falcon, flammulated owl, and great gray owl;
- greater sage-grouse and Columbian sharp-tailed grouse;
- three-toed woodpecker;
- Columbia spotted frog; and
- other special status species (as identified in Table ES-1) that will be surveyed concurrently.

Burrowing owl and pygmy rabbit will require site-specific field surveys if encountered during other species protocol surveys or Terrestrial Visual Encounter Survey (TVES). Note that on BLM-managed lands, protocol-level surveys for pygmy rabbits will be conducted in all areas with deep soil that contains big sagebrush species (including Mountain, Basin and Wyoming sage) with more than 5 percent canopy cover. These surveys will be conducted on BLM-managed lands, regardless of whether or not TVES surveyors identify rabbit activity. These protocol-level surveys will be conducted concurrently with TVES surveys; however, the surveyor conducting the pygmy rabbit surveys on BLM-administered lands will not be a part of or participate in the TVES surveys (i.e., his or her efforts will be spent exclusively on the pygmy rabbit protocol surveys for the duration of the survey).

This Work Plan includes field survey protocols for the above species (Appendix B-1 through B-11). Methods and timing are based on input from agency personnel as well as established survey protocols. Table ES-1 displays information on species-specific timing of surveys and the corresponding phase of the Work Plan in which the survey will be completed. The survey objectives for both wildlife and plant surveys are to collect site-specific information on wildlife and plant species and their occurrence within the survey area, which will be used to describe the affected environment, assist with final siting of the proposed transmission line and associated facilities, evaluate the potential impacts of construction, operations, and maintenance of the project, and provide the basis for environmental protection measures and appropriate mitigation measures.

Special Status Plant Species and Noxious Weed Surveys

Plants listed as threatened or candidate species under the Endangered Species Act (ESA) may occur within the project area. Plants listed as threatened or endangered by the state of Oregon, and as Sensitive by the BLM and USFS, have the potential to occur in the project area. These species will be addressed in Phase 2 of the Work Plan. Table ES-1 displays a list of these species and their survey timeframes.

Noxious weeds are nonnative, invasive species that threaten agriculture, rangelands, waterways, parks, wildlife, property values, public health and safety, and general ecological health and diversity of native ecosystems. Noxious weeds will be recorded concurrently during plant surveys. The Oregon Department of Agriculture (ODA) categorizes noxious weeds into two primary groups—List A, and List B. List A contains weeds of known economic importance that occur in the state in small enough infestations to make eradication or containment possible or weeds that are not known to currently occur in Oregon. Idaho noxious weeds are grouped into one of three lists maintained by the Idaho State Department of Agriculture: Statewide Early Detection and Rapid Response, Statewide Control, and Statewide Containment. See Appendix C-3 for a listing of Oregon and Idaho noxious weeds that may occur along the 500-foot survey corridor.

Waters of the United States

The Work Plan describes the proposed methodology for identifying, documenting, and delineating Waters of the U.S., including wetlands, that may be affected by the proposed transmission line to satisfy requirements of the U.S. Army Corps of Engineers (USACE), Oregon Department of State Lands (ODSL), and the Idaho Department of Water Resources (IDWR). The survey approach and appropriate functional assessment methodology will be finalized based on input from ODSL and USACE regulatory staff during a pre-application meeting. Direct impacts to Waters of the U.S. will be avoided and, where possible, minimized during micro-siting of project components (structures, access roads, pulling and tensioning areas, staging areas, and fly yards). A physical delineation and survey of these areas would occur only if a proposed project component is within 100 feet of Waters of the U.S.

Habitat Surveys

Identification and assessment of habitats is an integral part in evaluating the potential for occurrence of special status plant and wildlife species. Identification of the occurrence of unique habitats such as rock-ash-calcareous outcroppings, talus slopes, cliffs, caves, riparian zones, sand inclusions, mature timber stands, permanent and seasonal ponds, lakes, and wetlands, will take place in Phase 1 Vegetation Mapping. These unique features will be ground-verified during Phase 2 plant and wildlife surveys.

Phase 3

Preconstruction surveys will be implemented for select species during Phase 3. These may include surveys for active raptor nests, as well as general avian species nest surveys or specific plant species as appropriate. It is the intent that all vegetation clearing and grubbing will be performed prior to nesting and would negate the need to conduct nest surveys for most migratory birds. In the event that clearing would be needed during the nesting season, nesting surveys would be performed within 10 days of clearing, grubbing, grading or excavation activities.

If the Proposed Route alternatives or associated infrastructure change after Phase 2 surveys have been conducted, or where previously denied access has be granted, additional wildlife or plant surveys or wetland delineations will also be required during Phase 3 (Table ES-1).

Table ES-1. B2H Timeframe for Performing Pre-Field Mapping/Preparation and Biological Field Surveys

Survey Type		Survey Periods								
Common Name	**Scientific Name**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
PHASE 1—(IPC Proposed Route and NEPA Alternatives)										
VEGETATION and HABITAT MAPPING										
Vegetation Cover Mapping		■	■	■						
Unique Habitat Mapping		■	■	■						
Wetlands and Riparian (concurrently with Vegetation Mapping)		■	■	■						
PHASE 2—(BLM Preferred Alternative and IPC's Proposed Route and Route Alternatives)										
WILDLIFE										
Greater sage-grouse and Columbian sharp-tailed grouse	*Centrocercus urophasianus, Tympanuchus phasianellus*			■	■					
Washington ground squirrel	*Spermophilus washingtoni*				■	■				
Flammulated owl	*Otus flammeolus*					■	■	■		
Great gray owl	*Strix nebulosa*			■	■	■	■	■		
Northern goshawk	*Accipiter gentilis*						■	■	■	
Three-toed woodpecker	*Picoides dorsalis*				■	■	■	■		
Columbian spotted frog	*Rana luteiventris*						■	■	■	■
Raptor Nest Surveys					■	■	■			
Ferruginous hawk	*Buteo regalis*				■	■	■			
Golden eagle	*Aquila chrysaetos*				■	■	■			
Swainson's hawk	*Buteo swainson*					■	■			
Peregrine falcon	*Falco peregrinus*				■	■	■			
Bald eagle	*Haliaeetus leucocephalus*			■	■	■	■			
Terrestrial Visual Encounter Surveys										
Burrowing Owl[1/]	*Anthene cunicularia*			■	■	■	■			
Black-throated sparrow	*Amphispiza bilineata*				■	■	■			
Brewer's sparrow	*Spizella breweri*				■	■	■			
Grasshopper sparrow	*Ammodramus savannarum*				■	■	■			
Loggerhead shrike	*Lanius ludovicianus*				■	■	■			
Long-billed curlew	*Numenius americanus*				■	■	■			

Table ES-1. B2H Timeframe for Performing Pre-Field Mapping/Preparation and Biological Field Surveys (continued)

Survey Type		Survey Periods								
Common Name	**Scientific Name**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Northern waterthrush	*Parkesia noveboracensis*				■	■	■			
Sage sparrow	*Amphispiza belli*				■	■	■			
Sage thrasher	*Oreoscoptes montanus*				■	■	■			
Mojave black-collard lizard	*Crotaphytus bicinctores*				■	■	■			
Sagebrush lizard	*Sceloporus graciosus*				■	■	■			
Western ground snake	*Sonora semiannulata*				■	■	■			
Pygmy rabbit[1/]	*Brachylagus idahoensis*			■	■	■	■			
White-tailed jackrabbit	*Lepus townsendii*				■	■	■			
All other wildlife occurrences	N/A				■	■	■			
VEGETATION										
Howell's spectacular thelypody	*Thelypodium howellii ssp. Spectabilis*					■				
Slickspot peppergrass	*Lepidium papilliferum*					■	■			
Biennial stanleya	*Stanleya confertifolia*				■	■	■			
Bigelow's four-o'clock	*Mirabilis laevis* var. *retorsa*				■	■	■			
Calcareous buckwheat	*Eriogonum ochrocephalum* var. *calcareum*					■	■	■	■	
Cronquist's stickseed	*Hackelia cronquistii*					■	■			
Cusick's false yarrow	*Chaenactis cusickii*					■	■			
Cusick's lupine	*Lupinus lepidus* var. *cusickii*					■	■			
Desert pincushion	*Chaenactis stevioides*				■	■	■			
Dimeresia	*Dimeresia howellii*						■			
Douglas' clover	*Trifolium douglasii*						■	■		
Greeley's wavewing	*Cymopteris acaulis* var. *greeleyorum*				■					
Janish's penstemon	*Penstemon janishiae*					■	■			
Laurence's milkvetch	*Astragalus collinus* var. *laurentii*					■	■			

Table ES-1. B2H Timeframe for Performing Pre-Field Mapping/Preparation and Biological Field Surveys (continued)

Survey Type		Survey Periods								
Common Name	**Scientific Name**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Least phacelia	*Phacelia minutissima*				■	■	■			
Least snapdragon	*Sairocarpus Kingii*				■	■	■	■		
Many-flowered phlox	*Phlox multiflora*					■	■	■	■	
Malheur cryptantha	*Cryptantha propria*				■	■				
Malheur yellow phacelia	*Phacelia lutea* var. *calva*					■	■			
Mingan's moonwort	*Botrychium minganense*							■	■	■
Mountain moonwort	*Botrychium montanum*							■	■	■
Mulford's milkvetch	*Astragalus mulfordiae*				■	■				
Oregon semaphore grass	*Pleuropogon oregonus*						■	■		
Owyhee clover	*Trifolium owyheense*					■	■			
Packard's mentzelia	*Mentzelia packardiae*					■	■			
Packard's wormwood	*Artemisia packardiae*						■	■	■	
Red-fruited lomatium	*Lomatium erythrocarpum*						■	■		
Retrorse sedge	*Carex retrorsa*						■	■	■	
Salt heliotrope	*Heliotropum curvassavicum*					■	■			
Simpon's hedgehog cactus	*Pediocactus simpsonii*					■	■			
Smooth mentzelia	*Mentzelia mollis*					■	■			
Snake River goldenweed	*Pyrrocoma radiata*							■		
Sterile milkvetch	*Astragalus cusickii* var. *sterilis*						■	■		
Stiff milkvetch					■	■	■			
White-margined waxplant	*Glyptopleura marginata*					■	■			
HABITATS										
Vegetation Map Refinement			■	■	■	■	■	■	■	■
Unique Habitat Ground Verification					■	■	■	■	■	
Wetland Delineations					■	■	■	■	■	■

Table ES-1. B2H Timeframe for Performing Pre-Field Mapping/Preparation and Biological Field Surveys (continued)

Survey Type		Survey Periods								
Common Name	**Scientific Name**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
PHASE 3—(Preconstruction Surveys and Modifications to Project Features)[2/]										
WILDLIFE										
Active Raptor Nest Survey										
VEGETATION										
Vegetation Clearance Surveys in Areas of Disturbance										
OTHER										
Wildlife, Vegetation, and Habitat Surveys of Modified Route or Project Features										

Notes:

1/ Protocol surveys for these species will be conducted if individuals or their sign are documented during other protocol surveys or TVES and could occur during any phase of the project; on BLM-managed lands, protocol-level surveys for pygmy rabbits will be conducted in all areas with deep soil that contains big sagebrush species (including Mountain, Basin, and Wyoming sage) with more than 5 percent canopy cover.

2/ Surveys would be conducted during appropriate species timing requirements.

This page is intentionally left blank.

1.0 INTRODUCTION

The Applicant, Idaho Power Company (IPC), is proposing to construct, operate, and maintain approximately 300 miles of single-circuit 500-kilovolt (kV) transmission line, known as the Boardman to Hemingway Transmission Line Project (B2H). This Biological Survey Work Plan (Work Plan) describes the survey process and species-specific surveys that will be conducted to meet full data adequacy for National Environmental Policy Act (NEPA) and Oregon Department of Energy (ODOE) - Energy Facility Siting Council (EFSC) evaluation for B2H. This Work Plan presents all of the tasks required to successfully complete the biological resources studies and surveys for B2H. This work is being undertaken to comply with federal and Oregon State Endangered Species Acts (ESAs), ODOE-EFSC requirements, and Oregon Department of Fish and Wildlife (ODFW) habitat categorization requirements. The purpose of the surveys is to identify wildlife resources, including special status species, vegetation resources, including special status species, and Waters of the U.S. that may be present within the Applicant's Proposed Route and its alternatives for B2H. Special status and listed fish (Appendix E) will be assumed present in streams that have been documented to contain these species. Fisheries surveys will not be conducted; however, stream data (i.e., stream morphology, riparian vegetation characteristics, and substrate characteristics) will be collected at all locations where the project has the potential to adversely impact fish habitats (see Sections 2.1.2 and 3.3.3).

The initial process of identifying a route began in late 2007, when IPC submitted an SF-299 application for a Right-of-Way Grant to the Bureau of Land Management (BLM) and Bureau of Reclamation (BOR), a Special Use Permit to the USFS, and a Notice of Intent (NOI) to ODOE-EFSC. Following the public scoping meetings held in October 2008, these agencies received public input requesting that IPC conduct more extensive outreach while identifying the transmission line route. In response, IPC initiated a process to engage communities from Boardman, Oregon, to Murphy, Idaho, in siting the B2H Transmission Line Project. This process is called the Community Advisory Process (CAP). IPC met with various private landowners, local officials, business leaders and other stakeholders from May 2009 through May 2010 to identify community issues and concerns, develop a range of possible routes, and recommend proposed and alternate routes. Based on comments received in the CAP, IPC submitted a revised application to the BLM and USFS in June 2010, and a NOI to the ODOE-EFSC in July 2010. The objectives for siting the project were to address community concerns, avoid sensitive resources when possible, balance regulatory requirements, address construction difficulty, and estimate overall project costs. Sensitive resources areas that were avoided to the extent practical during the siting process included, but were not limited to, city and town boundaries, the Boardman Bombing Range, Exclusive Farm Use (EFU) zones, areas of critical environmental concern (ACECs), wilderness study areas (WSAs), all waterbodies (including wetlands, wild and scenic rivers, special status streams), visual resource retention and preservation lands, inventoried roadless areas, ESA-listed critical habitats, and areas with sensitive wildlife resources (e.g., sage grouse leks, eagle nests). Details regarding the siting process and the constraints considered regarding proposed and alternative routes are presented in the B2H Siting Study (IPC 2010).

The BLM, as the lead agency responsible for NEPA compliance, conducted a second public scoping period that ended in late September 2010. ODOE-EFSC conducted public meetings concurrently with the BLM's scoping meetings. Based on the scoping process, it was determined that BLM will work with cooperating agencies to determine which routes, including alternatives, will be analyzed in detail in the EIS. Once the NEPA alternatives have been established, a reevaluation of special status species in the project area will occur with input from BLM, USFWS, NOAA Fisheries, ODFW, and ODA. BLM's Preferred Alternative and IPC's Proposed Route as contained in the ASC will continue to be refined throughout the permitting process. The Phased Study approach, as described in the Work Plan, will ensure that appropriate biological resource surveys will be conducted as necessary.

Purpose of the Work Plan

The purpose of this Work Plan is to serve as a guide for specific species that will be surveyed for and method (protocol) that will be used to complete the surveys. This Work Plan will also serve as an agreement between IPC and the agencies (BLM, Idaho Department of Fish and Game [IDFG], ODFW, ODA, NOAA Fisheries, and the USFWS) on which species need to be surveyed to meet the requirements of the NEPA document and ODOE-EFSC Application for Site Certificate (ASC). This plan contains a list of the specific species that will be surveyed for, the timing of the surveys, and detailed protocols for the surveys for each species.

Agency Coordination

On August 22, 2008, a meeting was held with land managers and biologists from all of the involved BLM, USFS, NOAA Fisheries, USFWS, and ODFW offices in Baker City, Oregon, to discuss the need for protocol surveys for identified wildlife species, rare plant species, wetlands, vegetation, and general habitat surveys. Methods to develop vegetation mapping were also discussed and agreed upon. Subsequent meetings with ODFW biologists were held in Baker City on September 30, 2008, and in Pendleton, Oregon, on October 17, 2008. A meeting with the IDFG was held in Boise, Idaho, on February 9, 2009. The draft Work Plan was submitted to agency specialists on February 10, 2009, followed by an interagency meeting involving representatives of ODFW, BLM, USFS, ODOE, NOAA Fisheries, and USFWS to discuss proposed survey protocols on February 17, 2009. Shortly after, IPC initiated the CAP to develop a broader range of possible routes and recommend proposed and alternate routes. Following completion of the CAP, a second interagency meeting involving representatives of ODFW, BLM, USFS, ODOE, NOAA Fisheries, and USFWS was held on October 26, 2010, to obtain additional input on species and habitats along IPC's Proposed Route and route alternatives. A final meeting with these agencies was held in Baker City, Oregon, on February 15, 2011, to finalize the Work Plan. Input from agency specialists was used to identify the special status federal and state species that would require field surveys, the species targeted during concurrent field surveys, and the species for which field surveys would not be required.

Data Standards

The BLM NEPA handbook H-1790-1 (USDI-BLM 2008) does not provide specific guidance on required data standards. It does state that information should be of sufficient detail to serve as

a baseline against which to measure the potential effects of implementing an action. Council on Environmental Quality regulations (40 Code of Federal Regulations 1500.1 [b]) state that:

> "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail."

ODOE-EFSC requires the applicant to complete appropriate site-specific studies to characterize the fish and wildlife habitat at the site and nearby areas. The purpose of these studies is two-fold. The first is to determine the quality of the fish and wildlife habitat based on species presence or absence, and the second is to determine whether direct impacts to species or their habitat will occur or if the habitat can be avoided. If the impacts to species or habitat cannot be avoided, then mitigation must be developed.

The applicant must also provide appropriate studies of the site to identify threatened or endangered species that the proposed facility could affect. If a potential risk to the survival or recovery of a threatened or endangered species exists, the applicant must redesign or relocate the facility to avoid that risk or propose appropriate mitigation measures.

This Work Plan was developed through consultation with the ODFW, IDFG, ODA, USFS, USFWS, NOAA Fisheries, and BLM, and contains a comprehensive list of sensitive species that could be affected by the proposed B2H project. Surveys for the species documented in this Work Plan will provide an appropriate baseline for the NEPA analysis and will comply with ODOE-EFSC standards.

Updates to the Work Plan

All of the surveys that will occur in support of the B2H project have seasonally specific time frames in which they must occur. Any deferral in initiating the surveys or the need to conduct additional surveys could result in a delay in obtaining species data necessary for the ODOE-EFSC ASC. Therefore, updates to this Work Plan will be limited to the following conditions:

1. Change in status of a species by its federal listing as threatened or endangered
2. Changes to the location of IPC's Proposed Route or route alternatives that would affect special status species or their habitats that are not currently documented in this Work Plan.

1.1 Biological Survey Phases

IPC will collect biological resource data in three phases (Table 1). The phased approach was developed to meet the unique and not always complementary data needs, timelines, and regulatory processes of the BLM, USFS, and ODOE-EFSC for a multi-state transmission line project. The phased approach provides all of the data typical for these processes, while also

accounting for changes in the project as engineering design is refined and as permission to access private lands is granted.

Phase 1 utilizes existing data to create vegetation maps that describe the occurrence and potential for occurrence of biological resources within the project area. Phase 1 will provide biological information for the full range of route alternatives in the Draft EIS and provide the majority of information necessary for the ASC submittal to ODOE-EFSC, and issuance of a Draft Proposed Order.

Phase 2 includes protocol level surveys to be completed along the BLM Preferred Alternative and ODOE-EFSC Proposed Route identified in the ASC and provides the data necessary to complete a Final EIS and the issuance of ODOE-EFSC's Proposed Order. This phase includes ground surveys for Washington ground squirrel, Columbia spotted frogs, northern goshawk, great gray owl, flammulated owl, three-toed woodpecker, and aerial surveys of greater sage-grouse and nesting raptors. Surveys for special status plant and wildlife species will be conducted concurrently. During these surveys, all wildlife species and any sensitive plant species that are observed will be recorded. Other species-specific protocol surveys may be required along portions of the route if an unanticipated species is located during survey efforts.

Phase 3 includes pre-construction surveys that may be necessary to comply with temporal or spatial restrictions and/or provide information for any changed condition (e.g., modifications to project features).

Table 1. Phased Biological Surveys Approach

PURPOSE OF PHASED STUDY PLAN APPROACH

The purpose of this phased study plan is to provide a road map of the transmission line area of analysis, types of data to be collected and timing of collection. The objective is to devise a plan that will allow the NEPA, BLM Right-of-Way (ROW) Grant, Forest Service Special Use Permit and EFSC Site Certificate processes to proceed concurrently based on an adequate level of detail needed for making intermediate and final agency decisions. The specific phasing of data described below takes into account the unique nature of a long cross-state high-voltage line, public interest in line adjustments, and the inherent flexibility of transmission line components to be micro-sited to avoid impact. When the three phases are taken as a total the data collected and analyzed meet all of the typical BLM and USFS survey requirements, as well as all the substantive requirements of ODOE-EFSC regulations.

Biological Resources Phased Study Plan

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
MAJOR SCHEDULE ACTIVITIES			
Schedule Timeline Activities	**12 months** BLM/FS with cooperating agencies • BLM/USFS SF 299s. • Federal Register NOI. • Scoping Meetings. • Scoping Report. • Preliminary Draft EIS. • Administrative Draft EIS. • Draft EIS. ODOE-EFSC with ODFW • NOI (by Proponent). • Public Notice. • Public Information Meetings. • Preliminary ASC (by proponent). • Data requests. • Deemed Complete. • Draft Proposed Order.	**12 months** BLM/FS with cooperating agencies • Comment period. • Public Meetings. • Final EIS. ODOE-EFSC with ODFW • Public Hearings. • Proposed Order.	**4-6 months** After BLM/FS • Record of Decision. • Appeal Period. • ROW Grant and Special Use Permit issued. • Approval of Construction Plan of Development (POD). After ODOE-EFSC • Contested Case. • Site Certificate. • Appeal Period. • Compliance with all conditions of Certificate.

Table 1. Phased Biological Surveys Approach (continued)

STUDY PARAMETERS			
Resource Category	**Phase 1 Data Collection** Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	**Phase 2 Data Collection** Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	**Phase 3 Data Collection** Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
Alternatives	• Range of alternatives based on BLM / ODOE-EFSC scoping. The alternatives will be evaluated at same level of analysis in the Draft EIS based on the Phase 1 data sources described below. These will be the same range of alternatives presented in Applicant's preliminary ASC which will also be based on the Phase 1 data sources described below.	Includes IPC's and route alternatives presented in the Final ASC, BLM preferred alternative based on the Draft EIS comments, and any new reasonable alternatives identified as a result of scoping.	Includes route changes identified late in project permitting due to site-specific conditions.
Analysis Areas	• The analysis area will be specific to each resource area as determined by environmental practice, BLM guidelines or ODOE-EFSC standards.	The analysis area will be specific to each resource area as determined by environmental practice, BLM guidelines, or ODOE-EFSC standards.	
Disturbance Footprint	• The disturbance areas within the ROW include access roads, transmission structure sites, and pulling and tensioning sites. Disturbance areas outside ROW include service and access roads, staging areas and fly yards.	The disturbance areas within the ROW include access roads, transmission structure sites, and pulling and tensioning sites. Disturbance areas outside ROW include service and access roads, staging areas and fly yards.	Final modifications included in construction BLM POD and Supplemental ODOE-EFSC filing identifying any changes in conditions since Final Project Order.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
WILDLIFE			
Greater Sage-grouse	Existing Data • ODFW and IDFG lek data. • Sage-Grouse Conservation Assessment and Strategy for Oregon: habitat ranks/viability data. • ODFW occurrence data. • IDFG sage-grouse telemetry data. • The Oregon Natural Heritage Program (ONHP) data. • Idaho Fish and Wildlife Information System (IFWIS) Database. • Idaho Sage-grouse Habitat Planning Map. • Conservation Plan for the greater sage-grouse in Idaho. • Local Working Group sage-grouse conservation plans (e.g., Owyhee, West Central, Idaho, others). Additional Data • Aerial lek surveys of potential routes completed in April 2010. • Follow-up ground surveys may be conducted at suspected lek locations. A sage grouse specialist would make determination as to whether ground survey is needed. • Refine potential habitat types along routes using ReGAP.	• Incorporate any new sage-grouse data from ODFW and IDFG. 2011 aerial lek surveys of Proposed Route and associated project features (access roads, lay-down areas, and fly yards) not flown in 2010.	• Follow-up surveys of modifications to all project features.
Sharp-tailed Grouse	Existing Data • ONHP data. • IDFG lek data. Additional Data • Will be considered during all sage-grouse efforts (above).	• Incorporate any new grouse data from ODFW and IDFG.	
Burrowing Owl	Existing Data • ONHP data. • IDFG data. • BLM Location and habitat data. • ODFW Location and habitat data. Additional Data • Map potentially suitable habitat along all proposed routes.	• Ground surveys in potential habitat along the Proposed Route where right of entry granted. • Protocol surveys will be conducted in the immediate area (as defined by protocols) if owls or their sign are documented during Terrestrial Visual Encounter Survey (TVES) or other protocol species surveys.	• Follow-up surveys of modifications to all project features.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
Washington Ground Squirrel	Existing Data • Existing data from ONHP, The Nature Conservancy, and Boardman Bombing Range. Additional Data • Map potentially suitable habitat along all proposed routes based on ReGAP and high-quality aerial photography.	• Pedestrian protocol surveys of all potential habitats along IPC's proposed route, route alternative, and associated project features (on private lands where right of entry is granted) in March-May 2011. • Aerial route surveys to verify mapping in areas where access not granted.	• Follow-up surveys of modifications to all project features.
Great Gray Owl	Existing Data • USFS nest occurrence data. • USFS publications: Ecology of the Great Gray Owl. Additional Data • Map potentially suitable habitat along all proposed routes based on ReGAP, National land Cover Data (NLCD), stand data if available, aerial photography.	• Ground survey of potential nesting habitat along the Proposed Route and associated project features in April-July 2011.	• Follow-up surveys of modifications to all project features.
Flammulated Owl	Existing Data • ONHP. • Idaho Natural Heritage Program (INHP) Observations Database. Additional Data • Map potentially suitable habitat along all proposed routes based on ReGAP.	• Concurrent ground survey (with great gray owl and goshawk) of potential nesting habitat along the Proposed Route and associated project features in 2011.	• Follow-up surveys of modifications to all project features.
Northern Goshawk	Existing Data • ONHP. • Idaho NHP Observations Database. • Forest Service data. Additional Data • Map potential habitat types along all proposed routes based on ReGAP and stand data from the USFS.	• Ground survey of potential nesting habitat along the Proposed Route and associated project features in May- July of 2011.	• Follow-up surveys of modifications to all project features.
Three-toed Woodpecker	Existing Data • ONHP. Additional Data • Map potential habitat types along all proposed routes based on ReGAP.	• Concurrent ground survey (same timeframe as great gray owl and goshawk) of potential nesting habitat along the Proposed Route and associated project features in April – July 2011.	• Follow-up surveys of modifications to all project features.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
Raptor Nest Survey	Existing Data • ONHP and INHP data. • Agency historical records. Additional Data • none.	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Ferruginous Hawk	Existing Data • ONHP and INHP data. • Agency historical records. Additional Data • None.	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Swainson's Hawk	Existing Data • ONHP and INHP data. • Agency historical records. Additional Data • None.	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Golden Eagle	Existing Data • ONHP and INHP data. • Agency historical records. Additional Data • None.	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Bald Eagle	Existing Data • ONHP and INHP data. • Agency historical records where available. Additional Data • None.	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Peregrine Falcon	Existing Data • ONHP and INHP data • agency historical records Additional Data • none	• Aerial raptor nest surveys of all routes in 2011.	• Preconstruction aerial survey to map active nests for construction avoidance and/or spatial and temporal restrictions.
Pygmy Rabbit	Existing Data • ONHP and INHP data. • ReGAP. • High-quality aerial photos. Additional Data • None.	• Ground surveys in potential habitat along the Proposed Route where right of entry granted. • Protocol surveys will be conducted in suitable habitat (as defined by protocols) on BLM managed lands, or if rabbits or their sign are documented during TVES or other protocol species surveys project-wide.	• Follow-up surveys of modifications to all project features.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
Sensitive Fish Species	Existing Data • StreamNet. • USFWS, ONHP, and INHP data. • GIS waterflow data. Additional Data • None.	• Sensitive fish species will be assumed to be present based on existing data and no species-specific surveys will be performed.	• Sensitive fish species will be assumed to be present based on existing data and no species-specific surveys will be performed.
Columbia spotted Frog	Existing Data • ONHP. • INHP data. • USFWS data. • Potential habitat based on vegetation mapping Additional Data • None.	• Amphibian surveys of wetlands suspected to contain Columbia spotted frog within 250 feet of proposed project features (e.g., tower footprints, road footprints, fly yards).	• Follow-up surveys of modifications to all project features.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
• Terrestrial Visual Encounter Surveys (All wildlife species observed would be recorded; however, target species include: black-throated sparrow, Brewer's sparrow, grasshopper sparrow, loggerhead shrike, long-billed curlew, Mojave black-collard lizard, northern waterthrush, pygmy rabbit,[1/] burrowing owl, sage sparrow, sage thrasher, sagebrush lizard, western ground snake, and white tailed jackrabbit. Any observations of special status plant species and/or their habitats would also be recorded)	Existing Data • ONHP and INHP data. • ReGAP. • Species range information. • High-quality aerial photos. Additional Data • None.	• Terrestrial visual encounter survey of the Proposed Route and associated project features to record special status species observations or sign.	• Follow-up surveys of modifications to route access roads, or lay down area prior to construction.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
VEGETATION			
Threatened or Endangered Plant Species	Existing Data • Oregon Department of Agriculture, ONHP, IFWIS Database, BLM and USFS data. Additional Data • Map potential habitat types along routes based on ReGAP and ONHP data. • Ground surveys for federally listed Howell's spectacular thelypody (candidate) and slickspot peppergrass (listed species).	• Survey for all state listed threatened or endangered species as well as BLM/USFS Sensitive plants with the potential to occur along the Proposed Route and associated project features.	• Clearance surveys in potential habitat of tower footprints, access road footprints and other disturbance areas.
HABITAT SURVEYS			
Vegetation Mapping Pre-field desktop vegetation maps will be used to coordinate and support all biological field surveys; and to focus avoidance, minimization, and mitigation measures appropriately.	Existing Data • ReGAP. • Aerial photography. Additional Data • Refine ReGAP classifications using aerial photography.	• Refine mapping of the Proposed Route based on ground truthing, rangeland health evaluations, unique habitat surveys, and information gathered in TVES. • Will be used, along with all survey results, to begin preparation of a habitat mitigation plan.	• Preconstruction inventory to be used for reclamation planning and quantification of impacts relative to mitigation.

Table 1. Phased Biological Surveys Approach (continued)

Resource Category	Phase 1 Data Collection Provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the ASC complete and issued Draft Proposed Order.	Phase 2 Data Collection Supplements the Draft EIS analysis and provides protocol level information about the Agency preferred alternative and Applicants Proposed Route filed with ODOE-EFSC that are presented in the Final EIS and Proposed Order.	Phase 3 Data Collection Provides detailed site specific data for resources that could be affected at the time of construction as well as information on any changed conditions.
Unique Habitats (rock outcroppings, talus slopes, cliffs, caves, riparian zones, large snags, mature timber stands, permanent and seasonal ponds, lakes, wetlands, and springs)	Existing Data • ReGAP. • High-quality aerial imagery. • USFS stand data. • Forest Inventory Analysis. • National Hydrography Dataset . • Pacific Northwest (PNW) Hydrography Data. • National Wetlands Inventory (NWI) mapping. • Known locations of mines, adits, and caves. Additional Data • None.	• Unique habitats will be identified concurrently with other pedestrian survey of the Proposed Route and associated project features.	• Follow-up surveys where changes have occurred in the location of project facilities and where disturbance is expected.
Wetlands	Existing Data • Hydric soils mapping. • PNW Hydrography Clearinghouse data. • NWI mapping. • National Hydrography Data. Additional Data • None.	• Wetland determinations and mapping for the Proposed Route and associated project features.	• Delineation of all wetlands that would be affected by the approved ROW and approved permit applications from USACE and Oregon and Idaho state agencies.
Noxious Weeds	Existing Data • Photo interpretation of broad vegetation types. • BLM and USFS GIS data on weeds. • State noxious weeds list and maps. • County weed databases or maps. • Weeds will be documented during other plant surveys.	• Noxious weeds (species, relative density, and existing land uses that may contribute to their spread, persistence, and establishment) will be documented during other plant surveys.	• Preconstruction weed inventory of areas to be disturbed to develop treatment and monitoring plan.

Note:

1/ Protocol surveys will be conducted for pygmy rabbit if individuals or their sign are documented during other protocol surveys or TVES and could occur during any phase of the project; on BLM-managed lands, protocol-level surveys for pygmy rabbits will be conducted in all areas with deep soil that contains big sagebrush species (including Mountain, Basin, and Wyoming sage) with more than 5 percent canopy cover.

1.2 Survey Area

This section describes the survey area that will be used for all species unless otherwise indicated in specific protocols. The survey area will consist of a 250-foot buffer on both sides of IPC's proposed transmission line centerline (500-foot total width corridor). There are, however, currently five exceptions listed in Table 2 where IPC has requested a wider corridor to be surveyed due to the need for flexibility in line movement within these areas.

Other project features that extend beyond IPC's Proposed Route and alternative routes centerline would also be surveyed. These include all service and access roads, staging areas, and fly yards (Table 2). Service and access roads would be surveyed within a 100-foot-wide corridor, 50 feet on either side of the road centerline. This is sufficient to allow for some movement of the service road alignment and to allow for documentation of resources adjacent to the road. Staging yards and fly yards will be surveyed without a buffer. Survey buffers will be modified where necessary to reflect species-specific protocols.

Table 2. Project Features Associated with the B2H Transmission Line

Facility	Facility Size	Site Boundary Definition[1/]
Transmission Line Route		
500-kV	250' ROW	Mapped centerline plus 250-foot buffer along either side of centerline
DC 138/69-kV	100' ROW	Mapped centerline plus 250-foot buffer along either side of centerline
Relocated 138-kV	100' ROW	Mapped centerline plus 250-foot buffer along either side of centerline
New Access Roads	14' width	Mapped road plus 100-foot buffer along either side of road centerline
Improved Access Roads	14' width	Mapped road plus 50-foot buffer along either side of road centerline
Staging Area	20 acres	Mapped site (no buffer)
Fly Yard	15 acres	Mapped site (no buffer)
Off-ROW Pulling-Tensioning	5.5 acres	Mapped site (no buffer)
Regeneration Site	0.2 acres	Mapped site within surrounding 1-acre buffer

Notes:
1/ Expanded Site Boundary in the following locations:

1. Glass Hill (milepost 106–115) because of routing changes that could occur-- survey a 2,000-foot-wide corridor for both the main route and the alternative at this location
2. Weatherby area (milepost 184-190) to cover both the 69 and 138 kV line routes because of the existing transmission lines being double circuited and the 500 kV line being placed along the existing 138 kV line route -- survey 250 feet either side of existing ROWs.
3. I-84 route towards Brogan (milepost 193–199) because of the potential of BLM moving the line completely away from the leks--survey a 1,000-foot- wide corridor.
4. Milepost 270–275 because of the potential of moving the route further to the south because of landowner issues -- survey a 1,000-foot-wide corridor.
5. Milepost 286–289 because of the potential of moving the route further to the south because of landowner issues -- survey a 1,000-foot-wide corridor.

The survey area has been divided by milepost and starts at the proposed Boardman Substation near the existing Boardman Power Plant near Boardman, Oregon, and continues southeast to the planned Hemingway Substation, approximately 20 miles southwest of Boise, Idaho. The mileposting describe where resources occur on the ground. Maps used to display survey areas show the survey extent by species based on suitable habitat relative to mile posts.

The survey areas are based on vegetation mapping, Special status species habitat requirements, and avoidance and/or spatial and temporal restriction recommendations documented in the survey protocols. Survey areas for the species-specific protocol surveys outlined in Appendices B-1 through B-11 are graphically displayed on their respective map sets found in Volume II.

1.3 Data Collection and Reporting

Appendix A describes how data will be collected in the field for all resource surveys. Field crews will use GPS technology for data collection activities. Trimble GeoXT survey grade receivers loaded with ESRI ArcPAD 10 software will be used by crews conducting field surveys. All GPS data will be collected in ArcPAD using digital forms derived from a personal geodatabase provided by the BLM that will include set data fields and field domains that can be used for all species. Field staff will upload collected data as an .AXF file at the end of each day to a dedicated B2H SharePoint site that will be managed and maintained by Tetra Tech in the project GIS geodatabase.

Using the BLM-provided personal geodatabase will allow the BLM to directly input the collected data into Geographic Biotic Observations (GeoBOB). All data will be double-checked during entry, and any issues resolved with the persons who gathered the data.

In the event of equipment failure or poor GPS coverage, field data collectors will complete paper data sheets (standard flora and fauna data forms) to be entered into the personal geodatabase on a later date. All data will be double-checked during entry, and any issues will be resolved with the persons who gathered the data.

If needed, specific training by BLM personnel on the use of ArcPAD and the personal geodatabase collection, uploading data files, and data transfer would be conducted prior to field crews departing for surveys. Appendix A describes data collection methods, example flora and fauna data forms and field inputs, GPS equipment and software, QA/QC procedures, and data sharing with cooperating resource agencies.

1.4 Right of Entry for Private Lands

Right of entry for B2H biological surveys refers to obtaining land owner permission for survey crews to access private property. IPC is making a good faith effort to obtain right of entry to conduct biological surveys on private lands. One of the objectives of the Phased Study, as discussed in Section 1, is to allow the biological surveys and permitting processes to move forward in the event that IPC does not obtain access to all private property within typical

timeframes. Where ROW entry has been denied, IPC will rely on existing information, except where aerial surveys are appropriate to supplement the data. Appropriate field surveys to close data gaps where access was previously denied will be conducted in Phase 3. This ensures that necessary data are collected prior to ground-disturbing activities and allows IPC time to obtain access to private property.

2.0 PHASE 1 DATA COLLECTION AND ANALYSIS

Consistent with the Phased Biological Survey Approach described in Table 1, Phase 1 provides the basis for the Draft EIS analysis and for ODOE-EFSC to deem the Application for Site Certification (ASC) as complete and issue the Draft Proposed Order. The focus of Phase 1 will be to gather existing data to create vegetation maps that identify the potential for occurrence of special status plant and animal species within the survey areas of the NEPA alternatives and IPC's Proposed Route contained in the ASC. Phase 2 data collection (Section 3) will focus on BLM's "Preferred Alternative" and IPC's Proposed Route contained in the ASC [2].

2.1 Existing Resource Data

This section describes the existing data gathered to implement Phase 1. Existing data include literature reviews, agency management plans, and technical reports. A significant portion of existing data are in Geographic Information Systems (GIS) format, which contains information such as species observations, species distribution, wildlife habitat models, vegetation and land cover data, hydrology, aerial photography, land ownership, and political and municipal data. Table 3 lists the spatial data that has been collected to date, as well as the data that has been requested, but to date, has not been provided by the resource agency.

Existing data will be used to determine habitat types, occurrence of special status plant and wildlife species, and the potential for the occurrence of special status plant and wildlife species. By using existing data, an equal comparison can be made between IPC's Proposed Route and route alternatives regarding their current biological resources.

Existing data also consists of special status species lists. The comprehensive lists of federal and state listed species, those designated as Sensitive by the BLM and Forest Service, as well as Forest Service Management Indicator Species (MIS) have been reviewed, and state and federal biologists were contacted regarding which species from these lists could potentially occur near the project (Appendix E). Continued coordination with state and federal biologist will occur; particularly if there is a change in a species listing status or changes to the location of IPC's Proposed Route or route alternatives that are not currently documented in this Work Plan.

Plant and wildlife species data gathered for this project will be provided to the regulatory agencies as part of the permitting process. Agencies may release data to the public and/or keep it confidential. Data that are obtained as a GIS layer will be handled in accordance with any applicable data sharing agreements.

[2] IPC assumes that if the BLM Preferred Alternative and IPC Proposed Route under EFSC review differ, IPC, BLM and ODOE would engage in a collaborative process to reconcile route differences and allow the NEPA and EFSC processes to continue concurrently.

Table 3. Flora and Fauna Occurrence and Habitat Data

Data Name/Type	Data Source	Obtained/ Available
Aerial Photos	NAIP	Yes
Soil Types	NRCS SSURGO soil map	Yes
Site Condition Classes (e.g. gradient, aspect, primary community vegetation)	NatureServe	Yes
Elevation	USGS National Elevation Dataset	Yes
Current land use	GAP	Yes
	BLM	Yes
	Forest Service	Yes
Historic wildland fires	BLM	Yes
Existing roads	Oregon Department of Transportation	Yes
	Idaho Transportation Department	Yes
	ESRI	Yes
Existing canals, rivers, streams and water bodies	National Hydrologic Dataset	Yes
Existing wetlands	National Wetlands Inventory (NWI)	Yes
Irrigated agricultural lands	Agriculture Census of the United States	Yes
Mine, adit, and cave locations	BLM	--[1/]
Personal geodatabase for data collection	BLM	--[2/]
Wildlife occurrence and habitat data	ODFW	--[3/]
	IDFG	Yes
	Oregon Natural Heritage Program Database	Yes
	Idaho Fish and Wildlife Information System	Yes
	BLM	Yes
	BLM	--[4/]
	The Nature Conservancy	Yes
	Boardman Bombing Range data	Yes
	StreamNet	Yes

Notes:
1/ Locational data on mine, adit, and caves, to date, have not been provided.
2/ Anticipate agreement on data fields, etc. prior to or at the next biological survey work group meeting.
3/ Additional data on sage-grouse lek information has not yet been provided; however, this information is anticipated during review of the survey maps.
4/ Additional data for western burrowing owl has not yet been provided; however, this information is anticipated during review of the survey maps.

2.1.1 Wildlife

Existing wildlife literature and data will be gathered, reviewed, and incorporated into the vegetation mapping in order to identify appropriate survey areas (literature related to survey protocols can be found in Appendices B-1 through B-11). Species-specific habitat requirements, known distributions, and confirmed occurrences will help identify the likelihood of each species occurring along IPC's Proposed Route and route alternatives, and all NEPA alternatives. Coordination with agency specialists will help refine survey areas, based on the agencies expertise within these resources. Wildlife data gathered for this project will be provided to the regulatory agencies as part of the permitting process. Agencies may release data to the public and/or keep it confidential. Data that are obtained as a GIS layer will be handled in accordance with any applicable data sharing agreements.

2.1.2 Fish

No surveys for fish species will be performed. Listed or sensitive fish species will be assumed present in all watersheds that agency data and the Federal Register for listed species indicate presence. Sensitive fish species that could potentially occur within the water bodies crossed by the project include the following:

- bull trout (*Salvelinus confluentus*; federally listed as threatened),
- coho salmon (*Oncorhynchus kisutch*; federally listed as threatened),
- sockeye salmon (*Oncorhynchus nerka*; federally listed as endangered),
- Snake River Chinook (*Oncorhynchus tshwatscha*; federally listed as threatened), and
- steelhead (*Oncorhynchus mykiss*; state listed as threatened).

Additional non-listed fish species could also be present in these water bodies (see Appendix E for a list of special status fish species potentially present within the project area).

In addition, streams containing special status fish will be mapped for the purpose of data collection in Phase 2. Note that the Pacific Anadromous Fish Strategy (PACFISH)/Inland Native Fish Strategy (INFISH), and applicable federal resource management plan recommendations for stream buffers will be implemented during vegetation mapping on federal lands (each of these documents/plans will have varying buffers that are used to determine stream and riparian buffer widths, often dependent on whether or not the stream is fish bearing).

The INFISH (USFS 1995) provides interim direction to protect habitat and populations of resident native fish in eastern Oregon, eastern Washington, Idaho, western Montana, and portions of Nevada with the focus on managing Riparian Habitat Conservation Areas (RHCAs). The INFISH is implemented by the USFS through its field offices and applied to proposed or new projects or activities which must also comply with requirements of the ESA, the NEPA, the National Forest Management Act, and other applicable laws (USFS 1995). Implementation of the INFISH includes screening projects to determine their potential habitat effects and whether they will need to be modified to reduce risk to inland native fish habitat.

The Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California under PACFISH (USFS and BLM 1995) provides interim direction for the management of anadromous fish-producing watersheds on lands the USFS and BLM manage, with the focus on managing RHCAs. The PACFISH is implemented by the USFS and BLM through its field offices and applied to proposed or new projects or activities which must also comply with requirements of the ESA, the NEPA, the National Forest Management Act, the Federal Land Policy and Management Act, and other applicable laws (USFS and BLM 1995). Implementation of the PACFISH includes screening projects to determine their potential habitat effects and whether they will need to be modified to reduce risk to anadromous fish-producing habitat.

2.1.3 Bats

Data regarding known locations of mines, adits, and caves (which could serve as habitat for bat species) has been requested from state and federal agencies so that these unique habitats can be identified and, if possible, avoided during construction of the project. Areas that have significant cave formations which occur on federal lands are protected under the Federal Cave Resources Protection Act (16 U.S.C. §§ 4301-4310, November 18, 1988, as amended 1990), and resource agencies may not be able to release this information in its entirety. These areas, as well as any large snags that could serve as bat habitats, would be avoided were possible,; therefore, potential impacts to roosting, maternity, and hibernacula sites would be considered low. The special status bats species that could occur near the project are listed in Appendix E.

2.1.4 Plants

Available literature and data will be gathered, reviewed, and used to prepare vegetation maps prior to conducting field surveys as outlined in Section 2.2. In addition to the mapping effort, ORNHIC, GeoBOB, and IDFG Natural Heritage Program data records will be queried for all special status species located within five miles of the survey area. Occurrence data and species specific habitat requirements will aid in the identification of survey areas within each alternative. Appropriate staff at ODA, BLM, USFS, and Oregon Department of Transportation districts/ regions will also be contacted to obtain any additional species-specific information such as local blooming periods, identification tips, and the location of reference communities. All data regarding special status plant species locations will be provided to the regulatory agencies as part of the permitting process. Agencies may release data to the public and/or keep it confidential. Data that are obtained as a GIS layer will be handled in accordance with any applicable data sharing agreements.

2.1.5 Waters of the United States

Once a set of alternatives has been developed, the survey team will begin a more detailed investigation into the identification of Waters of the U.S. In preparation for the fieldwork in Phase 2, Tetra Tech will collect available background data and prepare field maps to be used for identifying the locations of probable water resources. This information will include the presence of hydric soils from the Natural Resources Conservation Service (NRCS) soil maps,

hydrography data from the PNW Hydrography Clearinghouse, NWI mapping, climate data, and any other pertinent data**.**

2.2 Vegetation Mapping

This section describes the process used to generate vegetative maps for the biological survey area. Land cover mapping will occur in three steps: 1) creation of pre-field desktop vegetation maps created from existing data, 2) pre-field survey maps created from existing plant and wildlife data and aerial photo interpretation (API) of habitat condition, and 3) incorporation of all survey data into finalized project vegetation maps. Pre-field desktop vegetation maps will be used to coordinate and support all biological field surveys and focus on avoidance, minimization, and mitigation measures appropriately. The primary goal of this effort is to develop vegetative cover and habitat maps that provide a land cover dataset that is accepted by the appropriate agencies and is applied across the entire survey area, including both public and private lands. This will be achieved through these objectives:

- Incorporating elements of GIS modeling and classification in combination with API of 1-foot color imagery (3Di West) to identify NVCS vegetation community types;
- Providing a mechanism for identifying suitable habitat for special status plant and animal species;
- Evaluating the quality of habitat for special status wildlife species using remote sensed data to the extent possible and supplementing that evaluation with substantial agency input and limited systematic field verification sampling; and
- Providing baseline information to categorize B2H habitats in accordance with ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000 through -0025).

A meeting was held with ODFW on January 16, 2009, to present the vegetation mapping methods described in this section. ODFW representatives agreed that the B2H vegetation mapping approach would meet the level of precision needed for compliance with ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000 through -0025).

2.2.1 Land Cover and Vegetation Classification

This section describes existing land cover and vegetation classification systems that will form the foundation of the vegetation mapping. The Northwest Regional Gap Analysis Project (ReGAP; OSU 2007) is the most current and accurate spatial land cover dataset that encompasses the entire survey area. Ecological Systems (ES), as defined under the NVCS, are a regionally consistent meso-scale land cover classification used by ReGAP. Much of the information in this section will come directly from the final reports on land cover mapping of zones that contain the B2H project area.

2.2.1.1 Northwest Regional Gap Analysis Project

The land cover map developed by ReGAP in the region containing B2H is an integration of four largely independent mapping and modeling efforts. The first is the Southwest ReGAP project (1999) which provided the methods for subsequent ReGAP mapping in Idaho and Oregon. The second is the SageMap project, which used the Southwest ReGAP methods to develop a land cover map for non-forested habitats in eastern Oregon, eastern Washington, and southern Idaho. The third was a Gradient Nearest Neighbor modeling project to map most of the forests of the U.S. Geological Survey (USGS) Map Zones to add forests types to the SageMap products. The fourth project was LandFire, which provides comprehensive maps and data describing vegetation, wildland fuel, and fire regimes across the United States. All four of these efforts used the NVCS, and the ES was the unit for which all of the natural land cover classes were attributed. ReGAP integrates information from each of these four projects to create a current and seamless land cover dataset. Complete final reports for the ReGAP land cover mapping process are available in the project file or at http://www.gap.uidaho.edu/Northwest/data.htm.

2.2.1.2 The National Vegetation Classification System and Ecological Systems

The NVCS has been adopted by the Federal Geographic Data Committee as the classification standard for all federal mapping projects (FGDC 2008, FGDC 1997). A six-level nested hierarchical structure of the NVCS defines classification units at the highest levels as heterogeneous units based solely on vegetative physiognomy and at the lower levels as more narrow and homogenous floristic units. The lower floristic levels (e.g., Alliance and Association) are based on both structural and compositional characteristics of vegetation derived by Mueller-Dombois and Ellenberg (1974).

The original ReGAP thematic mapping unit was the NVCS Alliance; however, too many alliances occurred in large project areas, and a mid-scale classification was needed. In response, NatureServe developed the Terrestrial Ecological Systems Classification framework for the conterminous United States (Comer et al. 2003). ESs are defined as “groups of plant community types that tend to co-occur within landscapes with similar ecological processes, substrates and/or environmental gradients” (Comer et al. 2003). Although distinct from the NVCS, the vegetation component of an ES is described by one or more NVCS alliances or associations. While the ecological system concept emphasizes existing dominant vegetation types, it also incorporates physical components such as landform position, substrates, hydrology, and climate. The ES classification complies with Federal Geographic Data Committee standards, and each ES is defined by the respective NVCS alliances found therein.

2.2.2 Mapping Methods

This section will describe the mapping methods that will be performed by GIS specialists under the direction of ecologists. The goal of the mapping process is to aid resource specialists in delineation of potential survey areas and to create a database that will be the basis for determining ODFW habitat categories as required under the ODFW Habitat Mitigation Policy (OAR 635-415-000).

2.2.2.1 Data Conversion to Project Area

ReGAP data will initially be clipped to a 3-mile corridor surrounding alternatives and all access roads, as well as other project features. A 3-mile corridor was chosen to account for minor adjustments to the alternatives that may occur. This data will be converted from a raster data type (row and column pixels) to vector data (polygons) using non-simplified polygons and will represent baseline vegetation data. All other data layers described in Section 2.2.2.2 will be clipped to this same 3-mile corridor.

2.2.2.2 Vegetation Mapping Methods

A GIS specialist will use ArcGIS 9.3 (ESRI, Inc.) to overlay existing data with the vegetation layer. Unique habitat types (e.g., ACECs, wetlands, talus slopes and cliffs, mature forest stands) will be identified during this mapping phase if detection is possible with existing data. The data layers listed in Table 3 will be used to assist ecologists in delineating survey areas. The vegetation dataset will be overlapped using the following map layers in ArcGIS in order to avoid misclassification of these land cover types:

- Existing roads buffered according to road type – Oregon Department of Transportation and Idaho Transportation Department;
- Existing canals, rivers, streams and water bodies – National Hydrologic Dataset;
- Existing wetlands – NWI and,
- Irrigated agricultural – Agriculture Census of the United States.

After refinement of the ReGAP data has been completed, the 3-mile dataset will be clipped down to the appropriate survey area for targeted species.

2.2.2.3 Phase 1 Mapping Quality Assessment

Assessing land cover map quality is an important concern for land cover mapping projects. Map quality assessment provides useful information to map users about the reliability of the map product. This section explains the mapping quality assessment for Phase 1.

ReGAP Quality Assessment

The assessment of ReGAP map quality followed the same methods as described in Lowry et al. 2005; refer to that document for a detailed description of map validation methods. In summary, ReGAP conducted an internal assessment of map quality on an intermediate land cover map generated with a subset of samples, rather than the final land cover map. This internal validation involved randomly selecting 20 percent of available samples stratified by land cover class, and withholding them from the decision tree model generation. The intermediate map (generated with 80 percent of the available samples) was assessed with the 20 percent withheld dataset, producing an error matrix and kappa statistic. The land cover modeling process concluded with the generation of the final map using 100 percent of the available data. Validation results therefore represent an assessment of land cover maps created using 80 percent of the training data. No assessment of the final map produced from 100 percent of the data will be made. ReGAP estimated total accuracy within Oregon and Idaho to be at 92

percent for the Columbia Basin, 89 percent in Basin and Range (Malheur region), 73 percent in the Owyhee Uplands, and 97 percent for non-vegetated areas (Kagan et al. 2008).

Habitat surveys will be composed of review of Phase 1 vegetation mapping (see Volume II—Land Cover Classifications Map Book), including identification of unique wildlife habitats, ground verification of vegetation cover and species dominance, and the preparation of final habitat category maps based ground surveys. These activities will be conducted concurrently along IPC's Proposed Route and route alternatives corridors (500 feet total width survey area), and associated project features. An assessment of habitat quality will be ground-truthed during Phase II and is further discussed in Section 3.4.

2.2.2.4 Vegetation Maps

Completed vegetation maps will be utilized by wildlife biologists, botanists, ecologists, and wetland biologists to identify species-specific and project-specific survey areas. Survey areas identified in this Work Plan are based on habitat associations and known occurrences of wildlife species. This data was used as an aid in determining the extent of species-specific survey areas. The compiled map sets are contained in Volume II and include:

- Section 1 Land Cover Classifications Map Book
- Section 2 Washington Ground Squirrel Survey Map Book
- Section 3 Northern Goshawk and Three-toed Woodpecker Survey Map Book
- Section 4 Great Gray and Flammulated Owl Survey Map Book
- Section 5 Sage-Grouse Survey Map Book
- Section 6 Special Status Plant Survey Map Book
- Section 7 Raptor Aerial Survey Area Map Book

Vegetation maps will also identify unique wildlife habitats (rock outcroppings, talus slopes, cliffs, caves, riparian zones, mature timber stands and permanent and seasonal ponds, lakes, wetlands, and springs). Agency personnel will be sent a complete 11-inch by 17-inch 1:32,000-scale vegetation map book.

2.2.3 ODFW Habitat Categories

The ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-000) provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The policy establishes consistent goals and standards to mitigate the impacts of a project on fish and wildlife habitats. The final step of the vegetation mapping process will be to categorize vegetation/habitats using the ODFW habitat category types. A preliminary list of the habitat types and the applicable ODFW habitat categories crossed by the project has been completed (Appendix F).

3.0 PHASE 2 DATA COLLECTION AND ANALYSIS

Phase 2 supplements the Draft EIS analysis and provides protocol level information about BLM's Preferred Alternative and IPC's Proposed Route contained in the ASC. The focus of Phase 2 will be specific wildlife and plant surveys that will identify, in detail, the biological resources that occur within the survey areas described in this work plan. These surveys will be the basis for final vegetation mapping, wetland delineations, habitat mapping and categorization as described herein.

3.1 Wildlife Field Surveys

The following field surveys will be completed for IPC's Proposed Route and route alternatives, and NEPA alternatives. Data gathered through Phase 2 surveys will assist in micro-siting of the Proposed Route to avoid and/or minimize disturbance of sensitive habitats where practicable. Table 4 lists the survey timeframe and mileposts identified for field surveys along the B2H routes.

Table 4. Wildlife Species, Survey Timeframe, and Mileposts Identified for Field Surveys along the B2H Routes

Common name (*scientific*)	Survey Timeframe	Survey Distance from 500-ft corridor	Mileposts[2/]
Burrowing Owl[1/]	March-May	Within the 500-ft corridor	0-80; 120-297
Columbian Spotted Frog	June-September	Within the 500-ft corridor	80-297
Flammulated Owl	May-July	0.25 mile	85-125
Great Grey Owl	March-July	0.25 mile	85-125
Pygmy Rabbit[1/]	March-June	Within the 500-ft corridor	200-297
Northern Goshawk	June-August	0.5 mile	85-125
Sage-Grouse / Sharp-Tailed Grouse	March-May	3 miles	124-267
Three-Toed Woodpecker	April-July	0.25 mile	85-125
Washington Ground Squirrel	March-May	Within the 500-ft corridor + 1,035 feet on either side of the corridor	0-55
Raptor Nest Surveys – Bald Eagle	April-June	0.5 mile	0-297 [3/]
Raptor Nest Surveys – Ferruginous Hawk	April-June	1 mile	0-297 [3/]
Raptor Nest Surveys – Golden Eagle	April-June	2 miles	0-297 [3/]
Raptor Nest Surveys – Swainson's Hawk	May-June	0.5 mile	0-297 [3/]
Raptor Nest Surveys – Peregrine Falcon	April-June	1 mile	0-297 [3/]
Terrestrial Visual Encounter Surveys	March-August	Within the 500-ft corridor	0-297

Notes:
1/ Protocol level surveys will be conducted if species is documented during other protocol surveys or TVES within the ROW corridor.
2/ Denotes areas that contain suitable habitat.
3/ Suitable habitat for this species occurs in multiple locations within the survey corridor and displayed on the raptor survey mapset.

This section of the Work Plan describes the proposed methodology for wildlife surveys during Phase 2. Field data collectors will use personal geodatabases with ArcPAD 10 software in which the required fields from the flora and fauna data forms created by the BLM will be filled in. This data collection method will allow the data to be transferred to the BLM for input directly into GeoBOB. This method will be used in accordance with BLM protocols to collect data in both Oregon and Idaho (Appendix A).

3.1.1 Washington Ground Squirrel

The Washington ground squirrel is a small ground squirrel occurring in grassland and shrubland habitats of the Columbia Plateau in Washington and Oregon. Washington ground squirrels are most common in native grassland and shrub-steppe habitats over silty loam soils, particularly Warden and Sagehill soils. Washington ground squirrels can also be found in some areas replanted to grassland under the Conservation Reserve Program (CRP), if these sites are planted to native grassland species and adjacent or very near to undisturbed native grasslands.

Concern for the long-term viability of Washington ground squirrel populations led to their listing by ODFW as endangered in January of 2000. The Washington ground squirrel is currently considered a candidate species for listing under the Endangered Species Act by the USFWS.

Washington ground squirrel habitat, as it relates to the survey area, occurs south of the Columbia River in Morrow, and Umatilla counties of Oregon.

Survey Methods

Surveys will assess the area of potentially suitable habitat within 250 feet either side of the proposed centerlines (500 feet total) and 1,035 feet on either side of the corridor boundaries. Details of the field survey protocol are provided in Appendix B-1 (Stateline 3 2001; Morgan and Nugent 1999).

Areas containing potential habitat for Washington ground squirrel, as identified during Phase 1 vegetation mapping efforts, will be surveyed late March through May. This survey window corresponds to the highest activity of Washington ground squirrel and is compliant with the survey protocol. Active burrows and colonies will be identified through a combination of visual and audible confirmations and fresh fecal material around burrow entrances. Each area of potential habitat will be surveyed twice.

Surveys will be conducted by crews of eight. Each crew will consist of at least four experienced observers. Prior to conducting any surveys, all field crew members will be refreshed or trained in the survey protocol by visiting an occupied Washington ground squirrel colony. Prior to conducting surveys, all field crew members will have their hearing tested to ensure that they can detect the high pitched call of a Washington ground squirrel.

3.1.2 Greater Sage-Grouse and Columbian Sharp-Tailed Grouse

Greater sage-grouse surveys would take place in areas that did not get surveyed in 2010, areas that did get surveyed but require further investigation, or new survey areas that come about through project changes or new information regarding the known distribution of the species. As

noted earlier, IPC's Proposed Route and route alternatives are not expected to be within known sharp-tailed grouse distribution, but occurrence is possible and will be noted during sage-grouse surveys.

Greater sage-grouse occur in quality sagebrush habitat throughout eastern Oregon and southern Idaho and will be addressed if the alternatives occur within this habitat. Columbian sharp-tailed grouse occurrence will also be noted during these aerial surveys. Columbian sharp-tailed grouse have been extirpated from Oregon since the 1960s; the only known population was reintroduced into Wallowa County in the 1990s. Columbian sharp-tailed grouse occur in Washington County in western Idaho. The project area is not expected to be within known sharp-tailed grouse distribution, but occurrence is possible and will be noted during sage-grouse surveys.

The greater sage-grouse relies on sagebrush habitats throughout the year (Wallestad 1975). Sagebrush is used for nesting and hiding cover during breeding and brood rearing, and for hiding and thermal cover in winter (Wallestad et al. 1975). More importantly, sagebrush leaves are the major food item in late fall, winter, and early spring (Wallestad et al. 1975). During early spring, sage-grouse assemble at traditional lek sites, where males display to attract females. Leks are located on areas that are relatively clear of vegetation, particularly of shrubs (Connelly et al. 1981); however, the proximity of sagebrush for protection from predators is also essential (Hanf et al. 1994).

Sage-grouse populations can be resident or migratory. For resident populations, the lek area tends to be the center of activity, whereas migratory populations move between breeding, brood rearing, fall, and winter habitats (Connelly et al. 2000). Although sagebrush is the common feature in all seasonal habitats, migration habits are generally influenced by elevation and the distribution and juxtaposition of quality habitats (IPC 2003).

The Columbian sharp-tailed grouse is one of six existing subspecies of sharp-tailed grouse in North America, and are endemic to big sagebrush, shrubsteppe, mountain shrub, and riparian shrub plant communities of the west. The subspecies currently occupies less than 10 percent of its historic range, with only three metapopulations remaining in central British Columbia, southeastern Idaho, northern Utah, northwestern Colorado, and south-central Wyoming (Hoffman and Thomas 2007).

The objective of the greater sage-grouse surveys is to identify previously unknown leks and to verify attendance at specific lek sites identified by ODFW and IDFG biologists.

Survey Methods

The survey area will include IPC's Proposed Route and route alternative corridors. Surveys will be conducted out to 3 miles on either side of the Project's corridors in Oregon and 4 miles on either side of the Project's corridors in Idaho, within areas that the ODFW and IDFG biologists have identified as areas that could potentially support greater sage-grouse. Areas surveyed in 2010 will not need to be surveyed in 2011. Details of the field survey protocol are provided in Appendix B-2 (Hagan 2005).

Depending on survey area and weather conditions, sage-grouse within the project area will start attending leks anywhere from early March (lower elevations in a warm year) and can remain there until mid-May (higher elevations after a long winter). The protocol notes that there may be local variation between districts that may dictate minor survey modifications. Helicopter surveys of greater sage-grouse leks will be conducted between March and April; however, due to weather constraints and survey schedule restrictions, some surveys may extend into early May. Best efforts will be made to reschedule if communication with ODFW and IDFG's greater sage-grouse specialists identifies a need.

Aerial surveys will be flown between 30 and 100 feet above ground surface. Distance between transects will be 0.5 mile. Helicopter surveys will ideally be conducted within the first 2 hours after sunrise but, due to flight time and survey window restrictions, some surveys may extend to 2.5 hours after sunrise; however, no surveys would extend beyond 3 hours. If any leks are observed, the location will be confirmed and documented with the appropriate resource agency.

3.1.3 Ferruginous Hawk, Bald Eagle, Golden Eagle, Swainson's Hawk, Peregrine Falcon, and Other Raptor Nests

Golden eagles inhabit open habitat types that range from arctic to desert conditions (Kochert 1986). This species typically nests on along cliff faces but will also utilize large trees where available and in close proximity to foraging grounds (Menkens and Anderson 1987).

Bald eagles typically nest in large trees near coastlines, lakes, or rivers that contain an adequate fishery to sustain a breeding pair. Nests are large and typically made of woody debris. Eagles will often reuse and add debris to nests each year, resulting in very large nest structures.

Ferruginous hawks inhabit open grasslands and shrub-steppe communities in rolling or rugged terrain. They use native and domesticated grasslands, pastures, hayland, cropland, and shrub-steppe (Dechant et al. 1999). High elevations, forest interiors, and narrow canyons are avoided by Ferruginous hawks (Black 1992). Nests are built in trees, shrubs, rock outcrops, cliffs, and on the ground (Dechant et al. 1999).

Swainson's hawks inhabit grassland, shrubland, and agricultural fields where open areas provide visibility of small prey and roost sites are available nearby (National Audubon Society 2008). Swainson's hawks nest in trees, usually trees bordering agricultural fields, in wetland borders, and on abandoned farms (National Audubon Society 2008). Because Swainson's hawks are generally the latest migratory hawk to arrive in the spring, their nests can be found in smaller trees.

The peregrine falcon inhabits various landscapes including mountains, river corridors, marshes, lakes, coastlines, and cities. In a natural setting, peregrines breed on cliffs, cut banks, and in trees. They scrape a depression or cup in the nest substrate in which they lay their eggs. Peregrines will use abandoned nests of other birds as well as man-made structures like buildings, transmission line towers, bridges, and silos (NatureServe 2011).

Survey Methods

Golden eagle, bald eagle, ferruginous hawk, Swainson's hawk, peregrine falcon, and all other raptor nest locations will be surveyed from a helicopter. The objective of the raptor nest survey is to locate all raptor nests that may be subject to disturbance and/or displacement effects from transmission line construction or operation and maintenance. The survey area for most raptor nests is 0.5 mile from the corridor; except for in areas that could support golden eagle (where a survey width of 2 miles would be used), and in areas that could support the ferruginous hawk or peregrine falcon (where a survey width of 1 mile would be used). Details of the field survey protocol are provided in Appendix B-3.

The initial survey will take place in early April with a second survey late May and/or early June to confirm previous observations and locate later nesting raptors.

Staffing will include a helicopter pilot along with two trained observers. Both the pilot and observers will have experience in conducting aerial surveys for raptor nests and identifying raptors. The helicopter will fly parallel transects at a distance of 0.25 mile from the 500-foot-wide project corridor to allow observers to see out to the 0.5-mile buffer distance and back. In ferruginous hawk and peregrine falcon habitat another transect will be flown out to 0.75 mile so observers can see to the 1-mile buffer distance and back to the 0.5-mile buffer distance. In golden eagle habitats two more transects will be flown at 1.25 miles and 1.75 miles from the 500-foot-wide project corridor to ensure complete coverage out to 2 miles. However, in golden eagle habitat this transect method may be abandoned for an intuitive search method (i.e., flying canyons or identifying cliff faces in steep terrain) to improve efficiency. Both sides of the project will be surveyed in this manner. Aerial nest searches are conducted by flying habitat suitable for most aboveground nesting species, such as cottonwood, ponderosa pine, tall shrubs, and cliffs or rocky outcrops.

3.1.4 Northern Goshawk

Northern goshawks occupy coniferous and deciduous forests. During their nesting period, they prefer mature forests consisting of a combination of old, tall trees with intermediate canopy coverage and open areas within the forest for foraging (Woodbridge and Hargis 2006).

Survey Methods

The objective of the northern goshawk survey is to identify occupied territories within or overlapping the survey area of the proposed alternative and to identify all northern goshawk nests. The survey area for northern goshawks is the proposed corridor (500 feet) and all areas within 0.5 mile of the corridor that meet habitat requirements for the species. Details of the field survey protocol are provided in Appendix B-4 (Woodbridge and Hargis 2006).

Northern goshawks will be surveyed twice throughout the field season using the broadcast acoustical survey method. Surveys are conducted during the nesting and fledgling stages, including early post-fledging dependency, which runs June 1 to August 15 (Woodbridge and Hargis 2006). Crews will broadcast goshawk calls at predetermined calling stations to elicit responses from goshawks that have territories within or overlapping the survey area.

Potential northern goshawk habitat is categorized in three types: 1) primary habitat, 2) marginal habitat, and 3) unsuitable habitat. Northern goshawks most often nest in primary habitat. The process of defining primary habitat within the survey area will be identified using a GIS model that selects forest canopy coverage of 40 percent or greater for a continuous area of at least 8 hectares (Sisk 2005) and is explained in more detail in Appendix B-4. Marginal habitats are forested areas adjacent to primary habitat. Aerial photographs can identify marginal habitat that is adjacent to primary northern goshawk habitat in the survey area. Unsuitable habitat that will not be surveyed include open grasslands and shrublands, lakes and ponds, areas near highways, and sparsely forested areas that are not adjacent to primary habitat.

A transect grid, as described by Woodbridge and Hargis was overlaid over initial forested habitat. Using the above criteria, the final suitable habitat layer was developed and used to define the survey area. Call stations are located in, and cover all suitable habitat within the survey area. Adjustments to calling station placement were reviewed while conducting the detailed habitat mapping to determine survey area, and efforts to optimize survey effort and cost, and to minimize surveyor exposure to hazards associated with walking transects in forested habitat and potential access issues were taken into account. Within the survey area, roads and trails are common and provide access to a majority of the suitable habitat. Detailed maps of survey routes and station locations will be used by survey crews and provided in Volume II—Northern Goshawk and Three-toed woodpecker Survey Map Book.

3.1.5 Great Gray Owl

The great gray owl is the largest owl in North America. It inhabits coniferous and hardwood forests, pine and spruce in particular, and utilizes older seral stages of forest and second growth, especially those near the water. The great gray owl nests in broken-top snags or uses abandoned stick nests of other species such as goshawks. It usually forages in open areas where scattered trees or forest margins provide suitable sites for visual searching. When the owl is nesting, it hunts during the day or night (Quintana-Coyer et al. 2004).

Survey Methods

The objective of the great gray owl survey is to identify territories within or overlapping the proposed alternative and to identify all nesting pairs of owls. The broadcast acoustical survey method will be used to identify occupied territories and nest locations. The survey area for great gray owls is the proposed alternative corridor and all areas within 0.25 mile of the NEPA alternatives and IPC's Proposed Route and alternative route corridors that meet habitat requirements for the species. Details of the field survey protocol are provided in Appendix B-5 (Quintana-Coyer et al. 2004).

Great gray owls will be surveyed twice throughout the field season. The first survey will correspond with the nesting stage and occurs in late April to early May. The second survey will occur from late June to early July, corresponding to the great gray owl fledging period. Crews will be broadcasting great gray owl calls at night along predetermined calling stations to elicit responses from owls that have territories within or overlapping the survey area. Night surveys

will be performed only along roads, trails, or portions of the survey area that can be safely traversed with a flashlight or headlamp.

Great gray owl nesting habitat in the Blue Mountains has been identified as having a minimum of 60 percent canopy cover (Bull and Henjum 1990). This habitat layer is included in the GIS model to identify potential nesting areas. Forested areas adjacent to potential nesting habitat are considered part of the survey area. An important consideration when identifying great gray owl habitat is locating open spaces or meadows used for foraging near identified nesting habitat. Forest and meadow boundaries adjacent to nesting habitat are included in the survey area. Detailed maps of survey routes and station locations will be used by survey crews and provided in Volume II— Great Gray and Flammulated Owl Survey Map Book.

3.1.6 Flammulated Owl

The flammulated owl is North America's smallest eared owl. They are generally associated with montane forests with brushy understory. They prefer aspen and ponderosa pine and can occur in mixed conifer forests of oak, Douglas fir, white fir, incense cedar, or sugar pine. Flammulated owls typically nest in cavities made by northern flickers and similar-sized woodpeckers. They are almost exclusively insectivorous, foraging at dawn and dusk (USDI BLM 1997).

Flammulated owls are one of the most migratory owls in North America, leaving for Central Mexico to Guatemala each year. Even with such lengthy migrations, breeding site fidelity is high and nests are used for multiple years.

Survey Methods

The survey area for flammulated owls is the route corridor and all areas within 0.25 mile of the corridor that meet habitat requirements for the species. Details of the field survey protocol are provided in Appendix B-6 (Smucker et al. 2008) has been used as supplements in the field information and guidance.

A nocturnal broadcast acoustical survey method will be used to illicit responses from flammulated owl in order to identify territories and nesting locations. Two surveys will be conducted concurrently with great gray owl surveys during early May and late June described above. Detailed maps of survey routes and station locations will be used by survey crews and provided in Volume II— Great Gray and Flammulated Owl Survey Map Book.

3.1.7 Three-toed Woodpecker

American three-toed woodpeckers are largely restricted to high elevation conifer forests and are therefore distributed in a mosaic pattern (mirroring the pattern of high elevation mountains). They occur in dense coniferous forests, and are associated with subalpine fir and Engelmann spruce at higher elevations; they occur mainly in lodgepole pine forests or in mixed-conifer forests with a lodgepole component at lower elevations (Leonard 2001), and seem to prefer disturbed coniferous forests with trees that exhibit thin, flaky bark such as spruce and lodgepole pine. They are a relatively specialized species, feeding primarily on beetles within decaying and dead trees and occurring in low densities throughout their range. Seventy-five percent of its diet consists of wood-boring beetles and caterpillars that attack dead or dying conifers (Wiggins

2004). However, areas of disturbed forests (e.g., recent burns, beetle infestations) have also been widely cited as important habitat.

Survey Methods

The survey for three-toed woodpecker will occur in portions of the route corridor that meet habitat and survey requirements. Details of the field survey protocol are provided in Appendix B-7 (Dudley and Saab 2003) has been used as supplements in the field information and guidance.

Surveys will include broadcast acoustical methods and visual and aural identification. Playbacks are particularly effective for locating nests early in the nesting season, especially before the onset of incubation. Three surveys will be conducted concurrently with northern goshawk surveys during late April, late May, and late June as described above under northern goshawk. Detailed maps of survey routes and concurrent station locations will be used by survey crews and provided in Volume II—Northern Goshawk and Three-toed woodpecker Survey Map Book.

3.1.8 Columbia Spotted Frog

Columbia spotted frogs are found in areas where permanent, quiet water is present, such as marshy edges of ponds or lakes, algae-grown overflow pools of streams, emergent wetlands, and near springs. Emergent and submergent vegetation are considered important habitat features. Following the spring breeding season they may move considerable distances from water, often frequenting mixed-conifer and subalpine forests, grasslands, and brushlands of sage and rabbitbrush if puddles, seeps or other water is available. Adult spotted frogs feed on invertebrates, generally within 1.6 feet from shore on dry days. During and immediately after rains, they may move away from permanent water to feed in wet vegetation or ephemeral puddles (Licht 1986). Spotted frogs hibernate during winter and emerge to breed when open water becomes available, generally during spring thaw.

Spotted frogs will be surveyed for in ponds, streams, emergent wetlands and springs along the route corridor. The exact location of potential spotted frog habitat is not entirely known at this time. Once the location of wetlands and other water resources has been identified, the location of spotted frog surveys will be determined.

Survey Methods

The survey area will include IPC's Proposed Route and route alternative corridors (500 feet) and 250 feet around any project features. The visual encounter survey method will be used, see Appendix B-8 for survey protocol (USGS 2009; Scarlett 2008).

Surveys will occur between mid-June and mid-September in suitable habitats.

Dip nets can be used in addition to visual surveys to positively identify tadpoles, juvenile and adult amphibians. Where spotted frogs (or other non-target amphibians) are found, the following information will be collected: date, time, location (UTM), water temperature, description

of site and habitat, observation method, observer, species, number of individuals detected and their stage of development, comments, and a sketch of the site.

3.1.9 Terrestrial Visual Encounter Surveys

The survey area will include IPC's Proposed Route and route alternative corridors (500 feet) and 250 feet around any project features. The sensitive species listed below will be surveyed concurrent with other surveys using the Terrestrial Visual Encounter Survey (TVES) method (Manley et al. 2006) and is a walking survey that identifies presence through evidence of species use (Appendix B-9).

Surveys will be conducted beginning in mid-March through mid-July.

TVES includes visual and aural confirmation of a species, evidence of sign such as burrows, nests, feathers, fecal material, or tracks. The focus of the TVES will be the following sensitive species and their habitat; however, all species encountered will be identified to the extent possible.

Black-throated Sparrow

The black-throated sparrow inhabits dry sagebrush and rocky desert habitats with widely spaced sage brush. Black-throated sparrows are very rare east of the Cascades with the exception of southern portions of Harney, Lake, and Malheur counties in Oregon and southwestern Owyhee County in Idaho where they are uncommon residents during the breeding season. This species migrates south by September of each year.

Brewer's Sparrow

In the breeding season, this sparrow could be found within the survey area in any area supporting native shrub-steppe habitat, particularly in extensive stands of big-sagebrush. Brewer's sparrow migrates south by mid-September to winter in the southern U.S. and Mexico.

Grasshopper Sparrow

In the breeding season, this sparrow could be found in within the survey area in native grassland and shrub-steppe habitat, and possibly CRP grasslands. It is only a summer resident within the survey area migrating south each year.

Loggerhead Shrike

Loggerhead shrikes could be found within the survey area in short-grass pastures, weedy fields, grasslands, agricultural areas, swampy thickets, orchards, and shrublands.. This species migrates south in the winter by late September, and is only occasionally seen in the winter in northern Oregon and Idaho.

Long-billed Curlew

The long-billed curlew breeds in the grasslands of the Great Plains and Great Basin. Nesting habitat for long-billed curlew is common throughout the survey area in grassland, dry-land wheat fields, and lands in CRP. This species migrates south wintering in California, Texas, and Mexico.

Northern Waterthrush

The northern waterthrush generally inhabits wooded areas adjacent to slow moving water. It is a more northern breeding species generally occurring in Canada and Alaska. In eastern Oregon, this species maintains a small breeding population in Klamath County over 150 miles southwest of the survey area. It is a vagrant elsewhere in Oregon with only a few observations occurring each year. This species migrates south by October of each year wintering in southern Mexico.

Sage Thrasher

In the breeding season, the sage thrasher could inhabit sagebrush and greasewood habitats within the survey area. Within the survey area it is a summer resident, migrating south by September of each year to winter in the southern U.S. and Mexico.

Sage Sparrow

The sage sparrow could be found in sagebrush shrub-steppe habitats within the survey area. This species migrates south by mid-September to winter in the southern U.S. and Mexico.

Burrowing Owl

The western burrowing owl is a grassland specialist found in open areas with short vegetation such as desert, grassland, and shrub-steppe environments. They have been documented nesting in within the proposed survey area in the small areas of grassland between center-pivot irrigation circles. Burrowing owls are ground nesters. They rely on the presence of fossorial mammals, such as ground squirrels and badgers, whose abandoned burrows are used. If any burrowing owls, signs, or burrows are identified during TVES surveys, surveyors would conduct protocol level burrowing owl surveys (Conway and Simon 2003; Appendix B-10) in the immediate area.

Mojave Black-collard Lizard

Mojave black-collard lizard could be found within the survey area in desert habitats that contain sparse vegetation and small rocks or boulders. In Idaho, habitat for this species within the survey area is limited to the Snake River Plain and the Owyhee foothills. In Oregon, habitat for this lizard within the survey area is limited to Malheur County.

Sagebrush Lizard

Sagebrush lizards within the survey area could be found in sagebrush shrub-steppe, greasewood, and other desert shrubs and sometimes on small rocky outcrops. In Idaho, habitat for this species is present throughout the survey area. In Oregon, habitat for this lizard within the survey area occurs in Malheur, Baker, Umatilla, and Morrow counties.

Western Ground Snake

Western ground snake within the survey area could be found in arid habitats that contain loose or sandy soil, which range from rocky areas to low desert shrub habitats. In Idaho, habitat for this species within the survey area is limited to the Snake River Plain and the Owyhee foothills.

In Oregon, habitat for this snake within the survey area is limited to Malheur County and the southern portion of Baker County.

White-tailed Jack Rabbit

White-tailed jackrabbits within the survey area could be found in open grasslands and shrub-steppe but also occupy pastures and fields. This species can also be found in forested areas. In Idaho, habitat for this species within the survey area is limited to the Owyhee foothills. In Oregon, habitat for this species is present throughout the survey area.

Pygmy Rabbit

Pygmy rabbits are the smallest rabbit in North America. They dig their own burrows in tall, dense, sagebrush habitats and are highly dependent on sagebrush for food and shelter throughout their lives (Ulmschneider 2004, 2008). A habitat suitability model (Hagar and Lienkaemper 2007) will be conducted to identify where pygmy rabbit habitat exists along IPC's Proposed Route and alternative route corridors; this model with aid in determining areas that could support pygmy rabbits as well as guide survey efforts.

On lands not managed by the BLM, surveyors will perform pygmy rabbit protocol-level surveys (Appendix B-11) if any pygmy rabbits or evidence of pygmy rabbit activity (rabbit burrows or pellets) are identified during any resource surveys.

On BLM-administered lands, protocol-level surveys for pygmy rabbits will be conducted in all areas with deep soil that contains big sagebrush species (including Mountain, Basin, and Wyoming sage) with more than 5 percent canopy cover. Surveys will be conducted on BLM-administered lands, regardless of whether or not surveyors identify rabbit activity. Pygmy rabbit surveys will be performed exclusively for the species and will not be conducted concurrent with other survey efforts.

3.2 Plant Field Surveys

The Phase 2 survey will focus on the following: Oregon state listed threatened or endangered species, and BLM/Forest Service species considered Sensitive Species (collectively referred to as special status species). There are multiple non-federally listed special status species that occur or have the potential to occur in the project area (plus two federally listed species as discussed in Sections 2.2.3 and 2.2.4). A description of these species and explanation of their ranking are presented in Appendix C-2. Methods for documenting presence/absence of special status plant species within the survey area are described in this section. The plant survey maps (Volume II) display where surveys would be conducted for each special status plant species.

3.2.1 Agency Survey Requirements

The ODA Native Plant Conservation Program administers and manages sensitive plants on all non-federal public lands. The ODA requires that state-listed threatened and endangered species, which appear on ORNHIC List 1 and have the potential to occur in the project area, be considered for survey on public lands. ODOE-EFSC mirrors ODA requirements on private lands. Species considered Sensitive by the BLM and occur, or have the potential to occur, on

BLM lands within the project area, must also be considered for survey. Similarly, Idaho BLM Type 1, 2, 3, and 4 special status plants known to occur, or with the potential to occur, on federal lands must be considered. Regardless of land ownership, suitable habitat for sensitive plants will be identified during the pre-survey vegetation mapping phase and refined during the species-specific surveys. Appendix C-2 provides information on sensitive species with the potential to occur within the project area.

3.2.2 Vegetation Survey Timing

Listed plant surveys will be conducted during the highest likelihood of blooming to ensure positive identification. As blooming periods span May to September, multiple surveys will be required to capture all of the species during their appropriate blooming periods. In a few cases, plants that are easily identifiable in fruit may extend the survey time for those species.

3.2.3 Howell's Spectacular Thelypody

Howell's spectacular thelypody, a biennial herb that flowers in May and June, is a federally listed species and an Oregon state endangered species. It occurs in moist valley bottoms and prefers alluvial outwashes with seasonal moisture. Refer to Appendix C-1 for more detail. Botanists will determine the appropriate survey period (i.e., the time frame when surveys would be conducted) based on site conditions during plant surveys. Portions of IPC's Proposed Route or route alternatives where suitable habitat has been identified may need to be surveyed a second time if based on plant phenology.

3.2.4 Slickspot Peppergrass

Slickspot peppergrass is a federally listed species. It is an herbaceous annual or biennial mustard that flowers from May to June. It is located in sagebrush-steppe habitats in distinct "slickspots" or mini-playas. Refer to Appendix C-1 for more detail. Botanists will determine the appropriate survey period based on site conditions during plant surveys. Portions of IPC's Proposed Route or route alternatives, where suitable habitat has been identified, may need to be surveyed a second time if based on plant phenology.

3.2.5 Survey Methods

The BLM "intuitive controlled survey" (USDA/USDI 1998) method will be used to survey for special status plants.

Areas with potential suitable habitat for one or more target species will be identified based upon the following: 1) pre-survey vegetation mapping efforts; and 2) consultation with knowledgeable local botanists. If federal or state resource agencies identify known and easily accessible reference communities, botanists will visit the locations to create search images of these species, habitats, and associated plant communities.

Two to four botanists will form a search line to traverse through the project area until a representative cross-section of all major habitats and topographic features has been surveyed. Botanists will be looking for target species while enroute to different areas. When an area with high potential for habitat as defined in the previous paragraph is identified or encountered during

the rare plant survey, a "complete survey" will be executed. Botanists will walk parallel to each other at distances appropriate for the size of the target species and the height and density of the surrounding vegetation to conduct a 100-percent visual exam of the high potential area. Detailed surveys will also occur in areas with known target plant populations.

In areas where multiple transects are required, surveyors will place a flag at the beginning of each transect and meander toward a transect endpoint identified by a compass bearing taken at the beginning flag. A flag will then be placed at the opposite end of the transect. The placement of flags helps identify areas that have been covered in one transect and new areas that need to be covered in the next.

To ensure special status species are not overlooked, botanists will maintain a list of all vascular plant species and their habitat associations observed during the survey. This list will be included with the botanical survey summary report as an appendix.

Species information to be collected includes, but is not limited to, population dynamics, associated species, habitat conditions, and potential threats. These parameters reflect the ORNHIC rare plant field survey form, GeoBOB database fields, and Idaho IFWIS rare plant observation report form (Appendix C-4).

3.2.6 Noxious Weeds Surveys

Noxious weeds are nonnative, invasive species that threaten agriculture, rangelands, waterways, parks, wildlife, property values, public health and safety, and general ecological health and diversity of native ecosystems. These plants are highly competitive and persistent, germinate under a wide variety of conditions, and often show fast seedling growth. Because these species are introduced, they lack natural control agents and frequently escape herbivory, factors that typically regulate native species (Keane and Crawley 2002).

Noxious weeds (Appendix C-3) will be recorded during all plant surveys. All noxious weed observations will be mapped using GPS. Relative abundance and size of the infestations (i.e., less than 0.1 acre, 0.1 to 1 acre, less than 1 acre) will be recorded. Existing site-specific disturbances and land uses (e.g., grazing, grading, etc.) that may be contributing to the introduction, spread, or viability of weed populations will be recorded.

Approximately 100 Oregon and Idaho noxious weed species potentially occur within the B2H survey area. The ODA categorizes noxious weeds into two primary groups: List A and List B. List A contains weeds of known economic importance which occur in the state in small enough infestations to make eradication or containment possible, or weeds that are not known to currently occur in Oregon, but whose presence in neighboring states make future occurrence in Oregon likely. Weeds on List B are considered weeds of economic importance that are regionally abundant, but may have limited distribution in some counties. Idaho noxious weeds are grouped into one of three lists maintained by the Idaho State Department of Agriculture: Statewide Early Detection and Rapid Response, Statewide Control, and Statewide Containment. See Appendix C-3 for a listing of Oregon and Idaho noxious weeds that may occur along a 500-foot survey corridor.

3.3 Waters of the United States

This section describes the methodology for identifying, documenting, and delineating wetlands and other Waters of the U.S. that may be affected by the project, as required by the USACE, ODSL, and IDWR. A physical delineation and survey would occur only if a project component (i.e., substation, tower, or access road) was sited within 100 feet of an identified wetland.

3.3.1 Field Surveys to Determine Presence of Wetlands and other Waters of the U.S.

During all terrestrial surveys (e.g., TVES, species specific, or rare plant surveys), Waters of the U.S. will be identified. The boundary of all water resources will be hand-drawn on field maps and mapped with sub-meter accuracy hand-held GPS units. If GPS reception is unavailable, hand-drawn maps will be digitized into GIS and refined using topographic data. A GIS wetland data layer will be created and overlaid on the project layout maps to identify areas of potential impact by the project and where specific wetland delineations will be required.

Under Section 404 of the Clean Water Act (CWA), the USACE and the United States Environmental Protection Agency (USEPA) regulate the discharge of dredge and fill material into "waters of the United States." The jurisdictional status of wetlands and other Waters of the U.S. is generally based on the USACE Jurisdictional Determination Form Instructional Guidebook (USACE 2007) and USACE guidance resulting from the Clean Water Act Jurisdiction following the U.S. Supreme Court's Decision in *Rapanos v. United States* and *Carabell v. United States* (USACE 2008). In order for an aquatic feature to be considered a "Water of the U.S." it must be at least one of the following:

- A traditional navigable water
- A wetland adjacent to a traditional navigable water
- A relatively permanent water, including tributaries that typically flow year-round or have a continuous flow at least seasonally (typically three consecutive months depending on the region)
- A wetland that directly abuts a relatively permanent water
- A wetland adjacent (proximal but not abutting) to a relatively permanent water, but only if it can be shown that the feature has a "significant nexus" with a traditional navigable water

Isolated wetlands that do not meet one of these requirements, however, can still be a state jurisdictional wetland. In order to assess the likelihood of state and federal jurisdiction, key data will be collected for each wetland (or group of small wetlands in mosaic situations) in an attempt to determine the following:

1) Does the feature appear to meet the definition of a wetland (hydrophytic vegetation, hydric soil criteria, and wetland hydrology criteria)?
2) Is the wetland isolated and located outside of a 100-year floodplain?
3) Was the wetland artificially created from upland?

4) Does the wetland receive irrigation? If so, would the area meet wetland criteria without artificial water input?

5) Does the drainage feature meet the definition of a stream channel? If so, does the stream exhibit indicators of perennial, intermittent, or ephemeral flow?

Wetland presence will be determined as per the 1987 Wetland Delineation Manual methods and the regional supplements, as appropriate. The USACE Arid West Regional Supplement will be used in the majority of the study area with the exception of higher elevation areas around the Wallowa-Whitman National Forest. In these higher elevation areas, the Western Mountains, Valleys, and Coast Regional Supplement will be used.

To assess potential impacts to wetlands, a 100-foot buffer of all proposed ground-disturbing activities will be developed. Where disturbance would be located within 100 feet of an approximate wetland boundary, wetland delineations will be conducted. Delineations will use the Routine Approach, as described in the 1987 USACE Wetlands Delineation Manual and amended by the applicable regional supplement. For potentially jurisdictional water resources, the new USACE "Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States" (Lichvar and McColley 2008) will be used. As described above, the Applicant and its consultant will coordinate with the ODSL, IDWR, and USACE early in the process to reach agreement on protocols for wetland determination and delineation. Specific wetland delineation protocols to be agreed upon include the following:

- Use of alternate forms to facilitate electronic data collection (versus use of the regional supplement data forms);
- Number of upland data plots in large tracts of land without wetland presence;
- Ordinary High Water Mark protocols, specifically for dry drainage areas; and
- Determination of hydrophytic vegetation in farmed areas.

3.3.2 Wetland Functions and Value Assessment

A meeting with the USACE and Oregon Department of State Lands (ODSL) staff in Bend and La Grande will be scheduled to discuss which functional assessment method is appropriate for the project. ODSL requested the use of the Oregon Rapid Wetland Assessment Protocol (ORWAP) in April 2009 (Adamus et al. 2010) (Appendix D-3). ODSL and USACE staff may agree to a different functional assessment method once they review the project.

The assessment will focus on areas that are likely to have water resources present. Focus areas will include topographic depressions, valley bottoms, areas with surface water signatures on aerial photography, riparian areas associated with perennial and intermittent streams, areas mapped as springs, wetlands, and streams on USGS topographic and NWI maps. Developed areas, non-irrigated plateaus lacking hydric soils, or steep slope areas will not be evaluated, except where drainage features are noted. Field maps will identify priority search areas.

Wetland field maps will be prepared concurrently and will be shown on vegetation maps, as described in Section 2.2.

The USACE and ODSL will require a wetland functional assessment of all wetlands affected by the project. Wetland functions and values will be assessed using the ORWAP; the details and method of the ORWAP can be found in Appendix D-3. Only wetlands that would be directly affected by the construction of the project would have a function and value assessment completed. The assessment will be used to determine mitigation requirements.

3.3.3 Sensitive Fish Habitat

As discussed in Section 2.1.1.1, fish presence will be assumed in all waterbodies that could potentially support these species (Appendix E), as indicated via agency data and stream classifications. No fish surveys would be conducted. Stream data will be collected at all locations where the project has the potential to adversely impact fish habitats. This will include crossing of streams by access roads, ROW clearing, or other project-related activities that may impact stream morphology, riparian vegetation, or substrate characteristics. Data collected on stream morphology will include:

- approximate flowing and bank full widths,
- channel slope,
- bank slope, and
- incision depth.

Data collected on riparian vegetation characteristics will include:

- vegetation type,
- approximate age, and
- riparian width from bank.

Data collected on substrate characteristics will include visual assessment of:

- dominant and subdominant substrates,
- relative cobble embeddedness, and
- percent of fines in riffle-run areas.

Additional data will be recorded when appropriate, such as the location of existing developments near the crossing that may impede fish passage.

3.4 Habitat Surveys

Phase 2 habitat surveys will be completed in three concurrent parts: 1) identification of unique wildlife habitats during Phase 1 and ground surveys conducted during Phase 2, 2) estimating vegetation cover and species dominance during Phase 2 ground surveys, and 3) preparation of final habitat category maps based on photo interpretation and ground surveys. These concurrent activities will be completed along IPC's Proposed Route and route alternatives (500 feet total width survey area) and associated project features. The components of these habitat surveys are discussed below.

3.4.1 Unique Habitats

Unique habitats within IPC's Proposed Route, route alternatives, and associated project features will be identified concurrently during TVES ground surveys for wildlife as described in Section 3.1.9 and Appendix B-9, and for plants as described in Section 3.2.5.

Unique habitats within IPC's Proposed Route and route alternative corridor area will be identified concurrently during ground surveys for plants and TVES. Ground surveys will identify any unique habitats that were not identified during Phase 1 vegetation mapping efforts. Previously undocumented rock-ash-calcareous outcroppings, talus slopes, cliffs, caves, riparian zones, snags, sand inclusions, mature timber stands, permanent and seasonal ponds, lakes, wetlands, and springs will be recorded along with a narrative describing the extent and condition of the habitat. These habitats will be documented in the field using GPS Trimble units, uploaded to the central geodatabase repository.

Data regarding known locations of mines, adits, and caves will be requested from state and federal agencies so that these sensitive areas can be avoided. In order to further protect these sensitive areas, field staff will record and map any suitable bat habitat (e.g., cliffs, mines, adits, caves, as well as large snags) found within the survey area during Phase 2 and 3 surveys. These areas would be avoided during project design and construction; therefore, potential impacts to roosting, maternity, and hibernacula sites would be considered low. No mines, adits, or caves will be entered by field staff.

3.4.2 Vegetation Cover and Species Dominance

Canopy cover and species dominance worksheets (Appendix C-4) will be completed concurrently with Phase 2 plant surveys and terrestrial visual encounter surveys for wildlife.

This information will be used to assign a qualitative attribute to the habitat mapping and ecological systems classifications compiled for IPC's Proposed Route and route alternatives. The quality of habitat attribute will assist in categorizing habitats in accordance with ODFW's Habitat Mitigation Policy framework.

The habitat mapping process will be to categorize survey areas within the framework of the ODFW habitat mitigation categories and will be rated based on the category characteristics presented in Appendix F for each ecological system surveyed. The characteristics used to determine the appropriate mitigation category for an ecological system (e.g., weed-infested and/or highly disturbed habitat where less than 25 percent ground cover is native) will be recorded using ocular estimates in all representative ecological systems (see Appendix C-4). In areas with high mitigation category ratings (i.e., low quality), additional comments will be provided to better define the cause or influences on the ecological system resulting in the low-quality rating. These field-defined ODFW mitigation categories will then be overlaid with all existing wildlife spatial data to further refine the habitat categories map.

3.4.3 Final Habitat Category Maps

Based on field data collection efforts during ground surveys, changes to the vegetation maps may be needed and will be evaluated using "heads-up" digitizing in ArcGIS 9.3 or 10 (ESRI,

Inc.) to verify the accuracy and correct any misclassified ES polygons within the survey area. API will be performed at a 1:5,000 scale, and the minimum mapping unit will be 0.2 acre (the area of a single ReGAP 98-foot [30-meter pixel]). The minimum mapping unit may be adjusted to account for unique habitat types, such as wetlands (i.e., the minimum mapping unit may be reduced to account for wetlands smaller than 98 feet wide).

The final habitat category maps will be based on field surveys, updated vegetation mapping within IPC's Proposed Route and route alternatives, and consultation with ODFW. Vegetation maps will be presented in a map book that contains 11-inch by 17-inch inch maps, at a scale of 1:24,000, for IPC's Proposed Route and route alternatives. These will be accompanied by a summary table showing the acres of each habitat type, ODFW habitat category, and a rationale for the assigned ODFW habitat category. The vegetation maps will be refined and finalized based on feedback from ODFW.

4.0 PHASE 3 – PRECONSTRUCTION SURVEYS AND MODIFICATIONS TO PROJECT FEATURES

Preconstruction surveys will be implemented for state and federally listed species and species of concern during Phase 3. It is the intent that all vegetation clearing and grubbing will be performed prior to nesting and would negate the need to conduct nest surveys for most migratory birds. In the event that clearing would be needed during the nesting season, nesting surveys would be performed within 10 days of clearing, grubbing, grading or excavation activities.

In the event that the Proposed Route alternatives or associated infrastructure change after Phase 2 surveys have been conducted, or where previously denied access has be granted, additional wildlife or plant surveys or wetland delineations will also be required during Phase 3 (Table 1).

4.1 Active Raptor Nest Survey

Active raptor nests will be identified through focused preconstruction surveys of the approved route and project features. Because construction will take more than 1 year, surveys will be focused on areas of active construction for that year. Identification of active nests will trigger implementation of temporal and spatial restrictions. Preconstruction raptor nest surveys will be conducted following the same protocol as described in Section 3.1.3 and Appendix B-3 of this document.

4.2 General Avian Species

The nests of most avian species are protected under the Migratory Bird Treaty Act of 1918 (as amended in 16 USC 703-712). In order to ensure compliance with the Migratory Bird Treaty Act, all ground clearing would occur outside of the avian breeding season, which should reduce the risk of removing or damaging active nests. The presence of avian species would be determined during protocol-level surveys and TVES surveys discussed for Phase 2 and the preconstruction surveys that would occur during Phase 3. Therefore, no targeted avian point count surveys or avian nest surveys (with the exception of the raptor nest surveys) would be conducted.

4.3 Waters of the United States

Phase 3 will utilize the results of the wetland mapping and field work conducted during Phase 1 and 2 to avoid and delineate water resources. This task will document and permit project changes that occur as the Proposed Route is refined, project structures are located, and micro-siting adjustments are made.

4.4 Surveys of Modifications to the Proposed Alternative or Project Features

Any modifications to the preferred route or changes to the location of any project features that result in construction being located outside of the surveyed area will be assessed and documented according to the protocols and timing described in this Work Plan.

5.0 REFERENCES

Adamus, P., J. Morlan, and K. Verble. 2010. Oregon Rapid Wetland Assessment Protocol. (ORWAP): calculator spreadsheet, databases, and data forms. Oregon Dept. of State Lands, Salem, OR.

Atwood, D., and A. Debolt. 2000. Field guide to the special status plants of the BLM Lower Snake River District. Available online at: http://www.blm.gov/pgdata/etc/medialib/blm/id/publications/field_guide_to_the.Par.30366.File.dat/entiredoc.pdf (accessed March 2011).

Black, A. 1992. *Ferruginous Hawk reproduction and habitat survey,* Northern Rockies Conservation Cooperative, Jackson, WY, 30 pp.

Bull, E.L., M.G. Henjum. 1990. *Ecology of the great gray owl*. Gen. Tech. Rep. PNW-GTR-265. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 39 p.

Comer, P., D. Faber-Langendoen, R. Evans, et al. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems, NatureServe, Arlington, VA.

Connelly, J.W., M.A. Schroeder, A.R. Sands, et al. 2000. "Guidelines to manage sage grouse populations and their habitats," *Wildlife Society Bulletin*, 28(4):967-985.

Connelly, J.W., W.J. Arthur, and O.D. Markham. 1981. "Sage grouse leks on recently disturbed sites," *Journal of Range Management,* 34(2):153-154.

Conway, J.C., and J.C. Simon. 2003. "Comparison of detection probability associated with burrowing owl survey methods," *Journal of Range Management,* 67(3):501-511.

Dechant, J.A., M.L. Sondreal, D.H. Johnson, et al. 1999 (revised 2002). *Effects of management practices on grassland birds: Ferruginous Hawk*. Northern Prairie Wildlife Research Center, Jamestown, ND, 23 pp.

Dudley, J. and V. Saab. 2003. *A field protocol to monitor cavity-nesting birds*. Res. Pap. RMRS-RP-44. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 16 pp.

eFloras. 2008. Website. http://www.efloras.org. Accessed March 2011. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.

FGDC (Federal Geographic Data Committee). 2008. *National Vegetation Classification Standard (Version 2.0),* FGDC Document number FGDC-STD-005-2008, Reston, Virginia. February 2008.

FGDC. 1997. The Vegetation Subcommittee of the Federal Geographic Data Committee endorsement of the National Vegetation Classification System (NVCS). Available at: http://el.erdc.usace.army.mil/emrrp/emris/emrishelp2/national_vegetation_classification_system_spatial_topics.htm (accessed online November 2008).

Hagar, J., Lienkaemper, G. 2007. Pygmy rabbit surveys on state lands in Oregon, U.S. Geological Survey Open-File Report 2007-1015, 23 pp.

Hagan, C.A. 2005. Greater sage-grouse conservation assessment and strategy for Oregon: a plan to maintain and enhance populations and habitat. Oregon Department of Fish and Wildlife, Salem, OR, USA.

Hanf, J.M., P.A. Schmidt, E.B. Groshens. 1994. *Sage grouse in the high desert of central Oregon: results of a study, 1988-1993,* BLM / OR / WA / PT-95 / 002-4120.7, U.S. Bureau of Land Management, Prineville, OR, USA.

Hoffman, R.W. and A.E. Thomas. 2007. Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region.

IPC (Idaho Power Company). 2010. Boardman to Hemingway Transmission Line Project Siting Study. August 2010.

IPC. 2003. Distribution of Sage and Sharp-tailed Grouse in Hells Canyon and Transmission Line Corridors Associated with the Hells Canyon Complex, Technical Report Appendix E.3.2-8, Idaho Power Company, Boise, ID, July 2003.

Jepson Online Interchange (JOI). 2011. California Floristics. Available online at: http://ucjeps.berkeley.edu/interchange.html. Accessed: March 2011.

Kagan, J.S., J.L. Ohmann, M.J. Gregory, et al. 2008. *Final Report on Land Cover Mapping Methods, Map Zones 8 and 9, PNW ReGAP,* Institute for Natural Resources, Oregon State University, Corvallis, OR.

Kagan, J.S., R. Morgan, and K. Blakely. 2000. Umatilla and Willow Creek Basin Assessment for Shrub Steppe, Grasslands, and Riparian Wildlife Habitats: EPA Regional Geographic Initiative Final Report.

Keane, R. and M. J. Crawley. 2002. "Exotic plant invasions and the enemy release hypothesis," *Trends in Ecology & Evolution*, Volume 17, Issue 4, pp. 164-170, A

Kochert, M.N. 1986. Raptors. Pages 313-349 in Inventory and monitoring of wildlife habitat. (Cooperrider, A. L., R. J. Boyd, and H. R. Stuart, Eds.) Chapter 16. U.S. Department of the Interior, Bureau of Land Management, Service Center, Denver, CO.

Leonard, D. L., Jr. 2001. Three-toed Woodpecker (*Picoides tridactylus*). *In* The Birds of North America, No. 588 (A. Poole and F. Gill, editors). The Birds of North America, Inc., Philadelphia, PA. 24 pp.

Lowry, J.H., Jr., R.D. Ramsey, K. Boykin, D. Bradford, P. Comer, S. Falzarano, W. Kepner, J. Kirby, L. Langs, J. Prior-Magee, G. Manis, L. O'Brien, T. Sajwaj, K.A. Thomas, W. Rieth, S. Schrader, D. Schrupp, K. Schulz, B. Thompson, C. Velasquez, C. Wallace, E. Waller, and B. Wolk. 2005. Southwest Regional Gap Analysis Project: Final Report on Land Cover Mapping Methods, RS/GIS Laboratory, Utah State University, Logan, UT.

Lichvar, R.W. and S.M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States – A Delineation Manual, ERDC/CRREL TR-08-12, August 2008.

Licht, L.E. 1986. Food and feeding behavior of sympatric red-legged frogs, Rana aurora, and spotted frogs, Rana pretiosa, in southwestern British Columbia. *Can. Field Nat*., 100:22–31.

Manley, P.N.; Van Horne, B.; Roth, J.K.; Zielinski, W.J.; McKenzie, M.M.; Weller, T.J.; Weckerly, F.W.; Vojta, C. 2006. Multiple species inventory and monitoring technical guide. Gen. Tech. Rep. WO-73. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office, 204 pp.

Menke, C.A., and T.N. Kaye. 2006. Lepidium papilliferum (Slickspot peppergrass): Evaluation of Trends (1998-2004) and Analysis of 2004 Habitat Integrity and Population Monitoring Data. Final Report. Institute for Applied Ecology. Available online at: http://appliedeco.org/reports/menke-and-kaye_-lepa-98-04-final.pdf (accessed: March 2011).

Menkens, Jr., G.E. and S.H. Anderson. 1987. Nest site characteristics of a predominantly tree-nesting population of Golden Eagles. *J. Field Ornithol*. 58:22-25.

Montana Plant Life (MPL). 2011. Phlox multiflora. Available online at: http://montana.plant-life.org/index.html (accessed: March 2011).

Morgan, R.L., and M. Nugent. 1999. Final Report: Status and Habitat Use of the Washington Ground Squirrel (Spermophilus washingtoni) on State of Oregon Lands, South Boeing, Oregon, in 1999. Oregon Department of Fish and Wildlife. November.

Mueller-Dombois, D., and H. Ellenberg. 1974. *Aims and methods of vegetation ecology*, John Wiley & Sons, New York, NY, 547 pp.

National Audubon Society. 2008. *Audubon Watch List*. Available online at: http://audobon.org (accessed January 2008).

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available online at: http://www.natureserve.org/explorer (accessed: January 5, 2011).

Newton, R.E and A.S. Thorpe. 2010. Assessing the status of Lupinus lepidus var. cusickii in Denny Flat, Baker County, Oregon. Institute for Applied Ecology, Corvallis, Oregon and USDI Bureau of Land Management, Vale District. iii + 7 pp.

ODA Plan Division. 2011. Oregon Department of Agriculture, Plant Division, Plant Conservation website. 2008. Howell's spectacular thelypody (*Thelypodium howellii* ssp. *spectabilis*). Available online at: http://www.oregon.gov/ODA/PLANT/CONSERVATION/profile_thhosp.shtml (accessed: March 2011).

OFP (Oregon Flora Project). 2007. Rare Plant Guide website. Available online at: http://www.oregonflora.org/rareplants/index.php (accessed March 2011).

OSU (Oregon State University). 2007. Northwest Regional GAP Ecological Systems, USGS Mapping Zones 8, 9, and 18: Existing Land Cover/Vegetation Map, Institute for Natural Resources, Corvallis, OR.

Quintana-Coyer et al. 2004. *Survey Protocol for the Great Gray Owl Within the Range of the Northwest Forest Plan*, USDA Forest Service and USDI Bureau of Land Management, Version 3.0, January 12, 2004.

Sisk, T.D. 2005. *Northern Goshawk Nesting Habitat*, Forest Ecosystem Research Analysis Project, Center for Environmental Sciences and Education: Northern Arizona University, Flagstaff, AZ.

Smucker, K., A. Cilimburg, and M. Fylling. 2008. *2008 flammulated owl surveys final report*. Northern Region Landbird Monitoring Program. Avian Science Center. University of Montana. Missoula, MT.

Stateline 3. 2001. 2010 Boardman to Hemingway Protocol for Washington Ground Squirrel Surveys. 2001. Adapted from Stateline 3 Part A and Part B Pre-Construction Wildlife Investigation. October 12, 2001.

Ulmschneider, H. 2004. Surveying for pygmy rabbits (*Brachylagus idahoensis*), fourth draft. Bureau of Land Management. Boise, ID. 2004. Revised 2008.

USACE (U.S. Army Corps of Engineers). 2007. Regulatory Guidance Letter 07-01. Practices for Documenting Jurisdiction under Sections 9 & 10 of the Rivers and Harbors Act (RHA) of 1899 and Section 404 of the Clean Water Act (CWA). June 5, 2007. Available online at: http://www.usace.army.mil/CECW/Documents/cecwo/reg/rgls/rgl07-01.pdf

USACE. 2008. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States. Memorandum December 2. Available on-line at: http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/cwa_juris_2dec08.pdf

USDA/USDI (USDA Forest Service, USDI Bureau of Land Management). 1998. Survey Protocols for Survey and Manage Strategy 2 Vascular Plants. Version 2.0. Whiteaker et al., December 1998.

USFS (USDA Forest Service). 1995. Inland Native Fish Strategy (INFISH) Environmental Assessment. Intermountain, Northern, and Pacific Northwest Regions.

USDI BLM (United States Department of Interior, Bureau of Land Management). 1997. United States Department of Interior, Bureau of Land Management. Technical Bulletin 97-5, Sensitive Animals of the Jarbidge Resource Area, Idaho-Additions. March 1997.

USFS and BLM (USDA Forest Service and ISDI Bureau of Land Management). 1995. Decision Notice/Decision Record, Finding of No Significant Impact, Environmental Assessment for the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH).

USDI BLM. 2008. National Environmental Policy Act Handbook H-1790-1.

USGS (U.S. Geological Survey). 2009. Managers' Monitoring Guide, Visual Encounter Surveys for Amphibians. USGS Patuxent Wildlife Research Center. http://www.pwrc.usgs.gove/monmanual/ techniques/ves.htm. Accessed April 2009.

Vanderhorst, Jim. 1997. Conservation assessment of sensitive moonworts (*Ophioglossaceae*); Botrychium subgenus Botrychium) on the Kootenai National Forest. Montana Natural Heritage Program, Helena, Montana.

Wallestad, R. 1975. "Male sage grouse responses to sagebrush treatment," *Journal of Wildlife Management*, 39(3):482-498.

Wallestad, R., J. G. Peterson, and R. L. Eng. 1975. "Foods of adult sage grouse in central Montana," *Journal of Wildlife Management,* 38:634-637.

WDNR (Washington Department of Natural Resources). 2000. *Trifolium douglasii*. Field Guide website. Available online at: http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/trdo.pdf (accessed: March 2011).

Wiggins, David. 2004. American Three-toed Woodpecker (*Picoides dorsalis*): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. July 1, 2004

Wilson, B. L., R. Brainerd, D.Lytjen, B. Newhouse, and N. Otting. 2008. Field Guide to the Sedges of the Pacific Northwest. Oregon State University Press. Corvallis, OR. Pg. 431.

Woodbridge, B., C.D. Hargis. 2006. Northern goshawk inventory and monitoring technical guide, Gen. Tech. Rep. WO-71, Washington, D.C: U.S. Department of Agriculture, Forest Service, 80 pp.

Yates, G. 2005. Lomatium erythrocarpum Survey: Final Report. Wallowa-Whitman National Forest. Available online at: http://www.fs.fed.us/r6/sfpnw/issssp/documents/inventories/inv-rpt-va-loer-waw-surveys-2005-10.pdf (accessed March 2011).

APPENDIX A

DATA COLLECTION AND REPORTING FOR ALL SURVEYS

APPENDIX A

DATA COLLECTION AND REPORTING FOR ALL SURVEYS

Data Compilation and Storage

Field crews will use GPS technology for data collection activities. Trimble GeoXT survey grade receivers loaded with ESRI ArcPad 10 software will be used by crews conducting field surveys. All GPS data will be collected in ArcPad, differentially corrected via Trimble Pathfinder, exported to and refined in the latest version of ArcGIS 10.x, and maintained in the project GIS geodatabase.

Where feasible, GPS forms derived from Geographic Biotic Observations (GeoBOB) will be used in accordance with BLM protocols to collect data for flora and fauna. Field data collectors will either enter data directly into the GeoBOB derived GPS forms (see attached examples of the flora and fauna data forms), or complete paper data forms to be entered into GeoBOB at a later date using species-specific data forms used for biological surveys (e.g., goshawk data form), all data will be double-checked during entry, and any issues will be resolved with the persons who gathered the data. GeoBOB training with BLM personnel would be conducted prior to field crews departing for surveys.

If GeoBOB is not feasible, Trimble TerraSync software will be used to facilitate data collection and data maintenance. To help maintain data integrity, data will be automatically validated and restricted to the domains and subtypes defined in the central geodatabase. Domains will provide the user with controlled and standardized data entry choices and along with real-time map display, will facilitate data collection.

Pathfinder Pro will be used in post processing to differentially correct GPS survey data for improved positional accuracy. Unique Base Provider Integrity Index will be used to automatically select and download the best quality base data available for differential correction. Automated routines will be used for data transfer, differential correction, and data export for quality control before being viewed and/or edited in ESRI ArcMap, then synchronized with the local geodatabase.

After collected data have been downloaded, a standard quality assurance assessment will be performed to ensure the collected data meet the requirements of this project. Data validation procedures (ensuring measures are logical and within normal ranges) will be detailed in each task protocol and will generally include domain and validation checks. All data will meet the Quality Assurance Project Plan developed for B2H. All Quality Assurance/Quality Control procedures will be in accordance with applicable professional standards, government regulations and guidelines and specific project goals and requirements. Any problems or comments related to a specific GIS or GPS data issue will be documented as appropriate. Any corrective actions necessary to insure that data integrity is maintained will be documented.

All collected field data (physical forms, pictures, GPS files (.axf, .ssf and .cor files) will be delivered to the BLM Vale District Office and the ODFW data steward.

Rare Plant Site Documentation

All target plant species will be surveyed using survey-grade GPS equipment with sub-meter positional accuracy. Individual points will be taken for lone plants or small populations. Polygons will be surveyed around large populations[1]. Multiple parameters for each listed plant location will be documented using a GPS data dictionary established for the survey effort. This data dictionary will store information on population dynamics, associated species, habitat conditions, potential threats, etc. consistent with the Geographic Biotic Observations (GeoBOB) database (ORNHIC rare plant field survey form and Idaho CDC rare plant observation report form) (Appendix C-4). Data will be exported to individual site records consistent with these forms. Site forms will be included with the botanical survey summary report as an appendix.

Sensitive and Strategic species sites located on OR BLM lands during any survey efforts will be entered into the agency corporate database, Geographic Biotic Observations (GeoBOB).

Comprehensive Baseline Technical Reports

The comprehensive baseline technical reports will be based on the results of field reconnaissance, project related species-specific surveys, and previously collected data (e.g., data provided by ODFW). The table of contents for the baseline technical reports is as follows:

BASELINE TECHNICAL REPORT
TABLE OF CONTENTS
SUMMARY *(Resource specific)*
INTRODUCTION
- Purpose and Objectives
- Physical Setting of Project Area (Figure 1)
- Resource Study Area (Figure 2)

DATA REVIEW
- Literature reviewed
- Existing Data (unpublished) reviewed

DATA COLLECTION AND METHODS
- Descriptions of survey dates, methods, and personnel

RESULTS AND DISCUSSION
- Description of special-status species distributions or habitat identified during surveys

REFERENCES
LIST OF TABLES
- Tables will be incorporated into the text as they are referenced.

[1] A large population would be defined in the field by either total area of population or by total number of individuals, depending on the species. Number of stems may be counted for some plant species or, if extensive, the area will be estimated or delineated using a Trimble unit and post-processed to determine extent and acreage.

LIST OF FIGURES

Figures will be incorporated into the text as they are referenced.

APPENDICES

Appendices will be presented at the end of the document

Completed state special status species observation forms

Representative photographs of the biological resources present

Any other information determined to be required by local, state, and Federal agencies

Example of BLM Flora and Fauna Data Forms

The follow data forms (flora and fauna) contain data cells that require input and would be entered using a survey grade Trimble GPS unit using ArcPad and an agency provided personal geodatabase. The example forms will be revised to include only data fields where input is necessary.

OR / WA BLM GeoBOB v 1.4 SITE & OBSERVATIONS FORM – FLORA, pg 1.
(*Circle* appropriate option when a list is provided, **Bold** items are required fields, *key to codes on cheat sheet. See data dictionary for Field Name and List of Value definitions.)

SITES

SITE ID: _____ SITE NAME: _____
SITE ALT. ID: _____
SPECIES CODE: _____ SCIENTIFIC NAME: _____ COMMON NAME: _____
UTM: _____E, _____N ZONE: _____ DATUM: _____
LAT: _____ _____ _____ W, LONG: _____ _____ _____N GPS model / software: _____
LEGAL DESCRIPTION: T_____R_____ S _____ ¼_____ 1/16_____ 1/64_____ MERIDIAN: W H D
USGS QUAD: _____
ADMIN UNIT: _____ SUB ADMIN UNIT: _____
***LOCATION ACCURACY**: _____
SPECIES SITE STATUS (locally): Extirpated (sp. & habitat), Occupied, Undetected, Unknown, Unoccupied
TOTAL QUANTITY: _____ QUANT. ESTIMATED?: Y / N
DISTRIBUTION: Clumpy, Linear, Scattered- Even, Scattered- Patchy
ABUNDANCE: Abundant, Common, Uncommon, Unknown, Very Uncommon AREA OCCUPIED (acres): _____
OBSERVERS: _____
VISIT PURPOSE: Incidental, Inventory, Treatment (specify in notes), Monitoring – Annual/ Fed. Listed, Monitoring – Grazing, Monitoring – Long-Term, Monitoring – Unspecified, Monitoring – Fire, Research, Revisit, Resurvey, Unspecified
DATE: _____ **DATE ACCURACY**: Day, Month, Year, Unknown
REVISIT NEEDED: Y / N REVISIT SCHEDULED DATE: _____
NOTES: _____
_____
_____

PHENOLOGY

^Phenology	% Phenology		*Phenology	% Phenology

All (A), Bud (B), Dead (DE), Dormant (DO), Flower (F), Fruit (FR), Juvenile (J), Multiple (M), Re-growth (RG), Senescent (S), Sporocarp (SP), Vegetative (V), w/o Sporophyte (WOS), w/ Sporophyte (WS),

HABITAT/ENVIRONMENTAL CONDITIONS (Optional data)

Slope (%): _____ Slope – min.: _____ Slope – max.: _____ Slope source: _____
Aspect (deg): _____ Aspect – min. _____ Aspect – max. _____ Aspect source: _____
Elevation (ft): _____ Elevation – min.: _____ Elevation – max.: _____ Elevation source _____
Source: C = Calculated, M = Measured, E = Estimated, G = GPS generated (for elevation only)
*Landform: _____ Stand Age: _____
Stand Structure: Multiple Canopies, Single Canopy, Two Canopies, Even/Live Resid, Unspecified
*Seral Stage: _____ *Substrate: _____
Percent Cover: 1) Overstory: _____ Overstory min.: _____ Overstory max:_____
2) Understory: _____ Understory min.: _____ Understory max:_____
~Fire Presence: Absent, Burned, Completely Burned, High Scorch, Mod Scorch, Partial Scorch, Very High Scorch
Topographic Position (rel. to overall slope): Bottom, Lower, Mid, Ridge, Upper.
Soil Texture Class: Clay, Clay Loam, Loam, Sand, Silt, Silt Loam, Sandy Loam, Other
Air Temperature (F): _____ Relative Humidity (%): _____ Soil Temperature (F): _____
Soil Moisture: Dry, Moist, Wet, Inundated/Flooded Light Index: Full Shade, Full Sun, Part Shade
Precip: Dry, Fog, Misty Rain, Rain, Sleet/Hail, Snow Wind: Calm, Gusty, Light, Moderate, Windy (15+ mph)
Notes: _____
_____
_____

~If fire was present within the last 5 years

OR / WA BLM GeoBOB v 1.2 SITE & OBSERVATIONS FORM – FLORA, pg 2.

ASSOCIATED OBS

Create a list below of non-target species found in the same geographic location as the target species Site / Observation. If needed, indicate percent cover, abundance and/or quantity for each species. Enter data into GeoBOB Add_Obs table (use Associated Species tab in Flora Sites or Fauna Obs data entry forms).

Species Code	Scientific Name	*Abundance	Quantity	% Cover

THREATS

***THREAT TYPES(S)**: _____
NOTES:_____
_____
_____

OBSERVATION POINTS

OBS ID: _____ ***LOCATION ACCURACY**: _____
QUANTITY: _____ QUANTITY ESTIMATED Y / N ?
UTM: _____ E, _____N DATUM: _____
LAT: _____ _____ _____ W, LONG: _____ _____ _____N GPS Unit used: _____

PHENOLOGY:

FLORA SITE PHENOLOGY					
^Phenology	% Phenology	Quantity	*Phenology	% Phenology	Quantity

All (A), Bud (B), Dead (DE), Dormant (DO), Flower (F), Fruit (FR), Juvenile (J), Multiple (M), Re-growth (RG), Senescent (S), Sporocarp (SP), Vegetative (V), w/o Sporophyte (WOS), w/ Sporophyte (WS),

NOTES: _____
_____
_____

OR / WA BLM GeoBOB v 1.2 SITE & OBSERVATIONS FORM – FLORA, pg 3.
(*key to codes on cheat sheet, *Circle* appropriate option when a list is provided, **Bold** items are required fields)

ADDITIONAL OBSERVATION LOCATIONS

If more than one observation is found in the survey area and that is within the survey site, record the location, Obs ID, and notes here. If specifics about the additional observations need to be recorded, such as feature, detail observation or collection information, complete a separate Obs form.

Latitude/UTM E	Longitude/UTM N	Obs ID	Notes

PLEASE ATTACH MAPS of Observation or Site when helpful.

COLLECTIONS

COLLECTION ID: _____
COLLECTION TYPE: Commercial, DNA, ID Tag, Museum, None, Other, Photo, Seedbank, Voucher
DATE: _____ **COLLECTOR**: _____
REPOSITORY: _____ IDENTIFIER: _____
Photo ID: _____
VERIFIER**:** _____Verification Date: _____
VERIFIED SPECIES CODE: _____
COLLECTION NOTES: _____
_____
_____

OR / WA BLM GeoBOB v 1.4 OBSERVATIONS & SITE FORM – FAUNA, pg 1.
(*Circle* appropriate option when a list is provided, **Bold** items are required fields, *key to codes on cheat sheet. See data dictionary for Field Name and List of Value definitions.)

OBSERVATIONS

OBS ID: _____ **SPECIES CODE**: _____
SCIENTIFIC NAME: _____ COMMON NAME: _____
UTM: _____ E, _____N ZONE: _____ DATUM: _____
LAT: _____ W, LONG:_____N GPS model & software used: _____
***OBSERVATION TYPE**: _____ **DATE**: _____
DATE ACCURACY: Day, Month, Year
RELIABILITY: Excellent, Good, Fair, Poor, Unknown ***LOCATION ACCURACY**: _____
TOTAL QUANTITY: _____ QUANTITY ESTIMATED?**:** Y / N
DISTRIBUTION: Clumpy, Linear, Scattered-Even, Scattered-Patchy
ABUNDANCE: Unknown, Abundant, Common, Uncommon, Very Uncommon
OBSERVERS: _____
Notes: _____
_____

DETAIL OBS

QUANTITY: _____ GENDER: Female, Male, Hermaphrodite, Unknown *AGE: _____
*ACTIVITY: _____ CONDITION: Dead, Excellent, Fair, Good, Injured, Live, Poor, Shell, Sick, Unknown.
REPRO-STATUS: Non-repro, Repro, Unknown, Not Applicable. [BATS] Lactating, Null Parous, Parous, Post-lactating, Pregnant, (bats) Testes/epididymides enlarged & visible .
NOTES: _____
_____

HABITAT/ENVIRONMENTAL CONDITIONS (Optional data)

SLOPE (%): _____ SLOPE – MIN. (%): _____ SLOPE – MAX. (%): _____ SLOPE SOURCE: _____
Aspect (deg): _____ Aspect – min. (deg):_____ Aspect – max. (deg):_____ Aspect source: _____
Elevation (ft): _____ Elevation – min. (ft): _____ Elevation – max. (ft): _____ Elevation source _____
Source: C = Calculated, M = Measured, E = Estimated, G = GPS generated (for elevation only)
*Landform: _____ Stand Age: _____
Stand Structure: Multiple Canopies, Single Canopy, Two Canopies, Even/Live Resid, Unspecified
*Seral Stage: _____ *Substrate: _____
Percent Cover: 1) Overstory: _____ Overstory min.: _____ Overstory max:_____
2) Understory: _____ Understory min.: _____ Understory max:_____
~Fire Presence: Absent, Burned, Completely Burned, High Scorch, Mod Scorch, Partial Scorch, Very High Scorch
Topographic Position (rel. to overall slope): Bottom, Lower, Mid, Ridge, Upper.
Soil Texture Class: Clay, Clay Loam, Loam, Sand, Silt, Silt Loam, Sandy Loam, Other
Air Temperature (F): _____ Relative Humidity (%): _____ Soil Temperature (F): _____
Soil Moisture: Dry, Moist, Wet, Inundated/Flooded Light Index: Full Shade, Full Sun, Part Shade
Precip: Dry, Fog, Misty Rain, Rain, Sleet/Hail, Snow Wind: Calm, Gusty, Light, Moderate, Windy (15+ mph)
Notes: _____
_____
~If fire was present within the last 5 years

ADDITIONAL OBSERVATION LOCATIONS

If more than one observation is found in the survey area and that is within the survey site, record the location, Obs ID, and notes here. If specifics about the additional observations need to be recorded (feature, detail observation, or collection information) complete a separate Obs form.

Latitude/UTM E	Longitude/UTM N	Obs ID	Notes

PLEASE ATTACH MAPS of Observation or Site when helpful.

THREATS

***THREAT TYPE(S):** _____
NOTES:_____
_____

OR / WA BLM GeoBOB v 1.4 OBSERVATIONS & SITE FORM – FAUNA, pg 2.
(*key to codes on cheat sheet, *Circle* appropriate option when a list is provided, **Bold** items are required fields)

ASSOCIATED OBS

Create a list below of non-target species found in the same geographic location as the observation. If needed, indicate percent cover, abundance and/or quantity for each species.

Species Code	**Scientific Name**	**Abundance** (Abundant, Common, Uncommon, Unknown, Very Uncommon)	**Quantity**	**% Cover**

COLLECTIONS

COLLECTION ID: _____
COLLECTION TYPE: Cast, Commercial, Depredation, DNA, Hair, ID Tag, Museum, Necropsy, None, Other, Pellets/Scat, Photo, Salvage, Voucher
DATE: _____ **COLLECTOR**: _____
REPOSITORY: _____ IDENTIFIER: _____
Photo ID: _____
VERIFIER: _____ Verification Date: _____
VERIFIED SPECIES CODE: _____
COLLECTION NOTES: _____
_____
_____

FAUNA SITES

SITE ID: _____ SITE NAME: _____
SITE ALT. ID: _____ **SITE SPECIES CODE**: _____
ADMIN UNIT_____ SUB-ADMIN UNIT_____ ***LOCATION ACCURACY**: _____
SITE STATUS: (locally): Extirpated (sp. & habitat), Occupied, Undetected, Unknown, Unoccupied
TOTAL QUANTITY: _____ QUANT. ESTIMATED?: Y / N AREA OCCUPIED (ac): _____
VISIT PURPOSE: Incidental, Inventory, Monitoring – Annual/ Fed. Listed, Monitoring – Fire, Monitoring – Grazing, Monitoring – Long-Term, Monitoring – Unspecified, Research, Resurvey, Revisit, Treatment (specify in notes), Unspecified
DATE: _____ **DATE ACCURACY**: Day, Month, Year
REVISIT NEEDED: Y / N REVISIT SCHEDULED DATE: _____
NOTES: _____
_____
_____
PLEASE ATTACH MAPS of Observation or Site when helpful.

Example of Equipment Lists and Species-Specific Data Forms

The following includes a list of equipment and data forms that may be used for data collection and will be used in conjunction with or in place of an agency provided personal geodatabase if needed.

2011 Great Gray Owl Field Equipment List

1. Broadcast Caller Unit (Digital or Megaphone)
2. Flashlight and/or headlamp
3. GPS Unit (loaded with calling station locations)
4. 2-way radio
5. Extra batteries
6. Maps
7. Watch
8. Data sheets (rite in the rain paper is helpful)
9. Sharpies/Pens/Pencils
10. Binoculars
11. Field Compass
12. Survey Vest
13. Rain gear
14. Bug repellent
15. Gallon-sized plastic bags (ziplocks) for feather molts or prey remains
16. First Aid and other safety equipment

2011 B2H Great Gray Owl Survey Form

Date (mo/day):_____ Page___ of___ **Surveyor(s):**_____
GGO Survey Grid Number: _____
Weather: Sunny Partly Cloudy Cloudy Rain
Temp Range:___-___ F
Survey Start Time:_____ **Survey Method:**_____
End Time:_____

Wind: 1 smoke rises (<1 mph)
2 smoke drifts (1-3 mph)
3 leaves rustle, breeze felt on face (4-7 mph)
4 leaves and small twigs in constant motion (8-12 mph
5 raises dust, small branches in motion (>12 mph)

Cloud Cover: 1 <5%
2 5-20%
3 21-40%
4 41-60%
5 61-80%
6 81-100%

Presence? Y N

Calling Station#	Start Time (24 hr)	Raptor Detection	Age	Comments and Location Descriptions	UTM Coordinates

2011 B2H Northern Goshawk Field Equipment List

1. Broadcast Caller Unit (Digital or Megaphone)
2. GPS Unit (loaded with calling station locations)
3. 2-way radio
4. Extra batteries for GPS and radio
5. Maps
6. Watch
7. Data sheets (rite in the rain paper is helpful)
8. Sharpies/Pens/Pencils
9. Binoculars
10. Field Compass
11. Survey Vest (blaze orange a good idea during turkey seasons)
12. Rain gear
13. Bug repellent
14. Gallon-sized plastic bags (ziplocks) for feather molts or prey remains
15. First Aid and other safety equipment

2011 B2H Northern Goshawk Survey Form

Date (mo/day):_____ Page___ of___ **Surveyor(s):**_____
NOGO Survey Grid Number: _____
Weather: Sunny Partly Cloudy Cloudy Rain
Temp Range:___-___ F
Survey Start Time:_____
End Time:_____

Wind: 1 smoke rises (<1 mph)
2 smoke drifts (1-3 mph)
3 leaves rustle, breeze felt on face (4-7 mph)
4 leaves and small twigs in constant motion (8-12 mph
5 raises dust, small branches in motion (>12 mph)

Cloud Cover: 1 <5%
2 5-20%
3 21-40%
4 41-60%
5 61-80%
6 81-100%

Presence? Y N

Calling Station#	Start Time (24 hr)	Raptor Detection	Age	Comments and Location Descriptions	UTM Coordinates

B2H Washington Ground Squirrel Colony Datasheet
Spring 2011

Date: _____ **Surveyor(s):** _____
Parcel#:

Revisited potential burrows from previous survey? Yes/No _____ Revisit #_____

Wind: Direction from (circle one): N NE E SE S SW W NW n/a **Wind Speed (mph):**

Precipitation(circle one) none light rain rain snow sleet hail other **Temp (F):_____Cloud Cover:_____**

Site Occupancy:	**Activity Confirmation (check all that apply):**	**How was first colony discovered?:**
[ ] Confirmed Active (1)	[ ] Visual(1)	[ ] Visual(1)
[ ] Confirmed Inactive (2)	[ ] Alarm call (2)	[ ] Alarm call (2)
[ ] Possible Activity (3)	[ ] Scat (3)	[ ] Scat (3)

Habitat Characteristics

Soil Type:
[ ] Sandy (1)
[ ] Silty (2)
[ ] Silty Sand (3)
[ ] Silty loam (4)
[ ] Silty Sand or loam w/ Gravel (5)
[ ] Rocky (6)

Shrub Cover:
[ ] <1%(1)
[ ] 1-10% (2)
[ ] 11-20% (3)
[ ] 21-40% (4)
[ ] 41-60% (5)
[ ] 61-80% (6)
[ ] 81-100% (7)

Shrub Distribution:
[ ] Patchy (1)
[ ] Homogenous (2)
[ ] Unknown or N/A (0)

Plant Species Composition:
[ ] native species dominant (>60%)
[ ] exotic species dominant (>60%)
[ ] neither native or exotics dominate
[ ] native species present (percent _____)

General habitat type: (circle one) bunchgrass, sagebrush steppe, annual grassland, other_____

Grazing Intensity:
[ ] 0-25% Lightly Grazed (1)
[ ] 25-50% Moderately Grazed (2)
[ ] 50-75% Heavily Grazed (3)
[ ] 75-100% Overgrazed (4)

Dominant Plant Species:_____
_____
_____
_____

Disturbances (circle all that apply): Anthropogenic Off Road Vehicles Wind Fire Erosion None

Activity Center Information

Number of Burrows:_____ Photo Number(s):_____
Number of Burrows with scat (approximate): _____
Number of scat found (approximate): _____ scat collected ? circle one: Yes/No _____
Waypoint Name in GPS:_____
Activity Center Boundary Waypoint UTMs:

N: E:
N: E:
N: E:
N: E:
N: E:
N: E:
N: E:
N: E:
N: E:
N: E:

Notes: _____

_____

_____

APPENDIX B-1

2011 PROTOCOL FOR WASHINGTON GROUND SQUIRREL SURVEYS

APPENDIX B-1

2011 PROTOCOL FOR WASHINGTON GROUND SQUIRREL SURVEYS

Adapted from Stateline 3 Part A and Part B Pre-Construction Wildlife Investigation, October 12, 2001; and *Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtonii*) on State of Oregon Lands, South Boeing, Oregon* (Morgan and Nugent 1999).

Objective

The primary objective for 2011 surveys is to survey known and/or historical Washington ground squirrel (*Spermophilus washingtoni*) colony sites within the project area to confirm occupancy. Secondly, areas identified as suitable habitat for Washington ground squirrels (WAGS) will be surveyed within the project area. The protocol described below outlines a method to identify presence or absence of WAGS.

Methods

Meandering Walking Transects

Two pre-construction walking transect surveys will be conducted between late March or April 1 and June 3 which correspond with the highest activity period. The period of highest activity occurs when juvenile ground squirrels are most active and alarm calls are most frequent. If the spring season is early, surveys may be initiated in March. We will contact local experts who are monitoring ground squirrel colonies to determine when the best time to begin surveys is in 2011.

Prior to conducting any surveys, all field crew members will be trained in the survey protocol during a reference visit to an occupied Washington ground squirrel colony. The surveys will be conducted in the morning (between approximately 6:00 a.m. and noon) but may be extended into the afternoon if weather conditions allow. Surveys will generally not be conducted when wind conditions are above 15 miles per hour (best judgment will be used when wind speeds are greater than 6 miles per hour [Morgan and Nugent 1999]) or when visibility is poor. All surveyors will have their hearing tested prior to going into the field to ensure that they can hear the very high-frequency calls of this species.

Surveys will cover all land within the preferred route corridor and within 1,000 feet of the outer boundaries of the corridor in native grassland, shrub-steppe and where native species were planted in CRP habitats and those CRP habitats are adjacent to native habitats. We will not survey areas where landowner access is not obtained and where recently seeded CRP lands provide little or no cover for wildlife. During all walking transects conducted within the survey corridors, surveyors walk as a group at similar paces, meandering through the habitat while progressing forward. Up to eight surveyors (depending on the width of habitat to be surveyed) will walk meandering transects no more than 195 feet apart (except where conditions were hazardous). Most surveys will be conducted 165 feet apart. Surveyors can share observations by talking quietly, using hand signals, or contacting each other with hand-held radios. This aids

in insuring double-recording species of concern is not taking place. Surveyors can occasionally clap hands or gently kick large shrubs in an attempt to flush animals out of shrub patches or to stimulate a response from animals. The observers will scan ahead and periodically behind, looking for animal activity. GPS Coordinates will be recorded for active or suspected Washington ground squirrel sites.

While conducting the walking transects, surveyors will look for potentially suitable holes/burrows while looking for squirrels and listening for their calls. When potential holes are located, surveyors will notify each other and slow their walking pace or stop near the area to listen and scan. Intensive searches will then be conducted to locate the animal(s) or droppings in the immediate area. Presence is confirmed when the animal(s) is visually detected, when squirrel calls are heard or droppings are found. The area will be further searched to identify the outside perimeter of the active site. Although Washington ground squirrels are expected to be the only small squirrel present in the area, there is a remote possibility that a similar species, the Townsend's ground squirrel, may occur. All squirrels seen will be identified when possible.

Active burrows and colonies will be identified through a combination of visual and audible confirmations (hearing alarm calls) and presence of characteristic Washington ground squirrel scat around burrow entrances. Scat samples will be collected or photographed for confirmation of squirrel presence. Areas where presence is confirmed will be mapped with a GPS unit. In places where only potentially suitable holes (similar size and shape of hole) are located, the area will be searched for confirmation of presence by looking for droppings on the soil surface or by using a sifter to sift through dirt within 1 foot of the holes. In areas where questionable holes are found and no sign of squirrels is noted, surveyors will note the location on maps and flag the site for further investigation at the next possible opportunity or during the second survey. High-use areas (likely the primary natal site) and/or groups of holes will be mapped and the GPS coordinates recorded. These high-use areas are defined as sites with numerous holes containing recent sign of activity and/or where animals are detected. Locations of old holes will be also mapped if it is strongly suspected that they belong to squirrels. These are defined as holes/burrows with characteristics of ground squirrel holes (size) but not showing any sign of use in recent months or weeks. Old holes are defined by the presence of recent vegetation growth obscuring the hole, spiders nesting in the burrow (black widows primarily), fresh pocket gopher or other non-squirrel droppings, and no "mowed' vegetation near the entrance or recent rubbing of vegetation roots exposed on the hole edge. Similar-sized, very old holes will not be mapped.

Morgan, R.L., and M. Nugent. 1999. Final Report: Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtoni*) on State of Oregon Lands, South Boeing, Oregon, in 1999. Oregon Department of Fish and Wildlife. November.

Stateline 3. 2001. 2010 Boardman to Hemingway Protocol for Washington Ground Squirrel Surveys. 2001. Adapted from Stateline 3 Part A and Part B Pre-Construction Wildlife Investigation. October 12, 2001.

APPENDIX B-2

SAGE-GROUSE LEK MONITORING

APPENDIX B-2

GREATER SAGE-GROUSE LEK SURVEY PROTOCOL

Adapted from:

Hagen, C. A. 2005. Greater sage-grouse conservation assessment and strategy for Oregon: a plan to maintain and enhance populations and habitat. Oregon Department of Fish and Wildlife. Salem, Oregon.

Lek/Lek Complex Searches: Lek searches consist primarily of determining the location of all leks using a helicopter. This allows us to identify the breeding distribution of sage-grouse within the survey area.

The following lek count procedures are based on the premise that once lek attendance begins, a high proportion of the males that attend any given lek do so each day.

Timing of Surveys

1. Surveys should be conducted between March 15 and April 30 each year. (Note: There may be local variation between districts that will dictate minor modifications to these dates).

2. Surveys ideally should be done within the first 2 hours after daybreak under clear, calm, and dry weather conditions.

3. All survey areas should be counted at least 2 times at 7 to 10 day intervals.

Lek Search Procedures

This type of survey is necessary to identify the entire breeding range of sage-grouse in the project area. Location of new leks and status (active or inactive) of known leks, which are not counted regularly can be determined from locating with aircraft.

The survey area should be flown in a transect pattern so that the entire area is systematically covered. The distance between transects will vary depending on light conditions (sunny vs. cloudy), ground vegetation structure (extensive sagebrush stands vs. juniper/sagebrush mixes), and topography (rolling vs. flat). However, a distance of 1/4 to 1/2 mile between transects is generally recommended.

Recommended flight level is 23 to 30 feet above ground although 50 to 100 feet will increase the margin of safety and may improve sighting distance. Past experience has shown that under optimal flying conditions, approximately one township can be surveyed in a 2 to 3 hour flight with a helicopter.

Note: for aerial lek searches, the following information should be recorded on the provided Aerial Observer Field Data Form

1. Date, observer name, and county/management unit where survey is being conducted.

2. Time when flying begins and ends, and the time when the survey begins and ends.

3. Lek name and/or designated number. Lek names may be derived from a nearby landmark or geographic feature.

4. Time lek is observed (hh:mm).

5. UTM coordinate of lek (using GPS unit).

6. Sky conditions (i.e. sunny, cloudy, raining or snowing).

7. Ground conditions (i.e. bare ground vs. snow covered).

8. Number of males, females, unclassified birds, and total number observed.

9. Directions to lek – If possible, a detailed description of the location and the best way to access each lek/lek complex should be recorded. This should include mileage from nearest town to junctions or crossroads, and directions to the lek location to the nearest 1/10th mile.

APPENDIX B-3

RAPTOR NEST SURVEY PROTOCOL

APPENDIX B-3

RAPTOR NEST SURVEY PROTOCOL

Adapted from:

Jeffrey, *et al*. Post-Construction 2008 Aerial Raptor Nest and Greater Sage-Grouse Lek Surveys for the Wild Horse Wind Facility. Western EcoSystems Technology, Inc. Walla Walla, WA. April, 2008.

Ministry of Sustainable Research Management, 2001. Inventory Methods for Raptors. Resources Inventory Committee. The Provence of British Columbia, Canada. October 2001, version 2.0. pp 37-41.

Aerial Raptor Nest Survey

The objective of the raptor nest survey is to locate all raptor nests that may be subjected to disturbance and/or displacement effects from transmission line construction.

Protocol

1. **Pre-survey Habitat Suitability Analysis.** A GIS analysis was conducted to identify areas containing suitable golden eagle nesting habitat. Typically, golden eagles nest in cliff and canyon areas and rock outcrops. In order to identify these areas, a digital elevation model was analyzed to show landforms with a minimum angle of inclination of 45 degrees.

2. **Establishment of survey areas.** The raptor nest survey area is broken into three categories according to the sensitivity of nesting raptors to disturbance from construction and human presence, or according to recommendations from the US Fish and Wildlife Service (USFWS). These nest buffers are seasonal in nature and correspond to sensitive nesting periods for each species.. Please refer to Table 1 below for exact USFWS recommendations (Whittington and Allen, 2008). For most species occurring within the project area, the USFWS recommends a nest buffer of 0.5 mile or less from construction related disturbances. Therefore the entire route will be surveyed out 0.5 mile from either side of the 500-foot corridor. Ferruginous hawks are more sensitive to disturbance and human presence and the USFWS recommends and 1-mile nest buffer from these activities. In ferruginous hawk habitat (non-forested, sagebrush and grassland areas) the survey area will extend out to 1 mile on either side of the 500-foot corridor. Recent concern over declining population trends of golden eagles in the west has prompted greater scrutiny of the potential impacts that projects, especially energy development, may have on these populations. USFWS guidelines recommend a 0.5 mile nest buffer for golden eagles, however the survey area for this project is extended to 2 miles in areas identified as potential nesting habitat to address the current concerns for this species.

3. **Timing of surveys.** The initial raptor nest survey is conducted via helicopter in April to early May when buteos (ferruginous hawk, red-tailed hawk), golden eagles, and prairie falcons should be actively establishing nests, incubating eggs or brooding/attending young. During greater sage-grouse surveys, raptor nests will be identified and therefore dedicated raptor

nest surveys will not take place within sage-grouse survey areas for the initial nest survey. A second aerial survey is conducted in late May or early June to look for evidence of nest success (e.g., fledged young nearby, large grown chicks in the nest) and to gather data on late-nesting species (e.g., Swainson's hawk).

4. **Survey approach.** The helicopter will fly parallel transects at a distance of .25 miles from the centerline to allow observers to see out to the 0.5-mile buffer distance and back to the centerline. In ferruginous hawk habitat another transect will be flown out to 0.75 miles so observers can see to the 1-mile buffer distance and back to the 0.5-mile buffer distance. In golden eagle habitats two more transects will be flown at 1.25 miles and 1.75 miles from the centerline to ensure complete coverage out to 2 miles. However, in golden eagle habitat this transect method may be abandoned for an intuitive search method (i.e. flying up canyons or identifying cliff faces in steep terrain) to improve efficiency. Both sides of the centerline will be surveyed in this manner. Aerial nest searches are conducted by flying habitat suitable for most aboveground nesting species, such as cottonwood, ponderosa pine, tall shrubs, and cliffs or rocky outcrops. During surveys, the helicopter is flown at an altitude of tree-top level to approximately 250 ft (76 m) aboveground. If a nest is observed, the helicopter moves into a position where nest status and species present can be determined. Efforts must be taken to minimize disturbance to breeding raptors, including keeping the helicopter a maximum distance from the nest at which the species could be identified, with distances varying depending upon nest location and wind conditions.

   Observers record as much information as possible during the brief investigation of nest sites. At a minimum, a GPS location is attributed to every nest identified in the survey area. When possible, the species associated with the nest is recorded as well as age classification (adult or juvenile) along with nest activity (active or inactive). Site description is noted as well. This would include the nest substrate (pine, poplar, cottonwood, juniper, shrub, rocky outcrop, cliff or man-made structure), the nest type (stick, scrape, eyrie), and other general descriptors such as aspect, approximate height, and surrounding terrain.

   Active Nests are defined as those nests which are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current year's 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 for a given area. Once a specific nest is selected for use by a breeding pair, 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.

   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. 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.

Table 1. Raptor Nest Spatial Buffers.

Species	Spatial Buffer in Non-Urban Areas
Bald eagle	0.5 to 1.0 mile
Northern goshawk	0.5 mile
Ferruginous hawk	1.0 mile
Golden eagle	0.5 mile
Peregrine falcon	1.0 mile
Red-tailed hawk	0.33 mile
Prairie falcon	0.5 mile
Swainson's hawk	0.25 mile
Burrowing owl	0.25 mile
Great gray owl	0.25 mile
Flammulated owl	0.25 mile

Whittington, D. M. and Allen, G. T. 2008. Draft guidelines for raptor conservation in the western United States. U.S. Fish and Wildlife Service, Region 9. Division of Migratory Bird Management. Washington, D.C.

Sample Data Form

Date: _____ Survey Segment: _____Mileposts Surveyed: _____

Weather (wind intensity, temp, and cloud cover): _____

Observer's Name: _____ Observer's Name:_____

TIME START:	
TIME END:	

SPECIES	Number of Birds	Age (A/J)	Nest (Active/Inactive)	GPS Location/Waypoint	Site Description

Additional Notes:

APPENDIX B-4

NORTHERN GOSHAWK SURVEY PROTOCOL

APPENDIX B-4

NORTHERN GOSHAWK SURVEY PROTOCOL

Adapted from:

Woodbridge, B.; Hargis, C.D. 2006. Northern goshawk inventory and monitoring technical guide. Gen. Tech. Rep. WO-71. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 p.

Broadcast Acoustical Survey

Acoustical surveys consist of broadcasting taped goshawk calls along transect routes to elicit responses from territorial adult goshawks and their young. This is currently the standard method used by the USDA Forest Service and many others. The efficacy of this method has been evaluated in terms of response rates at known successful nests and recently at territories occupied by non-breeding goshawks.

Protocol

1. **Pre-survey Habitat Suitability Analysis.** A GIS analysis was conducted to identify habitats containing suitable goshawk nesting habitat based on spatial data obtained from the National Land Cover Dataset of 2001 for canopy cover. The following forest attributes will be used to identify nesting habitat: 1) canopy coverage of 40 percent or greater, and 2) a patch size of 8 hectares or greater. Because of the age of the NLCD canopy cover, NAIP imagery was used to make any modifications to reflect recent landscape changes.

2. **Establishment of survey area and call stations.** The survey area will include the transmission line corridor (500ft), new roads and existing roads requiring reconstruction, and other project features (laydown yards, pulling stations, etc.), plus an additional 0.5 mile beyond these features. Aerial photographs and topographic maps are used to determine placement of calling stations. A transect grid, as described by Woodbridge and Hargis, was overlaid over initial forested habitat. Using the above criteria to identify potential habitat, the final suitable habitat layer was developed and used to define the survey area. Call stations are located in and cover all suitable habitat within the survey area. Adjustments to calling station placement were reviewed while conducting the detailed habitat mapping to determine survey area, and efforts to optimize survey effort and cost, and to minimize surveyor exposure to hazards associated with walking transects in forested habitat, as well as potential access issues were taken into account. Within the survey area, roads and trails are common and provide access to a majority of the suitable habitat. Detailed maps of survey routes and station locations will be provided to survey crews.

3. **Timing of surveys.** Surveys should be conducted during the nestling and fledgling stages, including early postfledging dependency: June 1 to August 15 over much of the range of the northern goshawk. After August 15, many fledgling goshawks will have moved out of the immediate vicinity of the nest stand, making location of the actual nest

more difficult. Surveys may begin half an hour before sunrise and should cease half an hour before sunset.

4. **Calling procedure.** At each calling station, the surveyor will broadcast calls for 10 seconds, then listen and watch for 30 seconds. During the nestling stage, surveyors will broadcast the adult alarm call. During the late nestling and fledgling stages, the juvenile begging or wail call will be used. The call sequence will be repeated twice, each time rotating 120 degrees from the last broadcast. After the last sequence, surveyors will walk to the next station or back to their vehicle at an easy pace, listening and watching carefully for goshawk calls and signs. While calling stations are placed near roads and trails, surveyors should walk a reasonable distance (i.e. 100m) into forested habitat away from the road to perform broadcast calls. Surveyors should also walk to adjacent call stations that are within reasonable proximity to avoid driving whenever possible. Use of two observers will likely enhance the probability of visual detections of goshawks and is required by the field safety plan. To avoid misidentifying broadcasts of coworkers, simultaneous surveys should be spaced apart by approximately 0.5 miles.

   Weather conditions will be recorded at the beginning of the survey. Surveys will not be conducted under conditions such as high winds (greater than 15 mph) or rain that could reduce ability to detect goshawk responses (see datasheet, page 6).

   Detection type, compass bearing, station number, and distance from station of any responses will be recorded. Surveyors will attempt to locate the goshawk visually and determine the sex and age (adult versus juvenile/fledgling) of the responding individual. All data will be entered on a field data form and into an agency approved standardized database within a field GPS device.

5. **Equipment.** Effective coverage of a survey area depends on the surveyor's ability to broadcast sound that can be detected at least 200 m from the source. Equipment producing at least 80 to 110 dB output at 1 m from the source should be used. MP3 players are used to store and play the goshawk calls. The call will be transmitted over a megaphone or digital amplifier/speaker setup that can be easily carried in the field.

6. **Preparation for survey.** Surveyors must be familiar with the appearance, typical flight patterns and vocalizations of goshawks and similar species before conducting surveys. Recent field guides should be consulted to review the field marks of male, female, and juvenile goshawks, as well as those of Cooper's hawks and red-tailed hawks.

   Identification of goshawk nests, plucking posts, feathers, whitewash patterns, and typical prey remains are important aspects of survey preparation. The USDA Forest Service guide, *Feathers of Western Forest Raptors and Look-Alikes,* may be useful in identification of feathers collected during surveys. Examples of high-quality recordings of goshawks and sound-a-likes are available from the Cornell Laboratory of Ornithology program, *Birds in Forested Landscapes,* and from the USDA Forest Service recording, *Voices of Western Forest Raptors*

   Field experience is important in learning to distinguish the vocalizations of goshawks from those of mimics such as gray jays and Steller's jays. These species are capable of producing excellent imitations of goshawk calls, particularly the female wail and juvenile begging call, and often respond to broadcast calls. Pileated woodpeckers, northern flickers, sapsuckers, and Cooper's hawks also have calls similar to those of goshawks.

7. **Interpretation of goshawk responses.** Surveyors must be aware of different types of responses likely to be encountered during surveys. Responses are classified into three categories: vocal non-approach, silent approach, and vocal approach. The frequency of each response type varies between sexes, ages, nesting stage, and vocalization broadcasted.

    - Vocal non-approach—goshawks may respond by perching away from the surveyor, often at the nest, and vocalizing. This response is commonly elicited from older nestlings and juveniles as begging calls, in response to broadcast of either alarm or food-begging calls.

    - Silent approach—goshawks, particularly adult males, will frequently fly silently in the direction of the surveyor to investigate and may be visible only briefly. Silent approach by female goshawks during the nestling and fledgling stages typically indicates an active nest within 200 m, but male responses may be long distances from the nest. Failure to detect this common response is a likely cause of false negative survey results.

    - Vocal approach—commonly in response to broadcast of alarm calls, adult female goshawks (and, less often, males) frequently fly toward the surveyor while vocalizing alarm calls. This response typically indicates the active nest is within 200 m, particularly if the adult goshawk remains in the vicinity of the surveyor.

8. **Locating active nests.** Searches for active nests may be conducted immediately following goshawk detections (particularly vocal approaches or attacks); however, it is often necessary to review the results from multiple surveys and stations from a larger area to approximate the likely nest location. Response type, distance, and direction from transect, and distribution of habitat will be plotted on aerial photographs, and the Intensive Search Survey method will be employed.

APPENDIX B-5

GREAT GRAY OWL SURVEY PROTOCOL

APPENDIX B-5

GREAT GRAY OWL SURVEY PROTOCOL

Adapted from:

Quintana-Coyer et al. 2004. Survey Protocol for the Great Gray Owl Within the Range of the Northwest Forest Plan. USDA Forest Service and USDI Bureau of Land Management. Version 3.0, January 12, 2004.

Broadcast Acoustical Survey

Acoustical surveys consist of broadcasting taped great gray owl calls at calling stations to elicit responses from territorial adult great gray owls and their young. This is currently the standard method used by the USDA Forest Service and many others.

Survey Period

March 15 - May 15 (approximately the incubation and brooding periods)
May 15 – July 15 (approximately the late nestling and fledging periods)

Survey Methods

The following are options for conducting Great Gray Owl surveys:

a. *Nighttime Survey Using Roads*: Survey areas that have accessible roads for establishing stations from which to call should be called at night.

b. *Nighttime Survey Using Trails or Easily Traversed Landscape*: In habitat without roads, nighttime calling stations will only be established in survey areas that can be traversed safely. Calling stations may be established on well-maintained trails where there is little danger to a caller equipped with only a flashlight or headlamp.

c. *Daytime Surveys Using Roads and Trails*: Survey areas that cannot be effectively and safely surveyed from the roads or trails at night will be surveyed during the daytime. Midday surveys should be avoided in favor of evening or early-morning surveys.

Great Gray Owls may not call or respond to calls during the day, so calling may be ineffective. Be cognizant of stick nests, broken-topped snags, mistletoe brooms, whitewash, owl feathers, pellets, movements by birds, and mobbing behavior by Common Ravens, crows, jays, and small birds. These signs may help in visually locating Great Gray Owls or their nests.

Calls used primarily to meet protocol:

- Male territorial call (Early Season/Late Season)
- Female begging/contact call (Early Season/Late Season)
- Juvenile begging call (Late Season)

Additional, sometimes useful calls:

- Female w/nest chatter (Late Season)
- Adult agitated call

Conducting Surveys

March 15-May 15 (Early Season)

1. After arriving at the call station, the surveyor should listen silently for one minute before playing the CD call track (silently means focus time, not eating, moving around or gathering gear). Track #1 on the CD issued with this protocol should be used.
2. If there is a night response, triangulate the location, move a sufficient distance to avoid disturbing the owls, and re-start the survey in an area out of earshot of the owls. If the response is in the day, immediately try to find the bird/nest and continue surveys when you are done with the follow up survey.
3. Continue to the remaining stations until the visit is complete.

May 15-July 15 (Late Season)

1. After arriving at the call station, the surveyor should listen silently for one minute before playing the CD call track (silently means focus time, not eating, moving around or gathering gear). Track #2 on the CD issued with this protocol should be used.
2. If there is a night response, triangulate the location, skip a sufficient number of stations, and re-start the survey in an area out of earshot of the owls. If the response is in the day, immediately try to find the bird/nest and continue surveys when you are done with the follow up survey.
3. Continue to the remaining stations until the visit is complete or there is a response.

Locating Great Gray Owls After a Response

1. If a response to the calls is detected, estimate the owl's location by getting a compass bearing and estimating the distance from the station to the response. In order to get a better location, use triangulation by taking compass bearings from two to three locations, mark these locations with a GPS point. Make sure the compass bearings are taken as soon as possible after a response.
2. Record the location and compass bearing(s) on a map or aerial photo and the field visit form. Attach a map to the field visit form, and include the compass bearing(s) and estimated distance from the station to the response.
3. Flag and GPS the response location to establish a start point for the follow-up survey.
4. Continue to the next calling station beyond audible distance of the responding owl (two to three stations) and continue surveying the remaining stations.
5. Once occupancy status is determined, calling stations within audible distance (two to three stations) may be dropped on subsequent visits.
6. Conduct a follow-up visit preferably within 48 hours of the response. If the response is during the day, immediately try and find the Great Gray Owl/nest and continue surveys when you are done with the follow-up visit.

7. The night survey visit and follow-up visit will be considered a complete visit. If there is no response during a night visit, it will be considered a complete visit.

Follow-up Visits

The goal of a follow-up visit is to visually confirm or infer the presence of a pair of Great Gray Owls and to locate a nest tree. Use the field form to record results in locating a pair or single owl and the nest tree information.

1. Starting from the station where a response was heard, and using compass bearing(s) obtained when a response was noted, begin a search by moving toward the approximate response location. Once a Great Gray Owl has responded, and after walking into the general area of the response, it is often helpful to softly broadcast a call toward the area from which the observer came, or toward the ground, in order to make the call softer and more diffuse. Midday visits should be avoided in favor of evening or early-morning visits.
2. Do a systematic search, looking for:
   - Live or dead trees with broken tops or mistletoe brooms
   - Abandoned Northern Goshawk, Common Raven, or Red-Tailed Hawk stick nests
   - Whitewash, feathers, and/or pellets around the base of possible nest and/or roost sites (E. Bull, pers. comm. 1995)
   - Movement in the canopy
   - Mobbing behavior by other birds
3. Keep the original location of the owl response in mind, and try to visually locate them. Great Gray Owls tend to fly away from intruders, so search for other visual clues as suggested above. Whitewash and pellets are often found near nest sites, but not actually under the nest until a week before young leave the nest. Whitewash and pellets are generally associated with roost sites. Calling may help to elicit responses from Great Gray Owls, but they may not respond to calls during the day. A technique that may be helpful is to broadcast the call softly and point the speaker downward when calling to avoid startling the owl as one walks in the direction of the original response.
4. Use the CD call track appropriate for the season of survey.
5. If a Great Gray Owl is not located after two hours of effort, note the negative results on the field form and the visit is complete.
6. If an owl is located, allow up to two hours to establish pair status. Use visual observation to help determine status. Observe and note behavior. Document all behavior noted, for example agitated calls, continuous responses (males often look toward the nest area), movements, roosting, preening or other behavior.
7. Once visual contact is established, evaluate the situation before moving closer. The surveyor may only be able to get within 27 m (90 ft) or so of an adult without causing it to flush. Do not call or stimulate owls any more than is necessary to determine status. By stimulating owls to move around during the day, one may increase their risk of predation. Be cognizant of predators in the area. For example, calling may attract Common Ravens. Great Gray Owl chicks and fledglings are very susceptible to avian and mammalian predation. If predators are attracted, leave the area and try a follow-up at another time.
8. If the owl is located, but is observed roosting/sleeping and there are no signs indicating a pair status within the two-hour follow-up visit, the visit is over.

9. The follow-up survey may take up to four hours: two hours searching for an owl and two hours trying to determine pair status. Additional time may be used, as the time constraints are minimums.

Requirements for All Great Gray Owl Surveying

1. Complete a field visit form for all outings, regardless if an owl was detected or not.
2. Surveyors must be outside their vehicle and use a projection device that can project the call so it can be heard at least 0.16 km (0.10 mi).
3. Do not survey under inclement weather conditions, such as high winds (> 10 mph), moderate to heavy rain or high noise levels (e.g., stream noise, machinery), which would prevent surveyor from hearing a Great Gray Owl response. Additionally, research has shown that owls are not likely to respond to calls during inclement weather.
4. The responsiveness of owls depends on many factors, which may include:
   a. Time of day. Great Gray Owls are more likely to be detected at night, near sunrise, and after sunset. During the middle of the day, they are relatively inactive and less likely to respond.
   b. Temperature. Air temperature will affect an owl's responsiveness. In hot weather, owls may be less likely to respond.
   c. Individual variation. Owls vary greatly in their responsiveness to broadcast calls.
5. Record observations of other species of interest that are detected while surveying for Great Gray Owls.

Determining a Known Site

Known Site Status is determined by any of the following:

- A male and female are heard and/or observed in proximity (<.10 mile) to each other on the same outing during the day
- A male takes prey to a female
- A female is seen on a nest
- A Young Live or dead GGO is observed [and can be determined by the presence of an adult GGO or other means that it is a definite GGO young (yellow eyes, etc)]. Once this is determined, it is considered a "Known Site." Since no additional survey effort is required to locate Great Gray Owls in this area, adjust the area to be surveyed for the remaining visits during a given survey year to complete the survey so you do not pick up this pair again. The only survey effort required after determining pair status is to locate the nest and document in ISMS.

Determining Other Observations Status

Resident Single Status is determined by:

A Great Gray Owl that is not known to be paired with a mate. Singles may establish a territory during a breeding season. A resident single is confirmed by at least two detections made in a two-year timeframe (one each year) or three detections in one year during the breeding season.

It is desirable to conduct additional visits to determine Known Site (pair status) and reproductive success. The sex should be positively identified by call. If the sex of an individual is uncertain, it is considered an “unknown sex Great Gray Owl single.”

Status Unknown (single owl) is determined by:

The response of a male and/or female, which does not meet the pair or resident single requirements.

.

Presence is determined by:

The detection of pellets or feathers that can be identified as being from Great Gray Owl

Field Surveyors should:

- Familiarize themselves with project area boundaries prior to establishing calling stations.
- Be competent in establishing compass bearings, including triangulation.
- Able to use GPS for marking the nest tree location.
- Possess birding skills, such as ability to visually identify all the owl species that occur in their area, know their calls, as well as potential predator species such as the Northern Goshawk, Common Ravens, Red-tailed Hawk, and species that may sound similar to a Great Gray Owl such as Blue Grouse (*Dendragapus obscurus*) and Great Horned Owls.
- Locate, describe, and interpret visual signs of owl nesting, occupancy, and behavior.

APPENDIX B-6

FLAMMULATED OWL SURVEY PROTOCOL

NORTHERN REGION LANDBIRD MONITORING PROGRAM

2008 FLAMMULATED OWL SURVEYS

FINAL REPORT

Photo K. Smucker

December 2008

Kristina Smucker, Amy Cilimburg, and Megan Fylling

Avian Science Center

Division of Biological Sciences

University of Montana, Missoula, MT 59812

http://www.avianscience.dbs.umt.edu

A copy of this report, survey protocols, & maps of Flammulated owl occurrence are available online at: http://avianscience.dbs.umt.edu/research_landbird_flam.htm

For more information, contact Kristina Smucker: kristina.smucker@mso.umt.edu; 406.243.2035

APPENDIX B-7

THREE-TOED WOODPECKER SURVEY PROTOCOL

United States
Department
of Agriculture

Forest Service

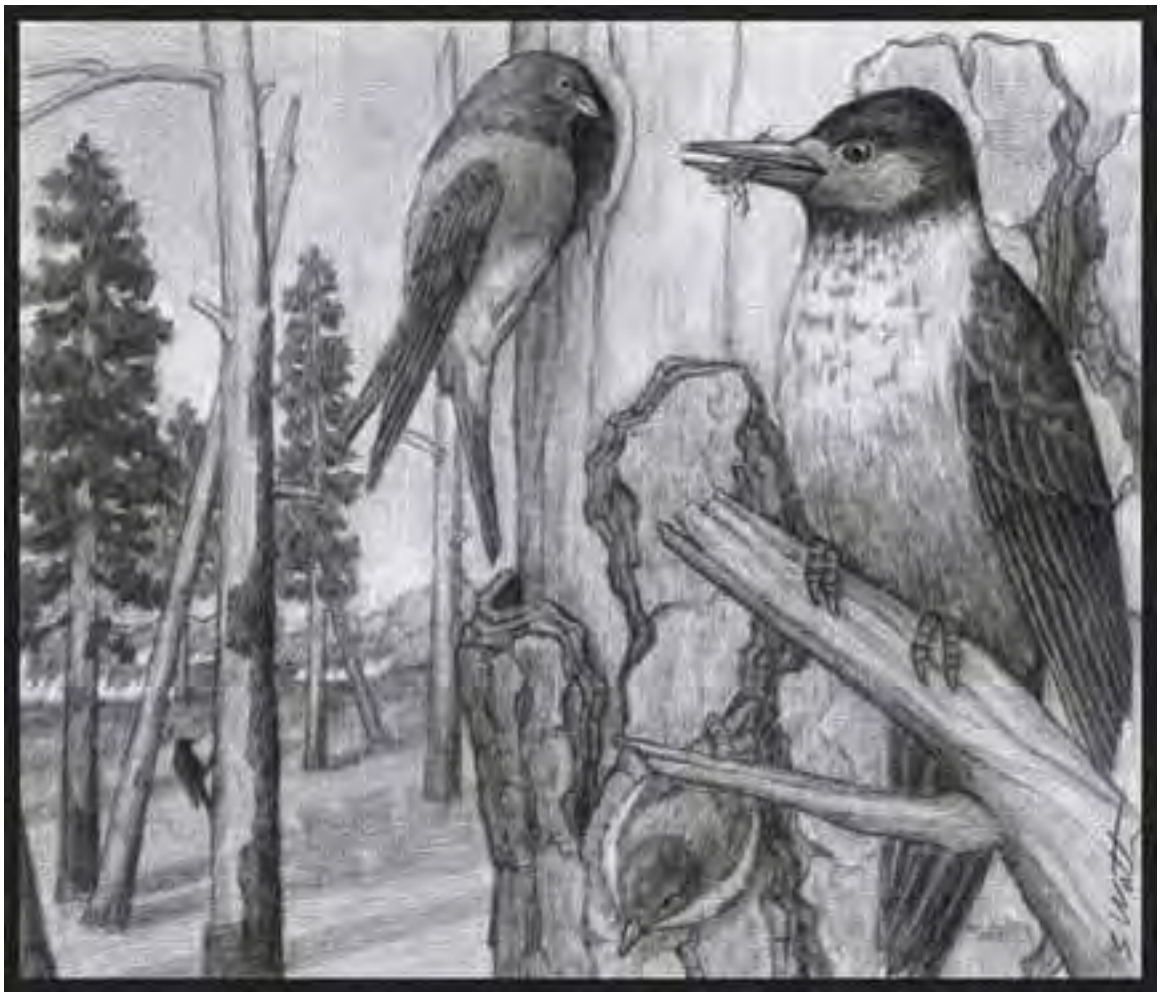
**Rocky Mountain
Research Station**

Research Paper
RMRS-RP-44

December 2003

A Field Protocol to Monitor Cavity-Nesting Birds

Jonathan Dudley and Victoria Saab



APPENDIX B-8

COLUMBIA SPOTTED FROG SURVEY PROTOCOL

APPENDIX B-8

COLUMBIA SPOTTED FROG SURVEY PROTOCOL

Adapted from:

Managers' Monitoring Guide, Visual Encounter Surveys for Amphibians. USGS Patuxent Wildlife Research Center. http://www.pwrc.usgs.gove/monmanual/ techniques/ves.htm. Accessed April 2009.

Description of Technique

Visual encounter surveys (VES) are a time honored field technique. VES was formalized by Campbell and Christman (1982) and Corn and Bury (1990), both using time as the constraint.

Visual Encounter Surveys are used to document the presence of amphibians and are effective in most habitats and for most species that breed in lentic (non-flowing) water. There are a number of assumptions inherent in VES that should be considered when designing a program using this technique. In brief, the assumptions are:

1) equal observability among species and among individuals,
2) no between-sampling visit effects e.g. there is an equal likelihood of being observed for each species for each sampling visit,
3) individuals are recorded only once per survey, and
4) no observer related effects.

Visual encounter surveys are conducted by observers walking through a designated area for a prescribed time, visually searching (in a systematic way, e.g. transects), for animals. The number of animals encountered are noted along with time elapsed during the survey. Visual encounter surveys are effective in easily identifiable habitats, such as riparian zones or ponds or in uniform habitats with good visibility. Species that are highly clumped are also good targets for VES, for example, pond breeding amphibians.

Data collected yields information on the presence of a species but does not establish absence, nor does it give reliable estimates of abundance. VES can be used along transects, streams, ponds, in quadrats or larger areas. There are three standard sampling designs for VES, randomized walk, transects, or a quadrat design (see Crump and Scott 1994 for details).

The scale of inference from this technique depends on the scale of the surveys. For instance if the level of inference is an entire refuge, locations for VES should be chosen randomly, but within strata that provide even spatial coverage of the entire area encompassed by the refuge. The level of inference can scale up to watershed or region with appropriate site selection and sampling effort.

VES can be supplemented with dipnetting and aural identification where appropriate. VES used in conjunction with pitfall arrays may be more effective in some habitats. More than one person can participate, number of minutes searching is always the number of minutes searched multiplied by the number of people searching. Ancillary data such as air and water temperatures, weather conditions, date, and time of survey should also be recorded. Minimum

data collected during VES includes, number of each species encountered, size (e.g. length or acreage) of the area searched and total search time.

The following is taken from:

Scarlett, 2006. Columbia Spotted Frog Inventory on the Umatilla National Forest. US Forest Service, Umatilla National Forest, Heppner and Walla Walla Ranger Districts. September 12, 2006.

Surveys occurred between June 15 and September 15. Dip nets were used to positively identify tadpoles and juvenile and adult amphibians. Because sites were generally small and surveyors were able to sample 100% of the habitat at the sites, only a single visit was made to each of the survey sites. Where spotted frogs (or other non-target amphibians) were found, the following information was collected: date, time, location (UTM), water temperature, description of site and habitat, observation method, observer, species, number of individuals detected and their stage of development, comments, and a sketch of the site.

APPENDIX B-9

TERRESTRIAL VISUAL ENCOUNTER SURVEYS

APPENDIX B-9

TERRESTRIAL VISUAL ENCOUNTER SURVEYS

Adapted from:

Manley, P.N.; Van Horne, B.; Roth, J.K.; Zielinski, W.J.; McKenzie, M.M.; Weller, T.J.; Weckerly, F.W.; Vojta, C. 2006. Multiple species inventory and monitoring technical guide. Gen. Tech. Rep. WO-73. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 204 p.

Terrestrial Visual Encounter Surveys

Terrestrial Visual Encounter Surveys (TVES) is an effective passive sampling technique for detecting nocturnal and diurnal raptors. Although detection rates are low, the technique is simple, low cost, and useful for a wide variety of species that may be missed by the other core methods (bird point counts, small mammal trapping, trackplate and camera surveys), such as some ungulates, lagomorphs, and raptors. TVES can detect signs of nocturnal and diurnal raptors, such as regurgitated pellets, whitewash, and plucking perches. These signs can be followed up to determine associated species.

Thus, TVES is a core survey method for all classes of vertebrates as a companion to taxon-specific core survey methods. TVES can be designed to target different taxonomic groups in a variety of environments (terrestrial vs. aquatic) and at different times of year.

This section describes the summer TVES, which is conducted once in the spring through summer and focuses on special status terrestrial bird, mammals, and reptiles. Along with this effort, a noxious weed inventory will occur. When observers encounter large patches of noxious weeds, a GPS point should be taken (or polygon walked) and a description of size and species should be noted.

Sampling Design

Three observers systematically survey for individuals and animal sign by traversing the 500-foot survey corridor along evenly spaced meandering transects. One observer will walk the centerline while the other two observers will walk at a distance of 150 to 175 feet from either side of the centerline. This allows observers to cover the entire corridor in one pass. Three observers are recommended to reduce observer fatigue, improve consistency in identifications by comparing observations, and provide a second opinion for difficult identifications.

Data Collection

Observers walk along the transect at a pace of approximately 0.5 mph, for a total of approximately 4 to 5 miles a day. Observers are expected to detect all animal sign or target animals or direct detections at any distance.

The perpendicular distance to all detections is recorded to enable the calculation of probability of detection. Aquatic habitats, such as lakes, ponds, streams, and bogs, located within the sample unit are not surveyed as part of this protocol. These areas will be marked on a GPS for subsequent use by wetland delineation crews. Surveys may be conducted any time of day, but it is recommended that they be conducted between 8 a.m. and 6 p.m.

Surveys note direct observations and sign of all less common and/or larger bodied species not well detected by the other survey methods being implemented. Animal sign can include a wide variety of features: tracks, scat, whitewash, regurgitated pellets, nests with fresh nesting material, feathers, burrows, haypiles, foraging marks, territory marks, prey remains, and food caches. Observers search surfaces, vegetation, turn over objects such as logs and rocks, and look in crevices in rocks and bark, replacing all surface objects after examining the ground beneath. Logs and other substrate are not torn apart to minimize disturbance to important habitat elements.

The following information is recorded for each detection: observer, time, search time elapsed, species, detection type (e.g., visual, auditory, capture, sign), age class of captures (juvenile, subadult, or adult), and substrate type (e.g., rock, log, bare ground, etc.). The gender of individuals is also recorded if known. Recording the search time elapsed enables subsetting the data set into increments of time for the purposes of sampling adequacy and comparisons with other data sets. In addition, all unusual captures or sign are documented by taking a digital picture that illustrates the diagnostic characteristics. These photos enhance the accuracy of species identification.

The reliability and utility of TVES for vertebrate species depends on size, gregariousness, uniqueness of their sign, habitat conditions, and time of season. The probability of detecting species presence from sign is highest when species are large, individuals live in groups, or individuals habituate to particular locations for roosting or feeding. Detections based on sign will not always be sufficient to identify species, in which case detections are identified to the lowest taxonomic level possible.

Equipment Needed

Observers will need a clip board, hand spade or rake, field keys, hand lens, stop watch or watch with timer, pocket ruler, resealable plastic baggies (for collecting scat and pellets), digital camera, hand lens, and binoculars.

Staffing, Training, and Safety

Field crews should consist of two biological technicians, with a crew leader at the GS-7 level to supervise and coordinate data collection. Each field crew of three can complete surveys along 4 to 5 miles a day. Crewmembers should be GS-4/5 or higher with academic training in the natural history and identification of multiple vertebrate taxa and/or practical experience in tracking, animal sign, and species identification.

Training should include: (1) literature research on specimens of local species; (2) training in the identification of tracks and sign; (3) field practice of data collection with an experienced tracker/observer; and (4) testing of crewmembers to verify proficiency.

APPENDIX B-10

WESTERN BURROWING OWL SURVEY PROTOCOL

APPENDIX B-10

WESTERN BURROWING OWL SURVEY PROTOCOL

Adapted from:

Conway, J. C., and J. C. Simon. 2003. "Comparison of detection probability associated with burrowing owl survey methods," *Journal of Range Management,* 67(3):501-511.

Broadcast Acoustical Survey

Acoustical surveys consist of broadcasting taped burrowing owl calls along roads to elicit responses from territorial burrowing owls.

Survey Period

The first survey would take place between March 15th and May 15th. The second survey would take place between May 15th and July 1st.

Survey Methods

Burrowing owls are active throughout the day and can be surveyed between sunrise and sunset. Conway and Simon (2003) recommend surveying when temperatures are at least 68 F (20 C) and winds less than 7.5 mph (12 km/hr). However given the constraints of the survey area and survey timeframe, burrowing owl surveys would be conducted when temperatures are above 50 F (10 C) and winds are less than 10 mph (16 km/hr).

Call stations should occur every 0.25 (400m) to 0.5 (800m) miles along roads where the best view of the landscape occurs.

After arriving at the call station, the surveyor should watch and listen silently for 3 minutes, followed by a 3-minute call-broadcast segment. Calls should be broadcast at 80 decibels (measured 3 feet (1m) from the speaker). The 3-minute call-broadcast segment should consist of 30 seconds of calls followed by 30 seconds of silence, with this pattern repeated 3 times. The first 2 30-second call periods consisted of the primary song of male burrowing owls and the final 30-second call period of an alarm call.

A GPS point should be taken at each calling station, no matter whether a burrowing owl is seen or not. Number of individuals seen should be recorded, as well as age and sex when possible. Observers should also take a compass bearing of the observation from their GPS point. If multiple individuals are observed in different locations, take a compass bearing of the observation most likely to represent the burrow location. Also note distance of observation from the GPS point.

APPENDIX B-11

PYGMY RABBIT SURVEY PROTOCOL

APPENDIX B-11

PYGMY RABBIT SURVEY PROTOCOL

Ulmschneider, H. 2004. Surveying for pygmy rabbits (*Brachylagus idahoensis*), fourth draft. Bureau of Land Management. Boise, ID.

Field Training

A key piece of advice: The rabbits themselves are secretive and difficult to see; thus it is being familiar with their habitat and sign that is the key to finding populations. Before surveying, look at pygmy rabbit habitat, burrows and pellets with an experienced person in the field. If possible, also look at badger and ground squirrel diggings, to help you learn to distinguish the differences between their burrows and those of pygmy rabbits. Descriptions and pictures are helpful, but there's no substitute for seeing it in the field. Biologists from different states with experience in surveying for pygmy rabbits are listed in Appendix A.

Habitat

There are two main features of pygmy rabbit habitat: relatively taller and denser big sagebrush (*Artemisia tridentata)* (but see below) and deep soils.

Sagebrush

Usually burrows are found in the taller and denser big sagebrush in an area. The height of the sagebrush can vary enormously, from about 1 ½ to 7 feet. Density can also vary, but commonly the sagebrush is so dense right at burrows that it is difficult to walk through. This means > 30% cover. Various subspecies of sagebrush are used, including Wyoming (*A. t. wyomingensis*), mountain (*A. t. vaseyana*), and Great Basin (*A. t. tridentata*). Other shrub species may be present, including bitterbrush (*Purshia tridentata)*, rabbitbrush (*Chrysothamnus* spp.*)*, greasewood (*Sarcobatus vermiculatus)*, snowberry (*Symphoricarpos* spp.*)*, and juniper (*Juniperus* spp.).

In some habitats used by pygmy rabbit in Oregon and Nevada, rabbitbrush is dominant or co-dominant with sagebrush, and burrows occasionally or commonly occur under large dense rabbitbrush (T. Forbes, OR; E. Sequin, NV, pers. comm.) and greasewood (J. Himes, NV, pers. comm.). The burrows are so hidden under the canopy that they are often only found by lifting the vegetation.

Pygmy rabbits also may occupy habitat that does not appear ideal: with short sagebrush and "bad" soil. In east-central Idaho, pygmy rabbits occupy "mima mounds" (mounds of soil several feet high and approximately 20-30 feet in diameter) with taller and denser sage, which are dotted in a landscape of shorter and thinner sagebrush (Roberts 2001). Katzner and Kozlowski (pers. comm.) both emphasize that it is important to keep an open mind, and not develop set ideas about what comprises pygmy rabbit habitat too early, or you may overlook inhabited areas. In Wyoming, Katzner (pers. comm.) has seen pygmy rabbits in areas that he initially would not have thought were habitat. In Montana, the average sagebrush height in occupied sites was only about 15 inches. There, Rauscher (pers. comm.) has often found them in areas where the sagebrush is not very dense and only knee-high or less, especially in mountain bowls and where sagebrush has been manipulated. In Utah, pygmy rabbits have been found to occupy 12 to 120-inch tall sagebrush. Regardless of the absolute height of the vegetation, the rabbits will almost always burrow in the tallest and densest sagebrush on the landscape.

Soils
Generally, pygmy rabbits burrow in loamy soils deeper than 20 inches. Soil composition needs to be able to support a burrow system with numerous entrances, but also must be soft enough for digging. A habitat model from the Univ. of Idaho (Rachlow and Svancara 2003) used a clay content of 13 to 30%, but models from Idaho State Univ. (Simons and Laundre 2001) used <13.5 % clay. In central Washington, pygmy rabbits are found only in areas with deep loamy soils. In southwest Idaho, they occur in areas with soils classified as stony sandy loam, and sandy loam over sandy clay and clay loam. In east-central Idaho, soils are gravelly outwash plains with lime-coated rocks. On the lava plains of southeast Idaho, rabbits will often burrow between or under lava boulders. In Nevada, soils are light-colored and friable.

At the Landscape Scale
Pygmy rabbits are found in alluvial fans, swales in a rolling landscape, large flat valleys, at the foot of mountains, along creek and drainage bottoms, in basins in the mountains, or other landscape features where soil may have accumulated to greater depths. They are generally on flatter ground, sometimes on moderate slopes, and not on steep ground.

At the Patch Scale
Look for relatively taller, denser big sagebrush (not low sage) and areas where there appears to be a non-uniform distribution of sage, in other words, where the texture of the sagebrush stand is uneven, or "lumpy", in both height and density. When scanning across a valley these clumps stand out as taller, or as having a different color. It is fairly effective to go directly to these areas to begin a search. Also look for signs of digging, and for soil surface that is not flat and level. The rabbits tend to mound up the soil where they have been burrowing over the years. Drainage bottoms and sagebrush draws with a relatively uniform coverage of sagebrush are also often used by pygmy rabbits.

Habitat Descriptions by State

Idaho: Areas with mounded topography – 'mima mounds' – are prime areas to target for surveys. In the Salmon, Idaho area, alluvial plains where rabbits are found are dotted with mounds about 20-30 ft in diameter, 1-2 ft tall, several hundred feet or yards apart, where the sagebrush is taller than in the surrounding intermound spaces. On 1:24,000 aerial photos, these mounds can be seen as a pattern of darker dots, extending over many miles of landscape (Photo 1 – Rocky Canyon); and from the ground, the mounds appear as lenses of darker and taller sage. The mounds are where the pygmy rabbits burrow. In southwest Idaho, a similar habitat is big sagebrush islands intermingled with low sagebrush (*Artemisia arbuscula)(* Photo 2 – Hutch Springs, Photo 3 – Mudflat Rd with Lynell). These kinds of areas are also visible on aerial photos).

In the mahogany (*Cercocarpus ledifolius)* savannah in the Owyhees of southwest Idaho, the rabbits are found in swales of taller sagebrush (photo 4 – aerial of mahogany savannah, photo 5- Dry Cr.) Mounding of the soil is present, but does not form distinctive mima mounds. A dotted pattern is usually not visible on 1:24,000 aerial photographs, although careful examination can show subtle and dim dotting. The soil does end up mounded where the pygmy rabbits have been digging their burrows and maintaining them over time.

Another major habitat in the Bruneau plateau country is the bottoms and lower slopes of small drainages where the sagebrush is denser and taller, indicating deeper soils (Photos 6 -& 7).

Oregon: Habitats in Oregon are very similar to those in Idaho. Most habitat is comprised of areas where big sagebrush inclusions are mixed with low sagebrush, rabbit brush, or shorter stature big sagebrush. Mounding similar to 'mima mounding' occurs in most of these sites (Photos 8, 9, 10, 11). Sagebrush on the mounds is usually 1-3 feet taller than that of the surrounding area. These mounds or clumps of big sagebrush can be spaced from a few feet to hundreds of feet apart.

The second most common type of habitat in Oregon is small draw bottoms where deeper soils have collected. Most of these sites are vegetated with basin big sagebrush in the drainage bottom, surrounded by Wyoming big sagebrush, low sagebrush, or mountain big sagebrush in the surrounding uplands. Some mounding can occur in these areas, but it is absent or very subtle. Burrows in these areas seem to be restricted to the very bottom of the drainages or the lower inside slopes of the drainage itself. Some areas with rabbits are dominated by rabbitbrush (Photo 12 - rabbitbrush).

Pygmy Rabbit Sign

Burrows

- Burrow entrances range from 4-10 inches across, usually fairly round but may be slightly wider than tall. The size of pygmy rabbit burrows usually surprises biologists the first time they see them because the holes are larger than they would have thought; many would have identified them as badger burrows. The older a burrow, the more the entrance seems to get enlarged, possibly from predators digging.
- Burrows are most often placed right at the base of a sagebrush, or occasionally another shrub species. Sometimes an entrance will be more in the open, but the majority of entrances will be underneath sage.
- At burrows, usually you will find the sagebrush so dense that walking is difficult, and you have to thread your way through it (which means >30% canopy cover). In more open sagebrush where you can walk more freely, you will probably not find burrows.
- The opening of the burrow usually flares out, and there may be a large pile of dirt outside the entrance, 1 to 3 feet in diameter.
- Usually, there will be more than one entrance in a burrow system; 2-4 is most common, with a maximum of up to 12, and occasionally there is only one.
- The burrow can slope down very steeply or moderately, and the burrow often narrows down from the flared entrance to about 4-5 inches in diameter.
- At currently used burrows, there will often be a lot of fresh dirt piled outside the entrances. Key your search on piles of fresh dirt to find burrows.
- Burrow systems will rarely be isolated; there will be a number of them in a habitat area. Isolated burrows without pellets are difficult to identify with certainty.
- A key feature of pygmy rabbit burrow systems is that they show evidence of having been built up and used over many years, unlike ground squirrel or badger diggings, which are generally a one-time affair. Pygmy rabbits remodel in the same spot year after year, creating mounded areas with taller, denser sagebrush growing on the old dirt piles, and evidence of burying the lower stem of nearby sagebrush over time. The undug areas between these mounded areas will have a fairly level ground surface (observation from Dana Quinney, expert on badger and ground squirrel diggings, Idaho Army National Guard).

- Sagebrush grows taller and denser on the mounded dirt. As pygmy rabbits 'remodel' over the years, filling in one tunnel and digging new ones within the same burrow system, they create overlapping mounds of varying ages in one area. The resulting complex of mounded area may be 15 to 30 ft in diameter. Thus, pygmy rabbit burrow areas have old mounding with plants and shrubs growing on them in addition to the current fresh dirt piles.

It is common to find many old burrows, with no fresh pellets, while surveying. In general, unoccupied old burrows appear to last some years. However, in Nevada, Sequin (pers. comm.) has observed extensive burrow systems "melt" completely into non-existence over the course of two to four weeks of wet weather in certain soils. All evidence of burrows was erased. Some of these burrows had been associated with very high pygmy rabbit activity just a few weeks prior. Later, the rabbits appear to return and dig burrows again.

Pellets

Rabbit pellets are distinctive: round, without dents or points, different from those of any other group of animals. Pygmy rabbit pellets are the smallest of the rabbit pellets, averaging 4-6 mm in diameter. However, the size can vary. Pregnant females produce bigger pellets, as large as cottontails, and up to 11 mm in diameter! (Dave Hays, pers. comm.). Young cottontails can produce very small pellets. Usually the size of pellets is uniform within a pellet group.

- Pellets are in little groupings near the burrow entrance and under sagebrush nearby. At an active burrow, there will often be a carpet of evenly-sized small pellets. Large quantities of uniformly small pellets around a burrow entrance are diagnostic of pygmy rabbits.
- Mountain cottontail pellets average 6-10 mm, but can be smaller. It appears that younger, smaller cottontails produce smaller pellets. Thus, they can overlap in size with pygmy rabbit pellets, creating potential for confusion. Be cautious: in Washington, genetic testing of pellets thought to be pygmy rabbit revealed they were from cottontails (Dave Hays, pers. comm.).
- Cottontails may use some of the same areas as pygmy rabbits, and may use their burrows. Beware particularly if there are rocky outcrops nearby. This is less of an issue in some places such as the Lemhi Valley, where the two do not commonly coexist. It can be more of a problem in smaller pygmy rabbit habitat patches intermixed with rock outcrops, such as in the Owyhee uplands. However, in Lakeview, Oregon, a telemetry study showed cottontails using the same habitats and some of the same burrows as the pygmy rabbits, though there are no rock outcrops for miles.
- Full-grown whitetail jackrabbit scat is 11-12 mm in diameter; blacktail jackrabbit pellets are about 9-10 mm in diameter.
- Rodents, including ground squirrels, have oblong droppings.
- Recent rabbit pellets are usually a dark to medium brown to greenish or blackish color. Very fresh pellets have sheen or appear somewhat glossy. Older pellets appear somewhat dull and eventually weather to gray. If the rabbits have been eating a lot of dry grass, fresh pellets may be more tan, the color of dry grass, and a little larger. If rabbits have been eating green wet feed in the spring, the pellets can be almost black on the outside, green on the inside, and may be more elongated and have little pinched ends, being softer when they were deposited.
- We don't know how long pellets last or how long they take to turn grey. Weather conditions affect how fast they turn grey; dry pellets will stay brown, wet pellets will turn grey faster. Pellets under winter snow may stay very fresh looking until uncovered the next spring. In an experiment at 6000 ft in southwest Idaho, pellets gathered fresh in

April and placed under a sagebrush were still brown in December. By the next April, they were grey, probably from the wet of winter snows and spring rains followed by exposure to sunlight.

- Some ants collect the pellets, so if you find burrows and no pellets, it may be due to ants. Look for them on the conical ant piles.
- Rabbits sometimes eat their own pellets (coprophagy), apparently mostly during the night (Dave Hays, pers. comm.).

Other Burrows

- A key difference between pygmy rabbit and badger or ground squirrel burrows is that badger and ground squirrel burrows generally do not create large complex mounds of overlapping dirt piles.
- Richardson's ground squirrels make smaller holes the size of the diameter of their bodies (approximately 2 -3 inches), and which do not usually have a flared entrance or a sizable pile of dirt. They usually dig holes in the open, overall occupy more open areas, and are often associated with a wet area of some kind. Belding's ground squirrel burrows are similar, but are in dry areas, and can be found under sagebrush as well as in the open. Pygmy rabbit and ground squirrel burrows may be mingled in the same area. Any ground squirrel may use pygmy rabbit burrows, or may dig their smaller burrows off of pygmy rabbit tunnels (Dana Quinney, Idaho National Guard, pers. comm.).
- Piute (Townsend's) ground squirrels also have small burrows with little dirt around them, and may be both under bushes or out in the open, but not particularly near water.
- Antelope ground squirrels have many small entrance holes placed in a mound of dirt 5 - 10 ft across and a foot or so high. Kangaroo rat burrows are similar. Both tend to be in sandier soils than pygmy rabbit burrows.
- Badger diggings are typically bigger than those of pygmy rabbits, 12-18 inches across and very round. Where there are ground squirrels, badger diggings may be numerous. Typically, however, you will see large, badger-dug holes located next to small ground squirrel holes, at least while ground squirrels are active. So instead of several moderate-sized burrow entrances near each other, like a pygmy rabbit burrow system, there will be big and small burrows together. Additionally, badger hunting burrows are one-time affairs, and even their natal burrows are only used briefly during one year.
- Where badgers have dug out pygmy rabbit burrows, which is common in some areas, the entrance will be enlarged to 12 to 18 inches, and very round, with a large pile of dirt. You probably will find both badger-dug and regular pygmy rabbit burrows in the area.
- Coyote and fox burrows are bigger, and more in the open, not under the sage. There will be only one burrow system in an area, not a number of them.
- Chipmunks, pocket mice, and deer mice all have burrows that are tiny (1 inch in diameter or so) and no or little loose dirt outside.
- Pocket gophers produce a mound of dirt about a foot in diameter, approximately 4-6 inches high, and the entrance hole, approximately 2-3 inches in diameter, is hidden under the mound of dirt. There will be a number of mounds in an area, and they are usually more in the open, between the bushes. In winter, pocket gophers tunnel under snow and fill the tunnels with soil; these will produce ropes of soil after the snow melts. They move through the landscape as they burrow, rather than maintaining a stationary burrow system.

Deciding whether or not burrows are pygmy rabbit

It is the combination of all indicators that you need to consider, both of the burrow itself, pellets, and the pattern of burrows on the landscape. No other animal digs burrows with the combination of features of those of the pygmy rabbit: in tall dense sagebrush habitat, burrow entrance 5-7 inches average diameter, located under sagebrush, a number of burrow systems in an area, and small round pellets. A burrow system with a carpet of small rabbit pellets around it is diagnostic of pygmy rabbits.

- First, you need to find both burrows and pellets together.
- For burrows that appear characteristic of pygmy rabbits but have no pellets, search further in the area, and/or look at another time of year. If you find other burrows with pygmy rabbit pellets in the area, then you can conclude that other, similar burrows without pellets are also from pygmy rabbits. Old burrows may tell us something about changes in population extent or density (although we're not sure how to interpret it yet!), and are also important to map.
- If you find small rabbit pellets but no burrows in the area, they are probably from mountain cottontails, especially near rocks. Burrows are an essential piece of evidence, because the pygmy rabbit seldom ventures far from them. (However, see the section on seasonal considerations.). There should be a number of burrow systems in an area, within a habitat patch.
- Is it the right habitat – big sagebrush and deep soils?
- Are the burrows placed underneath sage? Are they the right size and shape?
- What other animals are around? Be aware there may be cottontails and perhaps young jackrabbits producing small pellets similar in size to pygmy rabbit pellets, or ground squirrels, badgers, or other burrowers to sort out.
- Cottontails and ground squirrels may use burrows originally dug by pygmy rabbits, and further confuse the issue. However, of the rabbits, only pygmy rabbits actually dig burrows. We are interested in burrows dug originally by pygmy rabbits, even if they are now occupied by another animal.
- Finally, you can use other methods (discussed at the end of this paper) to confirm presence of pygmy rabbits.

Table 1. Rabbit track sizes, from information in Forrest 1988, Green and Flinders 1980, and Katzner 1994

	Pygmy Rabbit		**Cottontail**		**Jackrabbit**	
Back foot length	1.8-2.5 in	46-71 mm	3-3.5 in	77-90 mm	3.5 -4 in	90-103 mm
One track set (4 feet)	6-8 in		6.5-11 in		10-30 in	
Between track sets	6-16 in		8-22 in		10-60 in	

Organizing and Conducting Surveys

Targeting habitat

Pygmy rabbits are not randomly distributed within the sagebrush landscape, they are patchily distributed, because they choose particular soils and sagebrush habitats, and they do not appear to be abundant in many situations. Additionally, we cannot yet accurately predict with models where they might occur. With a patchy distribution, random survey methods that might work well for a more evenly distributed animal would be ineffective and inefficient. It is necessary to first target habitat as best you can, that is, to sort out the most likely habitat. We describe below a several-stage approach to doing this, using aerial photos, soil and vegetation

maps, Geographic Information Systems (GIS, if available), field knowledge, and driving and walking in the field as the final step to target where to look for pygmy rabbits.

Landscape Scale: The most basic components to use in a GIS model or other map are sagebrush types overlaid on soils (composition and depth). One kind of area to target for surveys is regions where big and low sagebrush are intermingled. Some models have added slope, aspect, fire history, and elevation, but these would be secondary parameters after first delineating sagebrush types and soils.

Fire history can be relevant but you need to know whether sagebrush has come back in or not. The timescale for this will vary enormously depending on whether its mountain sagebrush (maybe 15 years) or Wyoming sagebrush (maybe 100 years or never). So you must include this difference in a model. Aspect may be relevant if windblown soils are being deposited on the lee sides of hills, as in Gabler's model for the Idaho National Engineering and Environmental Laboratory, and Himes' model for east-central Nevada. Slope and elevation may be somewhat useful, after first delineating potential habitat using sagebrush types and soils.

For examples of GIS models from Idaho, see Rachlow and Svancara 2003, or Gabler et al 2000. John Himes (Texas Parks and Wildlife Dept.) has developed one for east-central Nevada, currently in review for publication. Be cautious with GIS models – we don't have successful ones yet. The Idaho models need refinement. The data used for both models did not distinguish between low sagebrush and big sagebrush. This resulted in the models rating as habitat large homogenous expanses of low sage with very rocky shallow soils, where no pygmy rabbits are found. Areas where pygmy rabbits were subsequently found in southwest Idaho were not targeted, some prime areas with intermingled big and low sagebrush.
The lessons from these efforts are that better habitat models are needed, as well as finer-scale, more accurate soil and sagebrush data. Additionally, there is no substitute for knowing what to look for from field experience, and going in the field and looking.

Mid-scale: Examine aerial photos, topographic maps, and use local knowledge to add or delete areas from your initial map. It is usually possible to distinguish dense sagebrush or to see mounds of taller, denser sagebrush as a dotted or mottled pattern on aerial photos. Local knowledge will help to eliminate burned areas that haven't regrown to sagebrush- e.g. some large old fires in the very southwest corner of Idaho are still vegetated with grass, but are included in the 2003 GIS model because they burned more than 15 years ago (the parameter used in the model). In Oregon, biologists have had success with flying over sagebrush landscapes and identifying dense areas of sagebrush for future ground surveys. You could combine surveys for sage grouse or big game with surveys for pygmy rabbit habitat.

Rank the areas you identified at the large scale, and start surveys in the most likely areas. These would be the largest blocks on the sagebrush and soils map which weren't eliminated by your refinements, areas surrounding past records, areas where aerial photos show mounds of sagebrush as a dotted pattern (see example photo at end), where big and low sagebrush are interspersed, and where there are swales of deep soils and tall dense sage.

Fine scale: You will probably have to make the final choice of where to walk a survey route while you are in the field, because the available data are not at a fine enough scale to do this from a distance. While you are driving to or in a chosen area, look for dense tall sage, especially with a "lumpy" or uneven texture, as well as for signs of digging. Sometimes, particularly where soils are light-colored or contain white, lime-covered rocks thrown out by digging, the mounds of freshly dug soil or white rocks are visible from the road. However, in darker soils this is not true,

and you have to walk to see burrows. When a suitable area is spotted, stop and walk a survey route.

Your sampling scheme will be dictated by your particular circumstances, both by how the potential habitat is distributed and by your "person-power". Your planned survey intensity for each area will vary with its priority, the size of the area you want to survey, and the people available to do it. Depending on travel time and whether you are finding burrows, (which will slow you down), you might expect to complete about 3 to 7 miles of walking transects in a day. Conduct the greatest amount of sampling in high priority areas, less sampling in lower priority areas. Portion your survey efforts among your highest priorities, with some sampling in lower priority habitat also, as a check on your ability to target habitat.

In snow: Areas where pygmy rabbits are concentrated will attract predators: coyote, badger, bobcat, and weasel. You can use their tracks to help guide you to pygmy rabbit areas, and even to burrows.

Patch scale: While you are walking a survey route you should target the tallest, densest patches of sage. These patches look like islands that stand out above the rest.

Survey Routes

The goal of a survey route is to check enough habitat in an efficient manner to determine whether pygmy rabbits are present or not, and secondarily to get an index of density of burrows. The goal is not to map out the total patch of habitat or to map every burrow within the habitat. Therefore you will not be trying to walk the perimeter of the population to map its extent, or to completely inventory the habitat, because this can be very time-consuming. Mapping a polygon requires a lot of walking to determine, first, whether rabbits are there, and their extent, and then walk the whole perimeter to map it with a GPS unit. It is simpler and faster to walk a meandering line through a habitat patch, targeting the most likely looking places (instead of the edge), and then continue on to the next swale or habitat patch, or loop back the other side of the valley. If you map your route and record results well, especially if you use a GPS unit, your survey route will be repeatable.

There are several advantages of recording burrow system locations with a GPS unit as you walk a survey route, as opposed to just tallying them. If you use the "repeat" feature (which fills out each new feature with the data from the previous one, so you only have to change a few things), it only takes a few seconds to record a burrow system as a point using a GPS unit, and will not appreciably increase your survey time. The advantages to having the data in this electronic form are many. You can directly download the points to a GIS map and see the pattern of distribution and density on the large scale. If you only record your survey route, and not the burrow points, you will not be able to easily see this pattern. Being able to see the points displayed on a GIS map is useful for refining your understanding of small-to-large scale distribution and habitat. Displaying the points on a background of orthophotoquads will help you with interpreting habitat from aerial photos, and will help you draw the extent of habitat patches on a topographic map or aerial photo.

Recording burrow system locations is a more complete record for those who come after you and want to repeat your work to determine changes over time – they will know exactly what you found where. For example, on a 2-mile long survey route, you may have found clusters of burrows in only a couple places. You can create a baseline for long-term monitoring at the same time as doing an initial survey, because you have a repeatable survey line along with very site-specific results. By recording burrow points along your survey line you can determine the

whether the distribution of burrow complexes changes over time, which will help us understand how to interpret old burrow complexes.

If you are alone, walk in a loop or triangle, targeting patches of taller, denser sage, looking for pygmy rabbit burrows and pellets. The goal of a looping or triangular route is to survey during all your walking time, and to avoid walking without actually surveying. You may walk through some unsuitable-looking sagebrush, but these data will be useful for helping distinguish where the rabbits do not occur, and will function as a check on your ability to target habitat. Using a topo map, you should be able to design a route that takes you up one swale and down another, or up and down two sides of a valley. In patchy habitat and where patches are small and follow the contours of the land, following the landforms and targeting the taller sagebrush clumps will be most effective. This means your survey line will be meandering, not straight.

If the habitat is uniform or on extensive flats, as in Nevada, straight transect lines arranged in a triangle, or a spiral pattern may be appropriate. For a spiral transect, walk directly to the center of a large, dense sagebrush patch, and then spiral your way out, gradually increasing the diameter of your circle until the habitat is no longer appropriate. To fully check out a potential site often takes about one hour of survey time (Eveline Sequin, pers. comm.).

Transect length should be dictated by the extent of the habitat patch, road distribution, and the amount of overall habitat you have identified to cover. Surveys in Idaho have shown that you will likely need to walk at least ½ mile to check an area for presence of pygmy rabbits with any degree of confidence, because of the distances between burrow systems, unless you find burrows immediately.

With two people working together, one-way linear transects may work, by “leapfrogging”: one person is dropped off to begin a survey route, the second drives ahead and starts another survey route; the first person ends up at the truck and drives ahead to pick up the second. If two people walk a survey route in tandem, the width each can cover will be determined by the habitat, but may be on the order of 100 ft., or 50 ft to each side. When two people are surveying together, each can simultaneously sample opposite sides of the road when the road bisects suitable habitat .

When you drive through unsuitable looking habitat within a generally potential habitat area, stop occasionally and walk a short survey route, as a check on your judgment of habitat, and record your transect walked. Note why the habitat looks unsuitable. Remember that ‘zeroes’ are as important to record as finding pygmy rabbit sign. These data will be used to refine habitat models, and will let us know where to and where not to focus management for pygmy rabbits.

Dogs and horses may be useful during surveys, if available. Dogs can let you know when a burrow is inhabited (though not what animal it is), and may flush rabbits. Horses can be used to survey more quickly than on foot.

Area search

When you find several current burrows and you are inventorying a new area, (or if you have not yet seen a pygmy rabbit in the area) take about a half hour to search the area looking for pygmy rabbits. This will help confirm whether you have pygmy rabbits, and will help you gain confidence in your ability to distinguish pygmy rabbit sign. So far you have had the search image for a burrow, and have been looking down. Now, switch, get the search image for movement and rabbits, and walk slowly, in widening circles around the active sites, looking ahead. Rabbits will often slip quietly into the burrow as you approach, and you have to be alert

for the slight movement. Once you learn how to look for the actual animal, you will begin to see them more (Dave Hays, pers com.).

Pygmy rabbits are easy to distinguish from mountain cottontails. When running away, the white of a mountain cottontail tail is usually visible. Pygmy rabbits do not have any white on their tail. Also, pygmy rabbits seldom run as far as mountain cottontails. Pygmy rabbits will scamper a short distance and stop, often under sagebrush plant or near a burrow entrance.

Seasonal Considerations

Surveys in Washington, Idaho, Nevada, and Oregon have shown considerable variation in the amount of fresh sign at burrows over the course of a year. During late summer and early fall pellets can be scarce at burrows. Burrow complexes that had lots of sign in winter or spring may appear almost deserted in late summer, with few pellets present, and then appear repopulated later.

Pygmy rabbits may use burrows less in summer and fall. In the fall, in SW Idaho, Ulmschneider found many burrows in big sagebrush islands on a valley bottom, with a mix of old and a few brown pellets. Several hundred yards away, under very dense tall sagebrush and bitterbrush on a rocky side slope, lots of fresh small pellets and a pygmy rabbit were observed, although no burrows were found right there. Rachlow (pers. comm.) found a similar situation in the summer in Montana, where there were lots of small pellets but no burrows in very tall sagebrush, and lots of burrows with few pellets in a nearby area. Apparently pygmy rabbits may abandon their burrows at that time of year in favor of dense cover, perhaps due to parasites. Himes (pers. comm.) also observed pygmy rabbit pellets without burrows in dense sage in Nevada in late summer.

In Nevada, Sequin (pers. comm.) has observed pygmy rabbits using certain areas dominated by rabbitbrush only during the dryer part of the year, late spring through fall. These areas have "loamier" soils that are much wetter in winter. Burrows in these areas often disintegrate during the winter, and there is no evidence of rabbits remaining in the area, by tracks, photo monitoring, or sightings. New burrows are then excavated in this habitat in spring. However, during all seasons, rabbits were still found in the adjacent sagebrush-dominated areas.

Winter may be a better time of year to confirm rabbit presence than the summer and fall. After a fresh light snow, fresh tracks and fresh pellets are obvious. Also, rabbits clean out burrow entrances after a snow, which helps identify occupied burrows. Pygmy tracks can often be followed to a burrow entrance. Winter logistics can become difficult, though, as snow deepens. Additionally, rabbits begin to burrow under the snow as it deepens, and you may not see much sign on the surface.

When initial surveys are conducted in the summer, and if you find possible or "old" pygmy rabbit sign, plan to return in late fall or winter and check again. For monitoring known populations, the time of the year should be consistent.

In the spring, rabbits appear to be active at their burrows; however, pellets can be more confusing because pregnant females make larger pellets that can be confused with cottontail.

Recording data

The basics to record are where and when you surveyed, whether you found burrows and pellets or not, and burrow locations and status. If you did find pygmy rabbit burrows, categorize, count them, and map them and your survey route.

Classify the status of each pygmy rabbit burrow system (not each entrance) according to the following system:

Used burrow plus fresh pellets (B+FP): brown pellets near a burrow, at least one entrance open, without cobwebs or debris that shows lack of use, usually shows a trail. In snow, tracks and/or pellets visible.

Unused burrow plus fresh pellet (UB+FP): burrow entrances have cobwebs, grass seeds, or other debris in entrance, but with brown pellets. May show transitory use.

Burrow plus old pellets (B+OP): only grey pellets at a burrow, entrances may show signs of non-use.

Burrow, no pellets (B): burrow entrance is not collapsed but no pellets found. Also use this category for burrows in snow where no tracks or pellets are visible.

Collapsed burrow (Col): No pellets

Pellets only (P): No burrows found, but pellets appear right for pygmy rabbit. (Collect and label.)

Fresh digging at a burrow but no pellets (B+dig): Digging may have been by a predator such as coyote or badger. If it was a predator, it was most likely digging after prey, and the prey may have been pygmy rabbit.

Possible PR burrow (Poss): Burrow seems right for pygmy rabbit, but there are confusing pellets or no pellets, or it is not in association with other pygmy rabbit burrows (identified by pellets or sightings).

There are several options for recording data, depending on the equipment available: electronically with GPS units, paper data forms, topographic maps, and aerial photos. With GPS units, one might think that it would be easy to map a polygon delineating a pygmy rabbit population, instead of walking a transect and mapping burrows. However, in the field one soon finds that mapping polygons is difficult and complicated, unless they are very small, and generally requires much more wandering about than walking a transect through a habitat patch, as you try to determine the extent of an often complicated population, exactly where the burrows stop, and then try to walk the perimeter. Additionally, a transect with burrow points added up along it will give you an index of burrow density that can be measured in future years (most GPS units are accurate within about 2 meters), which a polygon will not give you. If you try to do both, you will greatly lose efficiency! The simplest way to delineate the habitat is to draw the approximate extent of the habitat on a topographic map or aerial photo, after you finish your transect.

1. GPS unit with a data dictionary (e.g., GeoExplorer 3): *note your projection on a data sheet e.g., NAD 27.* (A "data dictionary" is an electronic data form that can be filled out directly into the GPS unit, and later downloaded directly to a computer. It can be created to match the paper data form given at the end of this paper.)

With a Geo Explorer 3 or other GPS unit that has capability for a data dictionary:

- Record your survey route (where you walked) using a line feature. You can interrupt the line where you record a pygmy rabbit point (i.e., a burrow system), and then resume it afterwards.
- Record each pygmy rabbit burrow system (not individual openings) as a point feature, using a pygmy rabbit data dictionary that includes the essential information on the data form at the end of this paper. Use the "repeat' feature, and when you become skilled, it will only take about 30 seconds to record a burrow. Burrow systems may be about 15 ft across. In areas with dense burrows, it may be difficult to decide when to record a new burrow system. One rule of thumb is to record a new burrow system at least 30 ft apart

(however they can be much denser than that; in Montana, Rauscher [1997] found an area with 8 burrow systems within 30 m).

- Take daily field notes of where you surveyed for the day, habitat, numbers of burrows in each status category, extent of habitat, why you thought they were or weren't from pygmy rabbits, general findings (no sign, old sign, lots of current sign, other critters), any other notes that would help someone else determine where you looked, what you found, and the validity of what you found. Remember that it is possible to lose GPS data, and that general notes are often extremely useful in interpreting the data! Remember zeroes are important to record and discuss!
- Map your survey areas on a topographic map or aerial photo, with date, your name, and a key to any symbols used.
- When finding pygmy rabbit sign in a new area, take samples of droppings and label each container with date, location, and your name (film canisters work well, or plastic zip bags).
- Take photos of burrows, landscape setting, and any other sign (tracks, trails, bones, pellets). Label your photos with date, location (Township, Range, Section and ¼ sections), your name, and what it shows.
- Also mark your driving routes on the maps, when you are within a search area and looking for target habitat to do foot surveys.

2. GPS unit without a data dictionary:
    - Record your survey route using a line feature and pygmy rabbit burrow systems using a point feature, as above.
    - Use the paper data form to record the necessary information.
    - Collect pellets and take photos as above.
    - Mark your survey areas on a topographic map or aerial photos, with date, your name, and general findings.
    - Also mark your driving routes on the maps.

3. No GPS unit (or GPS unit with a dead battery!)
    - Use aerial photos and/or topographic maps to record locations of any burrow systems found and of your survey route. Label each map and photo with "Pygmy Rabbit Survey," dates, your name, and a key to burrow classification and survey routes.
    - Alternatively, if burrows are too dense or difficult to map separately, map out your survey route and the area where burrows are found.
    - Keep a tally of burrow systems in each category as you walk a transect within the area delineated (see data sheet). Also mark your driving routes on the maps.

Other Methods

Traps

Trapping is not effective for general surveys. It may be useful once you know where you have the right burrows for further study or to confirm presence. Even in areas with known dense populations of pygmy rabbits, and putting traps right in the entrances of burrows that show fresh activity, trapping success rates are low (0-4%). Burrows are always there and usually distinctive, and therefore are more useful for general surveys.

Camera with automatic trigger (from Eveline Sequin)

Cameras can be used to determine if pygmy rabbits are currently active in an area. Photographs provide direct and convincing evidence that rabbits are present and provide a permanent record. Once burrows are located, or unconfirmed sightings are reported, cameras

can be left at the site with minimal human attention to collect the required data. Cameras are able to visually detect pygmy rabbits at locations where other survey methods do not detect them, and may be especially helpful in the spring when the potential presence of other young rabbits may confuse pellet surveys.

Equipment for an "active" camera set-up consists of a camera connected to an infrared beam unit (sender and receiver) that triggers the camera when the beam is interrupted. These infrared units are sold as burglar alarms for modest prices at electronic stores such as Radio Shack®. "Passive" camera setups are triggered by a motion or heat sensor. Active infrared cameras have proven to be more cost effective than passive cameras because they can easily be set in vegetated areas without being triggered by the surrounding moving vegetation.

First a site inspection should be conducted by walking around the area looking for burrowing activity, animals and fresh pellets. Next, set up one active infrared-triggered camera in a central location (near burrows if they have been located). Cameras can be set either across the entrance of an active burrow, or across an open area nearby. The receiver should be set to trigger the camera if the infrared beam is blocked for 0.5 seconds (1 infrared pulse, or the minimum amount of pulses the unit will allow). To make the camera units even more sensitive, reduce the width of the infrared lens to 1 mm with black electrical tape. This combination of settings is responsive enough to capture full body images of rabbits even when they are surprised by the flash or noise. Set the transmitter about 2-4m from the receiver and camera allowing plenty of area for rabbits to travel between the two units. The beam should be set at a height of approximately 5 cm. Set a camera delay of 1 or 2 minutes so that one animal will not use up the entire roll of film. Use 100 or 200 ASA film, and set the cameras to be active 24 hours a day. In locations where pygmy rabbits are known to be active, it was shown that cameras were usually able to record their presence over the course of one week. Depending on the site and the season, the roll of film will be used up in a few days or over the span of a week. In winter, snow may trigger the camera and use all film in an hour.

It is possible to distinguish pygmy rabbits from other rabbits (juvenile jackrabbits, cottontails) using this method. Adult pygmy rabbits can be distinguished reliably by their tails, heads, ear shape, and size in relation to camera equipment. Juvenile cottontails and jackrabbits can be distinguished by tails, head and ear shape, and coloration. Individual rabbits are generally photographed multiple times at one camera location. Therefore, even if not every photograph is entirely conclusive, the multiple angles of single individuals allow for conclusive evidence. If for some reason only one questionable photograph is received, the camera can always be set out for another week. Comparison photos of rabbit species by Eveline Sequin may be viewed at www.wildlife.utah.gov/habitat.

Spotlighting

It is possible to see pygmy rabbits by spotlighting at night; however, it is not as effective or efficient as looking for burrows. Burrows are permanent and easy to spot once you know what to look for, and you can look for them in the day. Spotlighting may be useful for confirming presence by seeing a rabbit once you find an area with burrows, however, the daytime area searches described above are probably more practical. Rauscher reports, "I attempted to spotlight pygmy rabbits in an area I knew to have a relatively high density of rabbits. I only saw 2 pygmy rabbits. This method is not very effective."

Peeper Probe

This is a flexible cable with an infrared camera on the end, allowing you to look down a burrow. It may be useful, once you have found burrows, in spotting a rabbit or helping to identify what

species dug a burrow in questionable cases. You may be able to figure out how to distinguish the underground features of pygmy rabbit burrows versus other burrows. Rauscher in Montana has used these probes in known occupied sites, and was able to see pygmy rabbits; however, he thinks that it is probably not too useful or effective for general surveys. The peeper probe may be useful for some aspects of demographic studies, such as looking into natal dens (J. Rachlow, pers. comm.) Females apparently dig single, simple burrows for giving birth, and fill the entrance with dirt, so these burrows may be hard to find.

Inquire of Locals; Check Hunting Records

Ask hunters or ranchers who have bagged or claim to have seen pygmy rabbits. On all state-owned Wildlife Management Areas that permit hunting, hunters are required to fill out and submit a card afterwards that indicates their kill to the respective state wildlife agency, which would be an additional way of determining potential sites to survey for pygmy rabbits

Track Plots

To determine presence of pygmy rabbits near a burrow, lay aluminum tracking sheets on the ground or make cleared track plots, and cover them with a thin layer of fine dust to record tracks.

Literature Cited

Gabler, K.I., J.W. Laundre and L.T. Heady. 2000. Predicting the suitability of habitat in southeast Idaho for pygmy rabbits. J. Wildl. Manage. 64(3): 759-764.

Green, J.S. and J.T. Flinders. 1980. *Brachylagus idahoensis.* Mammalian Species No. 125: 1-4.

Forrest, L.R. 1988. Field Guide to Tracking Animals in Snow. Stackpole Books, Harrisburg, PA. 193 pp.

Katzner, T.E. 1994. Winter ecology of the pygmy rabbit (*Brachylagus idahoensis)* in Wyoming. M.S. thesis, Univ. of Wyoming, Laramie.

Rachlow, J. and L. Svancara. 2003. Pygmy Rabbit Habitat in Idaho. Project Completion Report, Challenge Cost Share, Univ. Idaho, Moscow, ID. 28 pp.

Rauscher, R. 1997. Status and distribution of the pygmy rabbit in Montana. Final Report, Montana Fish Wildlife and Parks. 19 pp.

Roberts, H. B. 2001. Survey of pygmy rabbit distribution, numbers, and habitat use in Lemhi and Custer Counties, Idaho. Tech. Bull No. 01-11, ID Bur. Land Mgmt.

Simons, E. and J. Laundre. 2001. Predicting suitable habitat for the pygmy rabbit (*Brachylagus idahoensis)* using a Geographic Information System. Project Completion Report, Challenge Cost Share, Idaho State Univ., Pocatello, ID. 13 pp.

Appendix A. Persons Knowledgeable about Pygmy Rabbits

California	
Pat Lauridson, CA Dept. Fish and Game, Sacramento CA	plauridson@dfg.ca.gov
Donald Armentrout, BLM, Susanville CA	darmentr@ca.blm.gov
Patrick Kelley, CA State Univ., Stanislaus CA	patrickk@esrp.csustan.edu
Idaho	
Hadley Roberts, retired FS, Salmon ID	hroberts@ida.net
Helen Ulmschneider, BLM, Boise ID	helen_ulmschneider@blm.gov
Janet Rachlow, Univ. of Idaho., Moscow ID	jrachlow@uidaho.edu
Peggy Bartels, BLM, Burley ID	peggy_bartels@blm.gov
Vince Guyer, BLM, Salmon ID	vincent_guyer@blm.gov
Montana	
Ryan Rauscher, MT Fish, Wildlife and Parks, Missoula MT	rauscher@montana.edu
Nevada	
Eveline Sequin, Univ. Nevada Reno, Reno NV	esequin@unr.nevada.edu
John Himes, TX Parks and Wildlife Dept., Tennessee Colony TX	johnhimes@direcway.com
Oregon	
Todd Forbes, BLM, Lakeview OR	todd_forbes@blm.gov
Utah	
Adam Kozlowski, UT Div. of Wildlife Resources, Ogden, UT	adamkozlowski@utah.gov
Washington	
Dave Hays, WA Dept. Fish and Wildlife, Olympia WA	haysdwh@dfw.wa.gov
Wyoming	
Doug Keinath, Nat. Diversity Database, Laramie WY	dkeinath@uwyo.edu
Todd Katzner, Imperial College, London, England	t.katzner@imperial.ac.uk

PYGMY RABBIT SURVEY FORM

Observer(s): _____ Affiliation: _____
Address: _____ Phone: _____
Observation
Date: _____ Site Name: _____ Co.: _____ State: _____ Site #: _____
Township: _____ Range: _____ Meridian: _____ Section: _____ Quarter/Quarter: _____ of Quarter: _____
Project / Transect ID #: _____ Field Map ID: _____
Start Stop
Survey Method: _____ Search Time: : _____ : _____

GPS Data

Projection: Decimal Degrees ☐ Decimal Minutes ☐ Degrees/Minutes/Seconds ☐ UTM Zone: 10 ☐ 11 ☐
Datum: NAD27 ☐ NAD83 ☐ WGS84 ☐
Coordinates:
Starting point Easting _____ Northing _____ Elevation _____
Accuracy: PDOP _____ FOM _____ +/- _____ Feet ☐ Meters ☐

Land Ownership: State ☐ BLM ☐ USFS ☐ USFWS ☐ Private* ☐ (state below)
Tribal ☐ Military ☐ Nat. Park ☐ Other: _____
*Private landowner / Address / Phone: _____

Potential Threats to Area: Agriculture☐ Fire☐ Development ☐ Grazing ☐ OHV ☐ Other: _____
None

Summary of Results for Survey Route Pellets collected? Yes ☐ No ☐

Pygmy rabbit observed? Yes☐ No ☐ Pygmy Rabbit sign observed? Yes ☐ No ☐ Possible burrows ☐ Possible Pellets ☐

Summary of numbers of burrows: B+FP: _ B+OP: B: _ _ UB+FP: Col: _ _ B+dig:__ FP alone: _ ____

Length of survey route: Miles: Feet: Meters:

Predators (T- tracks, S–scat, V-visual): Coyote T S V Fox T S V Badger T S V Weasel T S V Bobcat T S V Raptor T S V Other

Notes. *Provide directions, describe landscape setting, note other animals, explain why if no pygmy rabbits were found, describe behavior of any pygmy rabbits seen, etc.*

CODES FOR DATA

Burrow Status	**B+FP –** used burrow plus brown, green, or black pellets	**B+OP** – burrow plus grey pellets	**B –** open burrow, no pellets	**UB +FP** Unused burrow, fresh pellets	**Col –** collapsed burrow	**B+dig –** burrow, fresh digging, no pellets	**FP –** fresh pellets alone	**Poss** Possible PR burrow
Burrow Details	**T** –Clean trail **O** – Open **Col** – Collapsed **Deb**- Debris filled **Dig** - Fresh digging **TS** – tracks in snow **US** – Untracked snow **B** - At base of bush **R** - At base of rock **E**– Enlarged by predator							
Pellet Quantity	**H –** high**,** lots, a carpet **M –** moderate **F-** few							
Soil	**L** - Loam **S** - sand **C** - Clay **G -** Gravelly **R** - Rocky							
CanopyCover (20 ft radius)	**S –** shrubs **F -** Forbs **G** – grass **B** - bare ground **0** –(0 – Trace) **1** - (1-10%) **2 -** (11-25%) **3 -** (26-50%) **4** - (51-75%) **5** – (76-100%							
Grazing use level	**0** - None **1** - slight **2** - light **3** - moderate **4** - heavy **5** – severe *Use descriptions from BLM's Landscape Appearance Method*							

Burrow #	UTM Easting	UTM Northing	Status	Burrow details	Pellets	Soil	Canopy Cover				Grass Use levels	Pygmy rab seen	# of entrances	Comments
							Shrub	Grass	Forbs	Bare				

BLM's Landscape Appearance Method for classifying Grazing Use Level:

1. **None** (0-5 %). The rangeland shows no evidence of grazing use; or the rangeland has the appearance of negligible grazing.
2. **Slight** (6-20%). The rangeland has the appearance of very light grazing. The key herbaceous forage plants may be topped or slightly used. Current seedstalks and young plants of key herbaceous species are little disturbed.
3. **Light** (21-40%). The rangeland may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed and 60 to 80 % of the number of current seedstalks of key herbaceous plants remain intact. Most ground plants are undamaged.
4. **Moderate** (41-60%). The rangeland appears entirely covered as uniformly as natural features and facilities will allow. Fifteen to 20 % of the number of current seedstalks of key herbaceous species remains intact. No more than 10 % of the number of low value herbaceous forage plants are utilized. (Moderate use does not imply proper use.)
5. **Heavy** (61-80%). The rangeland has the appearance of complete search. Key herbaceous species are almost completely utilized with less than 10 % of the current seedstalks remaining. Shoots of rhizomatous grasses are missing. More than 10 % of the number of low value herbaceous forage plants have been utilized.
6. **Severe** (81-100%). The rangeland has a mown appearance and there are indications of repeated coverage. There is no evidence of reproduction or current seedstalks of key herbaceous species. Key herbaceous forage species are completely utilized. The remaining stubble of preferred grasses is grazed to the soil surface.

Pygmy Rabbit Summary Sheet

Burrows

- 5-10 inches in diameter
- Placed under sagebrush
- In relatively tall dense sage

Pellets

Pygmy Rabbit	Cottontail	Jackrabbit
4-6 mm – in carpets near burrow is diagnostic	6-10 mm	9-12 mm

Tracks – length of hind foot

Pygmy Rabbit	Cottontail	Jackrabbit
46-71 mm	77-90 mm	90-103 mm

Visual

Pygmy Rabbit	Cottontail	Jackrabbit
Brown tail	White tail, obvious from rear	Black-tipped tail (blacktail) or whitish tail (whitetail)
Ears 2 1/4 – 2 1/2 in, about length of head	Ears 2 1/5 – 2 3/5 in, about length of head	Ears 5-7 in, way longer than head, and black tipped
Won't run far, zigzags, often stops at sagebrush or burrow	Bolts fast and far	Bolts fast and far
Small – 8 1/2-11 in	Medium – 12-14 in	Large – 17-21 in Blacktail; 18-22 in Whitetail.

APPENDIX C-1

FEDERALLY LISTED PLANT DESCRIPTIONS

APPENDIX C-1

FEDERALLY LISTED PLANT DESCRIPTIONS

Howell's spectacular thelypody (*Thelypodium howellii* ssp. *spectabilis*) – US Threatened; Oregon Endangered.

T. howellii ssp. spectabilis is a biennial herb belonging to the mustard family, Brassicaceae. During the first growing season this species typically forms a rosette with wavy-margined leaves. Ultimate height is one to two feet. Numerous pinkish-purple flowers with four petals on slender, elongate racemes occur in late May through June. Fruits are siliques (long, slender pods), maturing by mid-July. Seeds apparently germinate immediately, with new plants overwintering as basal rosettes. Preferred habitat is moist, alkaline valley bottoms dominated by basin wildrye (*Leymus cinereus*), alkali-grasses (*Distichlis stricta, Puccinella lemmonii, Poa juncifolia*), and black greasewood (*Sarcobatus vermiculatus*). Sites are usually in alluvial outwash areas, near streams or rivers, with seasonal moisture (ODA, Plant Division 2008).

Slickspot peppergrass (*Lepidium papilliferum*) – US Threatened; Idaho BLM Type 1.

L. papilliferum is an herbaceous, annual or biennial plant, also in the mustard family. It grows 4-12 inches in height with clusters of small white flowers containing four petals each. Plants are densely papillose-puberulent (having clusters of fine hairs). Flowering occurs in May through June. *L. papilliferum* occupies slick spots, also called mini-playas or natric sites. These are distinct, small, typically whitish patches with a clay subsurface soil horizon and exhibit higher alkalinity than surrounding soils. Slickspots are found scattered in sagebrush-steppe habitat at elevations ranging from 2,200 to 5,400 feet. Due to poor soils, vegetation is often sparse in undisturbed slickspots (Menke and Kaye 2006).

APPENDIX C-2

OREGON STATE LISTED AND BLM / FOREST SERVICE SENSITIVE PLANT DESCRIPTIONS

APPENDIX C-2

OREGON STATE LISTED AND IDAHO BLM SENSITIVE PLANT DESCRIPTIONS

Biennial stanleya (*Stanleya confertifolia*) – Oregon BLM Sensitive; Idaho BLM Type 2

S. confertifolia is a biennial (living two years) mustard (family Brassicaceae) also known as Malheur or biennial princesplume. Flowers are cream or yellow in color and form a dense raceme. Plants flower from April through June and may reach 3 feet in height. The species typically grows on dry plains in clay soils that are somewhat sparsely vegetated. Elevations range from 2,400 feet to 5,000 feet (Atwood and Debolt 2000).

Bigelow's four-o'clock (*Mirabilis laevis* var. *retorsa*) – ORHNIC List 2

Mirabilis laevis var*. retorsa* is a perennial forb from the Nyctaginaceae family. It has calyx-like involucres which are campanulate and clustered near the ends of branches. What appears to be pink to purple-red petals, are in fact cleft petaloid sepals. It has five stamens that extend beyond the sepals. It typically flowers from December to June (eFloras 2008).

Calcareous buckwheat (*Eriogonum ochrocephalum* var. *calcareum*) – Idaho BLM Type 3

A member of the buckwheat family (Polygonaceae), *E. ochrocephalum* var. *calcareum* is a mat forming plant with glabrous, elliptic or oblong, grey-green leaf blades. Scapes grow from 4 to 14 inches and have many small yellow flowers arranged in a terminal umbel/head. Flowering occurs from May through August and occasionally into September. This species grows on rolling, sparsely vegetated, clay hills among four-wing saltbush, shadscale, and spiny hopsage communities at 2,100 to 3,300 feet (Atwood and Debolt 2000).

Cronquist's Stickseed (*Hackelia cronquistii*) – Oregon State Threatened; ORHNIC List 1; Oregon BLM Sensitive

H. cronquistii is a perennial borage (Family Boraginaceae) growing 8 to 26 inches tall with blue tinged white flowers. Flowering occurs in May; seeds ripen in June. The species inhabits sandy sagebrush slopes, sometimes moist slopes in ravines, at elevations between 2,000 to 2,500 feet; nearly always on north facing slopes. Associates are big sagebrush (*Artemisia tridentata*), Indian ricegrass (*Achnatherum hymenoides*), bluebunch wheatgrass (*Pseudoroegnaria spicata*), spiny hopsage (*Grayia spinosa*), cheatgrass (*Bromus tectorum*), and many others (OFP 2007).

Cusick's false yarrow (*Chaenactis cusickii*) – Idaho BLM Type 2; ORNHIC List 4**

C. cusickii is an annual in the Asteraceae (sunflower) family. It is small in stature (less than 4 inches tall) with entire, linear leaves and sparsely wooly stems. Flowers are small, white to pinkish and disk-like clustered into heads, and bloom from May through June. This species grows on volcanic ash, especially the Succor Creek formation, in open places within the Wyoming big sagebrush and desert saltbush zone. Elevations range from 2,200 to 4,300 feet (Atwood and Debolt 2000).

Cusick's lupine (*Lupinus lepidus* var. *cusickii*) – Oregon State Endangered; ORNHIC List 1; Oregon BLM Sensitive

L. lepidus var. *cusickii* is a perennial in the pea family, Fabaceae. Morphology is low and spreading, with plants generally shorter than one foot. Plants are often grayish and the main stems are leafy. Flowering occurs in mid-June. Populations have been verified for only five sites in eastern Baker County along the Burnt River. The species is found in dry, open settings extending from barren upper slopes to rather dense stands of sagebrush on lower slopes. Substrates often consist of eroding slopes of volcanic ash (Newton and Thorpe 2010).

Desert pincushion (*Chaenactis stevioides*) – Idaho BLM Type 4

Also, an annual plant in the sunflower family, *C. stevioides* grows to approximately one foot in height. Leaves are deeply lobed to divided. Flowers are whitish, disk-like and clustered into heads. Flowering occurs from April through June. This plant typically grows in open sandy sites in salt desert shrub communities up to 4,000 feet elevation (Atwood and Debolt 2000).

Dimeresia (*Dimeresia howellii*) – Idaho BLM Type 3

D. howellii is an annual in the Asteraceae family. Flowers are white to pinkish or purple and all alike and perfect. Plant has mostly discoid heads and is wooly at base. Phenology is June in Idaho. Habitat is high desert foothills and dry areas on rocky, cinder or gravelly soils, from 3600 – 9600 ft elevation. Idaho occurrences are in Owyhee County (Atwood and Debolt 2000).

Douglas' clover (*Trifolium douglasii*) – Oregon BLM Sensitive

T. douglasii is member of the pea family, Fabaceae. Flowers are numerous (50-100) reddish-purple, tube-like, and clustered into a head at the top of the stem. Leaves are alternate and contain leaflets of three. This species typically blooms June through July. Habitats include moist to wet meadows, forested wetlands, and streambanks (WDNR 2000).

Greeley's wavewing (*Cymopterus acaulis* var. *greeleyorum*) – ORNHIC List 1; Oregon BLM Sensitive; Idaho BLM Type 3

C. acaulis var. *greeleyorum* is a perennial plant belonging to the Apiaceae (carrot) family. Its leaves are divided into lobed leaflets. Inflorescences consist of umbels made up of many small yellow flowers with yellow stamens (in contrast to var. acaulis which has white stamens). This species flowers from March through April and fruits into early June. It occurs on brown and white volcanic ash in Wyoming big sagebrush, salt desert shrub and Indian ricegrass zones (Atwood and Debolt 2000).

Janish's penstemon (*Penstemon janishiae*) – Idaho BLM Type 2

P. janishiae is a perennial plant in the figwort family (*Scrophulariaceae*). Flowers have large corollas from 18 to 28 mm long that abruptly expand into broadly netricose-ampliate throat (7 to 12 mm). The upper lip is from 8 to 13 mm long. Flowering occurs from late May through

June. This species is found in clay soils derived from volcanic ash or lake bed sediments in sagebrush communities from elevations of 2,600 to 4,300 feet (Atwood and Debolt 2000).

Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*) – Oregon State Threatened; ORNHIC List 1; Oregon BLM Sensitive

A. collinus var. *laurentii* is a perennial herb in the pea family (Fabaceae) that branches freely into small leaflets. Flowering occurs from May to July; the flower petals are cream or yellowish. Fruit (pendulous pods bearing short, shaggy hairs) are present from June to early August. The species occurs on dry slopes in areas with loess deposits, occasionally with sandy or rocky substrates, in bluebunch wheatgrass-Idaho fescue (*P. spicata-Festuca idahoensis*) palouse grassland or canyon communities. The majority of sites are in roadsides adjacent to wheatlands, or on canyon walls above streams and below the farmlands (Kagan, Morgan, and Blakely 2000).

Least Phacelia (*Phacelia minutissima*) – Idaho BLM Type 2

P. minutissima is a member of the waterleaf family (Hydrophyllaceae) that flowers April through July. It is the only annual *Phacelia* of moist habitats in Idaho. Distinguishing characteristics include unequal fruiting calyx lobes, mostly cauline leaves, and inflorescence terminating at the stem. The tubular-campanulate corolla is lavender and inconspicuous (Atwood and Debolt 2000).

Least snapdragon (*Sairocarpus kingii*) – State of Idaho Priority 1

S. kingii is an annual herb in the figwart family(*Scrophulariaceae*). It is found in pinyon-juniper woodlands from 1,600 feet to 7,500 feet. Plant is often clinging to other plants, raceme solitary with corolla of white flowers 5 to 7 mm, veins violet. Flowers from late April to mid July (JOI 2011).

Malheur cryptantha (*Cryptantha propria*) – State of Idaho Review Species

M. propria is a densely caespitose perennial herb in the borage family (Boraginaceae). Plants from 1 to 2.5 dm tall, with green, finely strigose and appressed-setulose pubescence. Species found on bare soil of ash and clay on open hillsides at elevations from 3,000 to 4,000 feet. Flowers from April through May (Atwood and Debolt 2000).

Malheur Yellow Phacelia (*Phacelia lutea* var. *calva*) – Idaho BLM Type 3

P. lutea var. calva is an annual belonging to the Hydrophyllaceae (waterleaf) family. Stems sometimes numerous, spreading. Plant is 1-4 cm tall. With exception of the inflorescence, the plant is glabrous. Corolla is yellow, with filaments usually surpassing the corolla sinuses.
Found in Owyhee County, Idaho on volcanic ash soils in Wyoming sagebrush or salt desert shrub zones from 2900-5300 feet elevation. Blooming period is May through June (Atwood and Debolt 2000).

Many-flowered phlox (*Phlox multiflora*) – ORNHIC List 2; Oregon BLM Sensitive

This species is in the phlox family, Polemoniacea. *P. multiflora* originates from a taproot. Its numerous, occasionally almost erect stems (usually less than 4 inches tall) form a loose

mat. One to three white (occasionally bluish) flowers are borne on the ends of the stems. The blooming period is from May to August (MPL 2011).

Mingan's moonwort (Botrychium minganense) – Oregon BLM Sensitive

B. minganense is a member of the fern family (Ophioglossaceae). Annually, it produces a single dull green, somewhat fleshy frond which is divided into two parts, a sterile trophophore and a fertile sporophore, which share the same stalk. The frond is usually less than 6 inches tall and is often much smaller. Emergent fronds may be observed from July through September (Vanderhorst 1997).

Mountain moonwort (Botrychium montanum) – Oregon BLM Sensitive

B. montanum is a member of the fern family (Ophioglossaceae). This species is a small perennial fern with a single above ground frond. The frond varies in height up to about 12 cm tall, is a dull glaucous gray-green, somewhat succulent, and divided into two segments which share a relatively short common stalk. Emergent fronds may be observed from July through September (Vanderhorst 1997).

Mulford's milk-vetch *(Astragalus mulfordiae)* – Oregon State Endangered; ORNHIC List 1; OR BLM Sensitive; Idaho BLM Type 2

A. mulfordiae is a perennial herb in the pea family. This species grows about 4-12 inches tall. Leaflets are paired except for the single terminal leaflet. Flowers are pea-like and whitish. Flowering occurs from late April to June, in fruit May to June. Fruits are peapod-like. The species occurs on old river deposits, sandy places near rivers, sandy bluffs, and dune-like talus in the foothills near the Snake River and on the Snake River Plain in northeastern Malheur County, Oregon and adjacent Ada, Owyhee and Washington Counties, Idaho (Atwood and Debolt 2000).

Oregon Semaphore Grass *(Pleuropogon oregonus)* – Oregon State Threatened; ORNHIC List 1; Oregon BLM Sensitive

P. oregonus is a perennial grass (Family Poaceae) 20-35 inches tall with slender rhizomes that have purplish-red scales. Culms are erect with overlapping sheaths. The ligule is 4-5 mm long, white and lacerate. Leaf blades are erect, flat, 3-7 inches long, abruptly narrowed into an acute apex. Flowering occurs in June, fruiting in June and July. The species inhabits moist meadows and marshland at about 2,500 to 4,000 feet in association with aquatic and semiaquatic species (OFP 2007).

Owyhee Clover *(Trifolium owyheense)* – ORNHIC List 1; Oregon BLM Sensitive; Idaho BLM Type 2

T. owyheense (Family Fabaceae) is a glaucous perennial plant with several spreading stems reaching 8 inches in length. The leaflets are thick, broad, overlapping, more or less emarginate, glaucous-green with white crescents. Flowering occurs in May and June, seed ripe June through August. The species inhabits bare slopes composed of loose diatomaceous talus or volcanic ash. Surrounding plant communities are dominated by sagebrush and juniper (*Juniperus occidentalis*). This species is a regional endemic to Owyhee uplands: Malheur County, Oregon and Owyhee County, Idaho (OFP 2007).

Packard's Mentzelia *(Mentzelia packardiae)* – Oregon State Threatened; ORNHIC List 1; Oregon BLM Sensitive

M. packardiae (Family Loasaceae) is a small, upright annual forb with linear leaves and solitary yellow flowers in terminal clusters. Flowering occurs in May and June, fruiting in June. The species is restricted to volcanic ash high in potassium, growing on loose slopes with other ash endemics such as Owyhee clover (*T. owyheense*), and Least yellow phacelia (*Phacelia lutea*) within the surrounding sagebrush-saltbush/bunchgrass zone. Narrow endemic in extreme east-central Malheur County, Oregon, near Idaho border (OFP 2007).

Packard's Wormwood (*Artemisia packardiae*) – ORNHIC List 4

Artemisia packardiae is a perennial forb from the Asteraceae family. It occurs along the boarder of Oregon, Idaho, and Nevada; it typically grown on basalt rock outcrops in shallow poorly developed soil. It forms a pistillate flower that is typically yellow. It blooms during late summer (eFloras 2008).

Red-fruited lomatium *(Lomatium erythrocarpum)* – Oregon State Endangered; ORNHIC List 1; Oregon BLM Sensitive

L. erythrocarpum is a perennial short-stemmed forb in the carrot family, Apiaceae. The plant is glabrous throughout and grows 2-3 inches tall. Stems, petioles, and peduncles are often purplish. Petals and anthers are purplish-white (petals with a purple midvein), fading to white. Flowering occurs in June through July. Fruits mature by mid-July, and drop by late July or early August. Suitable habitat is comprised of dry, moderately steep south-facing slopes of sandy-stony granodiorite soil and talus. This species occurs between lower shrub-steppe (dominated by mountain mahogany (*Cercocarpus ledifolius*) and big sagebrush (*A. tridentata*) and higher subalpine woodland (dominated by whitebark pine (*Pinus albicaulis*) and Engleman spruce (*Picea engelmannii*)) (Yates 2005).

Retrorse sedge (*Carex retrorsa* **)** – ORNHIC List 2; Oregon BLM Sensitive

A member of the family Cyperaceae, *C. retrorsa* contains leaves with dark reddish brown basal sheaths, mid to dark green blades that are flat to W-shaped Inflorescences 3–20(–35) cm; proximal bract 19–70(–100) cm, (2.5–)3–9 times longer than inflorescence; proximal (2–)3–6 spikes pistillate, ascending to spreading. Fruiting occurs June through Aug. Swamps, wet thickets, often along streams, marshes, sedge meadows, shores of streams, ponds, and lakes (Wilson et al. 2008).

Salt heliotrope (*Heliotropium curassavicum*) – ORNHIC List 2; Oregon BLM Sensitive

H. curassavicum belongs to the family Boraginaceae. Numerous white flowers are arranged in a helicoid fashion. The foliage is grey-green and decumbent (lying on the ground) with peduncles reaching up to 1 foot. This species occurs in association with wetlands. The blooming period is mid-spring (JOI 2011).

Simpon's Hedgehog Cactus (*Pediocactus simpsonii*) – Idaho BLM Type 4

P. simpsonii is a perennial in the Cactaceae (cactus) family. Plants consist of 1 to several globose to ovoid stems. Flowers are borne on the side of the areole at the tubercle apex. Corollas are yellow to purplish. Tubercles in 8-13 spiral longitudinal rows. Lacks longitudinally ribbed stems. Found on rocky or sandy benches and canyon rims in low sagebrush, budsage, and sandberg bluegrass communities, from 2900 to 6000 feet elevation. Blooming period is May through July (Atwood and Debolt 2000).

Smooth Mentzelia (*Mentzelia mollis*) – Oregon State Endangered; ORNHIC List 1; Oregon BLM Sensitive; Idaho BLM Type 2

M. mollis (family Loasaceae) is a small, finely hairy, branching annual growing 2-4.5 inches tall with small bright yellow flowers clustered in a terminal head. Flowering occurs in May and June. *M. mollis* is found only on green or grey montmorillonite derived from the Succor Creek formation with abnormally high potassium content. Restricted to volcanic ash outcrops in the Succor Creek drainage, Malheur County, Oregon and adjacent Idaho at elevations around 4,500 feet (OFP 2007).

Snake River Goldenweed (*Pyrrocoma radiata*) – Oregon State Endangered; ORNHIC List 1; Oregon BLM Sensitive; Idaho BLM Type 3

P. radiata is a large herbaceous perennial in the sunflower family, Asteraceae. Plants have clasping stem leaves and large, yellow headed flowers. Flowering occurs in July; germination may occur both in fall and spring. Dieback depends on severity of frosts. The species is commonly associated with big sage/bluebunch wheatgrass-Sandberg's bluegrass communities. Slopes and aspect vary, but rarely occurs on north slopes. Elevations range from 2,000 to 4,000 feet on shallow, mesic, slightly acidic soils (OFP 2007).

Sterile Milk-vetch (*Astragalus cusickii* var. *sterilis*) – Oregon State Threatened; ORNHIC List 1; Oregon BLM Sensitive; Idaho BLM Type 3

A. cusickii var. *sterilis* (Family Fabaceae) is a small, wiry, perennial herb with one to three 2-6 inch stems arising from an underground rootstock. Leaves have 6 to 8 widely spaced tiny 1/4 inch leaflets. Loosely clustered white flowers grow on an upward curving stem with 2 to 5 blooms per stalk. The species flowers in June and July, although many plants (stems) are often sterile. Flowers are followed by pendulous, inflated, purple mottled green fruit pods. Plants occur on open ash deposits nearly bare of other vegetation in the canyonlands of the Owyhee Uplands (OFP 2007). Given the specialized habitat requirements for this species, exact survey locations will be determined following the comprehensive vegetation and habitat mapping phase.

Stiff milkvetch (Astragalus conjunctus) – Idaho BLM Sensitive

A. conjunctus in a member of the pea family (Fabaceae). It is easily discinguished by its ascending flowers and connate proximal stipules. Habitat includes rocky hilltops, hillsides and canyon benches of sagebrush and steppe-desert communities from elevations of 3,600 to 5,200 feet. Flowers from mid-April through June (Atwood and Debolt 2000).

White-margined waxplant (*Glyptopleura marginata*) – Idaho BLM Type 4

G. marginata is a small (1-3 inches in diameter) prostrate annual herb in the family Asteraceae. Leaves are crustaceous-margined and shallow-lobed. Inflorescences consist of inconspicuous whitish ray flowers which bloom May through June. It occurs in dry sandy-gravelly or loose ash soils among shadscale, greasewood, spiny hopsage, rabbitbrush, winterfat, and sagebrush communities at elevations ranging from 2,600 to 4,000 feet (Atwood and Debolt 2000).

*Species is also considered sensitive in Idaho, but no known occurrences are present within 5 miles of the preferred route.

**Species is a “watch species” (ORNHIC List 4) in the state of Oregon; therefore, not part of the survey there.

ORNHIC LIST AND OREGON & IDAHO BLM RANK EXPLANATIONS

ORNHIC Lists:
List 1: Threatened or Endangered throughout range
List 2: Threatened, Endangered, or extirpated from Oregon; secure elsewhere
List 3: Review species
List 4: Watch species

Oregon BLM rankings:
Sensitive – A designation made by The BLM State Director under national policy (BLM manual 6840). Sensitive species equate to ORNHIC List 1 and 2 parameters.

Strategic – Strategic species equate to ORNHIC List 3 parameters.

Idaho BLM rankings:
Type 1 – Threatened, Endangered, Proposed, and Candidate Species: species listed by the USFWS as Threatened or Endangered, or Proposed or Candidates for listing under the Endangered Species Act (ESA) of 1973.

Type 2 – Rangewide/Globally Imperiled Species – High Endangerment: species with a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors.

Type 3 – Rangewide/Globally Imperiled Species – Moderate Endangerment: species that are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species.

Type 4 – Species of Concern: species that are generally rare in Idaho with small populations and/or localized distribution which currently have low threat levels. Due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

Type 5 – Watch List: species not considered BLM sensitive species, and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats and species biology or statewide trends.

APPENDIX C-3

NOXIOUS WEEDS LIST

APPENDIX C-3
NOXIOUS WEEDS LIST

OREGON AND IDAHO NOXIOUS WEEDS

Common Name	Scientific Name
Oregon Noxious Weeds – List A	
African rue	*Peganum harmala*
Camelthorn	*Alhagi pseudalhagi*
Coltsfoot	*Tussilago farfara*
Cordgrass: common, dense-flowered, saltmeadow, smooth	*Spartina anglica, Spartina densiflora, Spartina patens, Spartina alterniflora*
European water chestnut	*Trapa natans*
Giant hogweed	*Heracleum mantegazzianum*
Goatgrass: barbed, ovate	*Aegilops triuncialis, Aegilops ovata*
Goatsrue	*Galega officinalis*
Hawkweed: king-devil, meadow, mouse-ear, orange, yellow	*Hieracium piloselloides, Hieracium pretense, Hieracium pilosella, Hieracium aurantiacum, Hieracium floribundum*
Hydrilla	*Hydrilla verticillata*
Kudzu	*Pueraria lobata*
Matgrass	*Nardus stricta*
Oblong spurge	*Euphorbia oblongata*
Paterson's curse	*Echium plantagineum*
Purple nutsedge	*Cyperus rotundus*
Silverleaf nightshade	*Solanum elaeagnifolium*
Skeletonleaf bursage	*Ambrosia tomentosa*
Squarrose knapweed	*Centaurea virgata*
Starthistle: Iberian, purple	*Centaurea iberica, Centaurea calcitrapa*
Syrian bean-caper	*Zygophyllum fabago*
Texas blueweed	*Helianthus ciliaris*
Plumeless smooth distaff	*Carduus acanthoides*
Taurian woolly distaff	*Carthamus baeticus*
White bryonia	*Bryonia alba*
Yellow floating heart	*Nymphoides peltata*
Medusahead rye	*Taeniatherum caput-medusae*
Old man's beard	*Clematis vitalba*
Parrots feather	*Myriophyllum aquaticum*
Perennial peavine	*Lathyrus latifolius*

Common Name	Scientific Name
Oregon Noxious Weeds – List B	
Biddy-biddy	*Acaena novae-zelandiae*
Buffalobur	*Solanum rostratum*
Butterfly bush	*Buddleja davidii (B. variabilis)*
Common bugloss	*Anchusa officinalis*
Common crupina (bearded creeper)	*Crupina vulgaris*
Creeping yellow cress	*Rorippa sylvestris*
Cutleaf teasel	*Dipsacus laciniatus*
Dodder	*Cuscuta spp.*
Dyers woad	*Isatis tinctoria*
English ivy	*Hedera helix (H. hibernica)*
Eurasian watermilfoil	*Myriophyllum spicatum*
False brome	*Brachypodium sylvaticum*
Field bindweed	*Convolvulus arvensis*
Garlic mustard	*Alliaria petiolata*
Giant horsetail	*Equisetum telmateia*
Gorse	*Ulex europaeus*
Halogeton	*Halogeton glomeratus*
Himalayan blackberry	*Rubus aremeniacus (R. procerus, R. discolor)*
Houndstongue	*Cynoglossum officinale*
Johnsongrass	*Sorghum halepense*
Jointed goatgrass	*Aegilops cylindrical*
Jubata grass	*Cortaderia jubata*
Diffuse knapweed	*Centaurea diffusa*
Meadow knapweed	*Centaurea pratensis (C. jacea x C. nigra)*
Russian knapweed	*Acroptilon repens*
Spotted knapweed	*Centaurea stoebe (C. maculosa)*
Giant Himalayan knotweed	*Fallopia sachalinensis (Polyganum)*
Japanese knotweed (fleece flower)	*Fallopia japonica (Polyganum cuspidatum)*
Kochia	*Kochia scoparia*
Lesser celandine	*Ranunculus ficaria*
Mediterranean sage	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Old man's beard	*Clematis vitalba*
Parrots feather	*Myriophyllum aquaticum*
Perennial peavine	*Lathyrus latifolius*
Idaho Noxious Weeds – EDDR List	
Brazilian elodea	*Egeria densa*
Hydrilla	*Hydrilla verticillata*

Common Name	Scientific Name
Policeman's helmet	*Impatiens glandulifera*
Squarrose knapweed	*Centaurea squarrosa*
Syrian Beancaper	Zygophyllum fabago
Tall hawkweed	*Hieracium piloselloides*
Water hyacinth	*Eichhornia crassipes*
Yellow devil hawkweed	*Hieracium glomeratum*
Idaho Noxious Weeds – Control List	
Black henbane	*Hyoscyamus niger*
Bohemian knotweed	*Polygonum bohemicum*
Buffalobur	*Solanum rostratum*
Common crupina	*Crupina vulgaris*
Dyer's woad	*Isatis tinctoria*
Eurasian watermilfoil	*Myriophyllum spicatum*
Giant knotweed	*Polygonum sachalinense*
Japanese knotweed	*Polygonum cuspidatum*
Johnsongrass	*Sorghum halpense*
Matgrass	*Nardus stricta*
Meadow knapweed	*Centaurea pratensis*
Mediterranean sage	*Salvia aethiopis*
Musk Thistle	*Carduus nutans*
Orange Hawkweed	*Hieracium aurantiacum*
Parrotfeather milfoil	*Myriophyllum aquaticum*
Perennial Sowthistle	*Sonchus arvensis*
Russian Knapweed	*Acroptilon repens*
Scotch Broom	*Cytisus scoparius*
Scotch Thistle	*Onopordum acanthium*
Skeletonleaf Bursage	*Ambrosia tomentosa*
Small bugloss	*Anchusa arvesis*
Toothed Spurge	*Euphorbia dentata*
Vipers bugloss	*Echium vulgare*
Yellow hawkweed	*Hieracium caespitosum*
Idaho Noxious Weeds – Containment List	
Canada thistle	*Cirsium arvense*
Dalmatian toadflax	*Linaria genistifolia* ssp*. dalmatica*
Diffuse knapweed	*Centaurea diffusa*
Field bindweed	*Convolvulus arvensis*
Hoary allysum	*Berteroa incana*
Houndstongue	*Cynoglossum officinale*
Jointed goatgrass	*Aegilops cylindrica*

Common Name	Scientific Name
Leafy spurge	*Euphorbia esela*
Milium	*Milium vernale*
Oxeye daisy	*Crysanthemum leucanthemum*
Perennial pepperweed	*Lepidium latifolium*
Plumeless thistle	*Carduus achanthoides*
Poison hemlock	*Conium maculatum*
PunctureVine	*Tribulus terrestris*
Purple loosestrife	*Lythrum salicaria*
Rush Skeletonweed	*Chondrilla juncea*
Saltcedar	*Tamarix* sp.
Scotch Thistle	*Onopordum acanthium*
Spotted Knapweed	*Centaurea stoebe* ssp. *micranthos*
Tansy Ragwort	*Senecia jacobaea*
White bryony	*Bryonia alba*
Whitetop (hoary cress)	*Cardaria draba*
Yellow starthistle	*Centaurea solstitialis*
Yellow Toadflax	*Linaria vulgaris*

APPENDIX C-4

BLM COVER AND SPECIES DOMINANCE PROTOCOLS AND WORKSHEETS

APPENDIX C-4

BLM COVER AND SPECIES DOMINANCE PROTOCOLS AND WORKSHEETS

Completing the BLM Cover Worksheet

From BLM Technical Reference 1734-6, Interpreting Indicators of Rangeland Health (2000)

The Cover Worksheet is divided into two sections: The Life Forms section, where canopy cover is estimated for important life forms (e.g., grass, forb, shrub, tree, succulents, and biological crusts) and the Ground Cover section, where the amount (cover) of bare ground, litter, standing dead vegetation, rock/gravel, biological crust, and plants are estimated.

Canopy cover is the percentage of the ground covered by plant foliage. When estimating canopy cover, small openings (less than 2 inches in diameter) within the canopy are included as cover. Canopy cover of plants removed by grazing is not reconstructed to pregrazing canopy for this estimate. Estimate only the canopy cover present at the time the evaluation is conducted. This ensures an accurate picture of the actual site protection from raindrop impacts at the time that the assessment is conducted.

The cover in the Life Forms section includes cover estimates of the overlapping canopies of different life forms. For example, the cover of both a grass beneath a shrub canopy and the canopy cover of the shrub are estimated and recorded on the worksheet in the appropriate categories. The subdivisions of life forms for each life form class (e.g., annuals, native perennial, exotic perennial under the Grass category) may be deleted and other categories added to better represent local vegetation. The cover ranges may also be changed to better fit natural or ecologically relevant breaks in cover for different areas.

The Ground Cover section represents the proportion of the soil that is protected from being hit directly by a raindrop. Ground cover is the percentage of material (e.g., litter, standing dead vegetation, gravel/rocks, vascular plants, and biological crust), covering the land surface. In contrast with the Life Forms section, overlapping cover classes are not estimated.

Ground cover is estimated by recording cover estimates of the first contact (i.e., highest contact above soil surface) with live vascular plants, standing dead vegetation, litter, biological crust, rock/gravel, and bare ground. The sum of these six cover categories should

roughly total 100 percent, given the use of ranges of cover instead of discrete cover values on the form. If cover measurements are taken, they may be inserted into the Cover Worksheet in lieu of a checkmark for the appropriate cover category.

The total cover of the vegetation Life Forms will not necessarily equal the Vascular Plants cover value in the Ground Cover section since the former contains cover estimates for overlapping canopies while the latter does not. The litter category in the Ground Cover section includes both persistent and non-persistent litter. Litter includes all dead organic matter in contact with the soil surface. Standing dead vegetation includes all plants that have been dead more than one growing season that are not in direct contact with the soil surface. Standing dead vegetation is important in protecting the site from raindrop contact, while litter provides the same site protection and is an important source of organic matter via decomposition in many areas. The rock/gravel category includes all material with a diameter greater than 0.2 inch. Any gravel less than this diameter is recorded as bare ground.

Biological crust includes lichens, mosses, cyanobacteria, and algae that grow on the soil surface. It is sometimes difficult to differentiate biological crust from bare soil or dead organic matter during the dry portion of summer. Spraying questionable areas with water and waiting a minute will often give live lichens or mosses a greenish tinge indicating live tissue. Conversely, cyanobacteria crusts are often very difficult to identify, especially when weakly developed, without a careful examination of the internal structure of the crust. Cyanobacteria crusts are generally not included when estimating cover.

Completing the Species Dominance Worksheet

The Species Dominance Worksheet is used to identify the dominant species based upon either production or cover. State or federally listed noxious weeds and invasive plants are also recorded. The evaluator(s) should be trained in the identification of all state or federally listed noxious weeds prior to conducting any evaluations. New noxious weed locations should be reported immediately to the appropriate person or office.

Part 1 is required, while Part 2 (Dominant Species by Life Form) is recommended but not required. Do not reconstruct canopy cover or production when determining species dominance if utilization of plants has occurred. It is not necessary to fill each blank in the list with a plant name if additional dominant species in that life form are not present or are rare.

Cover Worksheet

State _____ **Office** _____ **Ecological Site** _____

Observer(s) _____ **Date** _____ **Site ID** _____

	COVER CLASSES (% Canopy)							
LIFE FORMS[1]	0	0-1	2-5	6-15	16-30	31-50	51-75	76-100
I - Grass								
Annual								
Native Perennial								
Exotic Perennial								
II - Forb								
Annual								
Perennial								
III - Shrub								
IV - Tree								
V - Succulent								
VI - Biological Crust								

% GROUND COVER[2]	0	0-1	2-5	6-15	16-30	31-50	51-75	76-100
I - Vascular Plants								
II - Standing Dead Vegetation								
III - Litter (in contact with the soil surface)								
IV - Biological Crust								
V - Rock/Gravel								
VI - Bare Ground								

[1] **Life Forms Cover** - Record multiple canopy cover classes; total plant canopy may exceed 100%. Small openings (less than 2" in diameter) are included as cover.

[2] **Ground Cover** - Category I is an estimate of total vascular plant cover; overlapping canopies are counted as only **one** canopy (record life form with first point of contact). Total vascular plant cover (I) together with the sum of cover in Categories II-VI should total to approximately 100%.

Notes: Include source of cover data (e.g., estimates or measurements)

Species Dominance Worksheet

Part 1 (Required)

The most common species, noxious weeds (state-listed plants), invasive natives, invasive exotics (non-noxious) are **ranked** according to dominance using cover ☐ or weight ☐.

Dominant Species on Site

1 _____
2 _____
3 _____
4 _____

Noxious Weeds

1 _____
2 _____
3 _____

Invasive Natives

1 _____
2 _____
3 _____

Invasive Exotics

1 _____
2 _____
3 _____

Part 2 (Optional) **Dominant Species by Life Form**

The most common species are ranked according to dominance using cover ☐ or weight ☐ by life form.

Annual Grasses

1 _____
2 _____
3 _____

Annual Forbs

1 _____
2 _____
3 _____

Perennial Grasses

1 _____
2 _____
3 _____

Perennial Forbs

1 _____
2 _____
3 _____

Shrubs and Trees

1 _____
2 _____
3 _____

Succulents

1 _____
2 _____
3 _____

Biological Crust (rate by component not species, e.g., lichen, moss, or algae)

1 _____
2 _____
3 _____

APPENDIX C-5

OREGON AND IDAHO
RARE PLANT OBSERVATION FORMS

OREGON NATURAL HERITAGE INFORMATION CENTER
RARE PLANT FIELD SURVEY FORM

Please complete all entries in the top section above the heavy line. Please complete as much as possible the more detailed section below the heavy line. You may use the back for comments or additional space. If possible, please attach a map of the location, preferably something of the same quality as a USGS 7.5' map.

Scientific Name: _____

Date of Field Work: _____ County: _____ Collection: ___Yes (_____), ____No
mo. day year coll # , herbarium

Directions: _____

_____

Reporter: _____ Phone: _____

Address: _____

1. LOCATION - Attach separate map or sketch a map indicating exact site, scale and proximity to prominent features.

A. Plant found? ___Yes ___No If no, reason: _____

B. Location: T_____ R_____ Sec_____ _____1/4 of _____1/4 (use back for more TRS)

C. Source of GPS coordinates (circle one): GPS (make & model_____) or map (type & scale_____)

GPS differentially corrected? ___Yes ____ No

Datum (circle): Nad 27, Nad 83, other_____. Easting/Longitude_____Northing/Latitude_____

Coordinate System (circle): UTM (Zone 10), UTM (Zone 11) or Latitude/Longitude

D. Owner/Manager: _____

2. SPECIES BIOLOGY

A. Phenology: _____% in flower, _____% in fruit, _____% in leaf

B. Population size: Number of plants: _____ Area occupied: _____

C. Age Class: _____% seedlings, _____% immature, _____% 1st year, _____% mature, _____% senescent

3. HABITAT

A. Plant communities/Habitat Description/Associated species: _____

_____

_____

B. Aspect: _____ (enter compass direction(s) or degrees)

C. Slope: _____slight (0°-20°), _____moderate (20°-45°), _____extreme (45°+), ____vertical

D. Topographic position: _____crest, _____upper slope, _____mid-slope, _____lower slope, _____bottom

E. Light: _____open, _____filtered, _____shade

F. Moisture: _____inundated, _____saturated, _____moist, _____dry

G. Elevation range: _____ to _____ (choose unit: feet or meters)

H. Substrate/soil: _____

I. Visible threats/potential disturbance: _____

4. DETERMINATION - How was plant identified? (choose one or more, please fill in the source for each choice)

_____keyed in flora , _____compared with specimen, _____compared with photo/drawing,
_____identified by someone else, _____other .

Source (name of flora/which specimen/which drawing/name of identifier): _____

5. PHOTOGRAPHS/SLIDES

Did you take a print or slide: _____Yes (specify which), _____No. May we obtain duplicates at our cost? ___Yes ___No

Oregon Natural Heritage Information Center / 1322 SE Morrison Street / Portland, Oregon 97214 / 503-731-3070 phone & fax

IDAHO RARE PLANT OBSERVATION REPORT

Fill out the form by tabbing through and completing the fields. Some fields contain check boxes and drop-down menus. If you do not have information for the field, leave it blank. Use F1 for help in any shaded field. E-mail completed form to scooke@idfg.state.id.us or send to Botany Information Manager, Idaho Conservation Data Center, Idaho Department of Fish and Game, PO Box 25, Boise, ID 83707.

Species: _____ Date of Observation: _____

Observer(s): _____

Agency/Organization/Company: _____

Address:_____

Phone: _____

County:_____ Quad: _____

Township: _____ Range: _____ _____ 1/4 of _____ 1/4 of Section _____

Township: _____ Range: _____ _____ 1/4 of _____ 1/4 of Section _____

GPS Information: Enter **either** UTMs **or** latitude/longitude coordinates from GPS, as well as datum, way points (optional) and accuracy information in the table below. **If you did not take GPS readings, please leave this table blank.**

Have your GPS Coordinates been differentially corrected? Yes ☐ No ☐ Unsure ☐

Do you have this report location digitized already? Yes ☐ No ☐

If yes, you may send shape-files in lieu of a paper map. Did you submit shape-files with this form? ☐ Yes ☐ No.
If yes, list projection of shape-files:
Please give the parameters if the projection is not standard:

Datum	Way Point	UTM Northing	UTM Easting	Latitude	Longitude	Accuracy
Datum	WP#					+/-
Datum	WP#					+/-

If you have more coordinates, please list them under Additional Comments.

Minimum Elevation: _____ ft. Maximum Elevation: _____ft.

Stand # or other identification #: _____

Directions (be specific):_____

Is this a new location? ☐Yes ☐ No ☐ Unsure? Give occurrence # if known:_____

Mapping Instructions:, If submitting paper maps, complete A - C. If submitting shape–files complete parts B and C.

A) Please attach a photocopy of the appropriate part of the USGS 7.5 minute quad (or comparable map) and delineate the population and all subpopulations (if present) on the map using the guidelines listed below. **Label subpopulations if you have population and/or habitat information for them.**

* If the population/subpopulation area is < 12.5 meters (40 ft.) in diameter, place a single point on the map marking its location. If necessary, indicate these point locations with an arrow so they are easier to see.

* If the population/subpopulation area is >12.5 meters (40 ft.) in diameter, draw a polygon on the map marking its location.

* If the population/subpopulation follows the boundary of a trail, lake, stream, road, etc., draw the boundary on the edge of this feature. Where needed, add notes on where boundary lines are.

B) How accurately do you feel you mapped or digitized the population compared to its actual location on the ground? Use the guidelines to determine how many meters (m) or miles on the ground correspond to millimeters (mm.) or inches (in.) on a 1:24,000 scale map. Within 25 m (0 - 1 mm. on map) Custom:

C) I sent a hard-copy map via U.S. mail. Other:

Population Information - Please fill in this section with the information for the **entire population**. If subpopulations exist and you have information for them, complete the subpopulation information forms on the last page.

Total # of individuals in the population(s) is _____ ☐ Actual ☐ Estimated

What was counted? ☐ Genets ☐ Ramets ☐ N/A (non-vascular etc.) ☐ Unknown

Phenology: _____% seedling _____ %non-reproductive _____ % reproductive _____ % dormant _____ % unknown

The size of the population area is _____

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Do you feel you mapped the full extent of the population? ☐ Yes ☐ No ☐ Unsure

Is there more potential habitat in the area that hasn't been surveyed? ☐ Yes ☐ No ☐ Unsure

The survey was: ☐ very thorough ☐ somewhat thorough ☐ cursory ☐ incidental observation

Additional population comments: _____

Habitat Description – Please fill in this section with information for the **entire population**, using ranges where appropriate. If subpopulations exist and there is specific habitat information or threats that need noting, use the forms on page 4. Please avoid abbreviations if possible, thanks!

General habitat description: _____

Aspect: _____ Slope: _____

Substrate/soil: _____

Light regime: _____

Community type: _____

Associated Species include: _____

Look-alike species that are present: _____

Comment on threats to the population and its immediate habitat including **level** and **imminency** of threat if known.

Include factors such as land use, disturbance, disease or predation, invasive weeds, etc: _____

CONDITION is an integrated measure of the quality of biotic and abiotic factors, structures, and processes **within** the occurrence, and the degree to which they affect the continued existence of the occurrence. Condition has the following components: reproduction and health for species, ecological processes, species composition and biological structure, and abiotic/chemical factors.

Briefly comment on the **CONDITION** of the occurrence:

Overall **condition** is: A (excellent)

LANDSCAPE CONTEXT is an integrated measure of the quality of biotic and abiotic factors, structures, and processes **surrounding** the occurrence, and the degree to which they affect the continued existence of the EO. Components of Landscape Context are: landscape structure and extent, including genetic connectivity, and condition of the surrounding landscape.

Briefly comment on the **LANDSCAPE in the area surrounding the population**. Include factors such as current and past land use (farmland, residential area etc.), disturbance factors, and fragmentation: _____

Overall **landscape** is: A (excellent)

Land Owner/Managers (forest/ranger district/BLM/ or private land owner if known): _____

Owner Comments: _____

Management, Monitoring, and Research Needs (include any steps that you think should be taken to protect the population): _____

Collector/Collection #:_____ Herbarium:_____

Photo Attached? ☐ Yes ☐ No

Other knowledgeable individuals: _____

Additional Comments (anything you think is important that did not fit in any other space on the form):

_____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

Subpopulation Information

Subpopulation # _____ Subpopulation area: _____

The total # of individuals in subpopulation is _____ ☐ Actual ☐ Estimated

Population vigor is ☐ excellent ☐ good ☐ fair ☐ poor

Habitat information: _____

Threats to this subpopulation: _____

APPENDIX D-1

WETLAND DETERMINATION DATA FORM
ARID WEST REGION

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D-2

WETLAND DETERMINATION DATA FORM
WESTERN MOUNTAINS, VALLEYS,
AND COAST REGION

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D-3

OREGON RAPID WETLAND ASSESSMENT PROTOCOL MANUAL

VERSION 2.0.2

JULY 2010



Manual for the Oregon Rapid Wetland Assessment Protocol (ORWAP)

version 2.0.2

Paul Adamus, Ph.D.
Adamus Resource Assessment, Inc.

Janet Morlan, PWS
Kathy Verble, CPSS
Oregon Department of State Lands

APPENDIX E

B2H SPECIAL STATUS SPECIES LIST

B2H SPECIAL STATUS SPECIES LIST

FEDERAL AND STATE LISTED WILDLIFE SPECIES; AS WELL AS MIS AND BLM / FOREST SERVICE SENSITIVE SPECIES

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3/]	USFS R6[4/]	ODFW[5/]	Potential Habitat within Route	State (along route)
MAMMALS								
Gray Wolf (*Canis lupus*)	E (outside the NRM DPS)	FRFO	VALE	Idaho: Type 1	UMA; WAW	LE	Y	Oregon
Canada Lynx (*Lynx canadensis*)	T	FRFO;	VALE; PRIN	Idaho: Type 1	UMA; WAW		N	Oregon
Northern Idaho Ground Squirrel (*Spermophilus brunneus brunneus*)	T	FRFO		Idaho: Type 1			N	Idaho
Southern Idaho Ground Squirrel (*Spermophilus brunneus endemicus*)	C	FRFO		Idaho: Type 1			N	Idaho
Washington ground squirrel (*Spermophilus washingtoni*)	C		VALE; PRIN			LE	Y	Oregon
Pygmy Rabbit *(Brachylagus idahoensis)*		FRFO	VALE; PRIN	Idaho: Type 2 Oregon: Sensitive		SV	Y	Idaho and Oregon
White-tailed Jack Rabbit (*Lepus townsendii*)						SV	Y	Oregon
Wolverine (*Gulo gulo*)	C	FRFO (North American sub-species)	PRIN	Idaho: Type 3 Oregon: Sensitive (California Subs.)	UMA; WAW (MIS) (California subsp)	LT	Y	Oregon
Fisher (*Martes pennanti*)		FRFO	PRIN	Idaho: Type 3 Oregon: Sensitive	WAW	SC	Y	Oregon
American Marten (*Martes martes*)					UMA (MIS); WAW (MIS)	SV	Y	Oregon
Kit Fox *(Vulpes velox)*			VALE	Idaho: Type 4 Oregon: Sensitive			N	Oregon
Rocky Mountain Elk (*Cervus canadensis*)					WAW (MIS)		Y	Oregon
Fringed Myotis (*Myotis thysanodes*)		FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive		SV	Y	Idaho and Oregon
Spotted Bat *(Euderma aculatum)*		FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive		SV	Y	Idaho and Oregon
Townsend's Big-eared Bat (Corynorhinus townsendii)		FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive	UMA	SC	Y	Oregon
Pallid Bat (*Antrozous pallidus*)			PRIN	Oregon: Sensitive		SV	Y	Idaho and Oregon
AVIAN								
Bald Eagle *(Haliaeetus leucocephalus)*	Delisted 8/8/2007	FRFO	VALE; PRIN	Idaho: Type 1 Oregon: Sensitive	UMA; WAW (MIS)	LT	Y	Idaho and Oregon
Yellow-billed Cuckoo *(Coccyzus americanus)*	C	FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive		SC	N	Idaho and Oregon
Flammulated Owl (*Otus flammeoulus*)		FRFO		Idaho: Type 3		SV	Y	Oregon
Great Gray Owl (*Strix nebulosa*)						SV	Y	Oregon
Burrowing Owl (*Athene cunicularia*)				Idaho: Type 5		SV	Y	Idaho and Oregon
Greater Sage-grouse *(Centrocercus urophasianus)*	C	FRFO	VALE; PRIN	Idaho: Type 2 Oregon: Sensitive	WAW	SV	Y	Idaho and Oregon
Columbian Sharp-tailed Grouse *(Tympanuchus phasianellus columbianus)*		FRFO	VALE	Idaho: Type 3 (no subsp.) Oregon: Sensitive	WAW	SC	Y	Oregon
Mountain Quail *(Oreotyx pictus)*		FRFO		Idaho: Type 3		SV	Y	Idaho and Oregon

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3/]	USFS R6[4/]	ODFW[5/]	Potential Habitat within Route	State (along route)
Peregrine Falcon *(Falco peregrinus anatum)*		FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive	UMA; WAW (MIS)	SV	Y	Idaho and Oregon
Prairie Falcon *(Falco mexicanus)*		FRFO					Y	Idaho and Oregon
Northern Goshawk *(Accipiter gentilis)*		FRFO			WAW (MIS)	SV	Y	Oregon
Ferruginous Hawk *(Buteo regalis)*		FRFO		Idaho: Type 3		SC	Y	Idaho and Oregon
Swainson's hawk (*Buteo swainsoni*)				Idaho: Type 5		SV	Y	Idaho and Oregon
Common nighthawk (*Chordeiles minor*)						SC	Y	Idaho and Oregon
Three-toed Woodpecker (*Picoides tridactylus*)					UMA; WAW (MIS)	SV	Y	Oregon
Lewis' Woodpecker *(Melanerpes lewis)*		FRFO	VALE; PRIN	Idaho: Type 3 Oregon: Sensitive	UMA (MIS); WAW (MIS)	SC	Y	Oregon
White-headed Woodpecker (*Picoides albolarvatus*)		FRFO	VALE; PRIN	Idaho: Type 4 Oregon: Sensitive	UMA (MIS); WAW (MIS)	SC	Y	Oregon
Williamson's Sapsucker (*Sphyrapicus throideus*)		FRFO			UMA (MIS); WAW (MIS)		Y	Oregon
Pileated Woodpecker (*Dryocopus pileatus*)					UMA (MIS); WAW (MIS)	SV	Y	Oregon
Yellow-bellied Sapsucker (*Sphyrapicus varius*)					UMA (MIS); WAW (MIS)		Y	Oregon
Black-backed Woodpecker (*Picoides arcticus*)					UMA (MIS); WAW (MIS)	SV	Y	Oregon
Hairy Woodpecker (*Picoides villosus*)					UMA (MIS); WAW (MIS)		Y	Oregon
Northern Flicker (*Colaptes auratus*)					UMA (MIS); WAW (MIS)		Y	Idaho and Oregon
Downy Woodpecker (*Picoides pubescens*)					UMA (MIS); WAW (MIS)		Y	Oregon
Mountain Chickadee (*Poecile gambeli*)					UMA (MIS); WAW (MIS)		Y	Oregon
Black-capped Chickadee (*Poecile atricapilla*)					UMA (MIS); WAW (MIS)		Y	Oregon
White-breasted Nuthatch (*Sitta carolinensis*)					UMA (MIS); WAW (MIS)	SV	Y	Oregon
Red-breasted Nuthatch (*Sitta canadensis*)					UMA (MIS); WAW (MIS)		Y	Oregon
Pygmy Nuthatch (*Sitta pygmaea*)				Idaho: Type 5	UMA (MIS); WAW (MIS)		Y	Oregon
White-headed woodpecker *(Picoides albolarvatus)*					UMA (MIS)		Y	Idaho and Oregon
American White Pelican (*Pelecanus erythrorhynchos*)		FRFO	VALE; PRIN	Idaho: Type 2 Oregon: Sensitive		SV	N	Idaho and Oregon
Trumpeter Swan (*Cygnus buccinator*)			VALE; PRIN	Idaho: Type 3 Oregon: Sensitive			N	Idaho and Oregon
Horned Grebe (*Podiceps auritus*)			VALE	Oregon: Sensitive			N	Idaho and Oregon
Calliope Hummingbird (*Stellula calliope*)		FRFO					Y	Idaho and Oregon
Willow Flycatcher *(Empidonax trailii)*		FRFO				SV	Y	Idaho and Oregon
Hammond's Flycatcher *(Empidonax hammondii)*		FRFO					Y	Idaho and Oregon
Olive-sided Flycatcher (*Contopus borealis*)		FRFO				SV	Y	Idaho and Oregon

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3/]	USFS R6[4/]	ODFW[5/]	Potential Habitat within Route	State (along route)
Black Swift (*Cypseloides niger*)			PRIN	Idaho: Type 4 Oregon: Sensitive			N	Oregon
Loggerhead Shrike *(Lanius ludovicianus)*		FRFO				SV	**Y (Incidental with WAGS)**	Idaho and Oregon
Sage Sparrow *(Amphispiza belli)*		FRFO				SC	**Y (Incidental with WAGS)**	Idaho and Oregon
Black-throated Sparrow *(Amphispiza bilineata)*		FRFO				SP	Y	Idaho and Oregon
Grasshopper Sparrow (*Ammodramus savannarum*)			VALE; PRIN	Idaho: Type 5 Oregon: Sensitive		SV/SP	Y	Idaho and Oregon
Yellow Breasted Chat (*Icteria virens*)						SC	N	Idaho and Oregon
Bobolink (*Dolichonyx oryzivorus*)			VALE; PRIN	Oregon: Sensitive		SV	N	Oregon
Tricolored blackbird (*Agelaius tricolor*)			PRIN	Oregon: Sensitive		SP	Y	Oregon
Western Bluebird (*Sialia Mexicana*)						SV	Y	Idaho and Oregon
Sage Thrasher (*Oreoscoptes montanus*)							Y	Idaho and Oregon
Frankllin's Gull (*Larus pipixcan*)			VALE	Oregon: Sensitive		SV	N	Idaho and Oregon
Upland Sandpiper (*Bartramia longicaula*)		FRFO	PRIN	Idaho: Type 4 Oregon: Sensitive	UMA; WAW	SC	Y	Idaho and Oregon
Northern Waterthrush *(Parkesia noveboracensis)*				Oregon: Sensitive			Y	Idaho and Oregon
Brewer's Sparrow *(Spizella breweri)*		FRFO		Idaho: Type 3			Y	Idaho and Oregon
Golden Eagle *(Aquila chrysaetos)*	SOC						Y	Idaho and Oregon
Long-billed Curlew (*Numenius americanus*)				Idaho: Type 5		SV	Y	Idaho and Oregon
Bufflehead (*Bucephala albeola*)			PRIN	Oregon: Sensitive	WAW		N	Idaho and Oregon
REPTILES AND AMPHIBIANS								
Columbia Spotted Frog *(Rana luteiventris)*	C		VALE; PRIN	Idaho: Type 1 Oregon: Sensitive	UMA; WAW	SC	Y	Idaho and Oregon
Oregon Spotted Frog (*Rana pretiosa*)			PRIN	Oregon: Sensitive		SC	N	Oregon
Northern Leopard Frog *(Rana pipiens)*		FRFO	VALE	Idaho: Type 2 Oregon: Sensitive	UMA	SC	Y	Idaho and Oregon
Western Toad *(Bufo boreas)* – Northern Rocky Mountain Population		FRFO				SV	Y	Idaho and Oregon
Woodhouse Toad *(Bufo woodhousii)*		FRFO	VALE	Idaho: Type 3 Oregon: Sensitive		SP	Y	Idaho and Oregon
Inland Tailed Frog (*Ascaphus montanus*)			VALE	Oregon: Sensitive	UMA; WAW	SV	Y	Oregon
Mojave Black-collared Lizard *(Crotaphytus bicinctores)*		FRFO					N	Idaho and Oregon
Longnose Snake *(Rhinocheilus lecontei)*		FRFO		Idaho: Type 3			Y	Idaho and Oregon
Western Ground Snake *(Sonora semiannulata)*		FRFO		Idaho: Type 3			Y	Idaho and Oregon
Common Garter Snake *(Thamnophis sirtalis)*		FRFO					Y	Idaho and Oregon
Sagebrush Lizard (*Sceloporus graciosus*)						SV	**Y (Incidental with WAGS)**	Oregon
Painted Turtle (*Chrtsemys picta*)			VALE	Oregon: Sensitive	UMA	SC	N	Oregon
FISH								
Bull Trout (*Salvelinus confluentus*)	T	FRFO	VALE; PRIN	Idaho: Type 1	UMA; WAW	SC	Y	Oregon
Inland Redband Trout (*Oncorhynchus mykiss gibbsi)*		FRFO	VALE; PRIN		UMA; WAW	SV	Y	Oregon
Oregon Great Basin Redband Trout (*Oncorhynchus myskiss*)						SV	Y	Oregon
Middle Columbia River Steelhead (*Oncorhynchus mykiss* ssp.)	T		PRIN; CEN		UMA; WAW	SV	N (downstream influence)	Oregon
Snake River Basin steelhead (*Oncorhynchus mykiss* ssp.)	T				UMA; WAW	SV	Y	Oregon

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3/]	USFS R6[4/]	ODFW[5/]	Potential Habitat within Route	State (along route)
Snake River Chinook (Spring/Summer/Fall Runs) (*Oncorhynchus tshwatscha* ssp.)	T		VALE; PRIN	Idaho: Type 1 Oregon: Sensitive	UMA; WAW	LT	Y	Oregon
Snake River Sockeye Salmon	E		VALE	Idaho: Type 1	WAW		Y	Oregon
Coho Salmon – (*Oncorhynchus kisutch*) Lower Columbia River DPS- No Designated Critical Habitat	T		PRIN			SV	Y	Oregon
Westslope Cutthroat Trout (*Oncorhynchus mykiss* ssp.)			PRIN	Idaho: Type 2 Oregon: Sensitive	UMA; WAW	SC	Y	Oregon
White Sturgeon (*Acipenser transmontanus*)		FRFO		Idaho: Type 2			Y	Idaho and Oregon
Malheur Mottled Sculpin (*Cottus bendirei*)							N	Oregon
Margined Sculpin (*Cottus marginatus*)							N	Oregon
Pacific Lamprey (*Lampetra tridentata*)				Idaho: Type 2 Oregon: Sensitive		SV	Y	Oregon
INVERTEBRATES								
Meadow Fritillary (*Boloria Bellona)*			VALE; PRIN	Oregon: Sensitive	WAW		Y	Idaho and Oregon
Silver-bordered Fritillary (*Boloria selene)*			VALE; PRIN	Oregon: Sensitive	WAW		Y	Idaho and Oregon
Fir pinwheel (*Radiodiscus albietum)*					WAW		Y	Idaho and Oregon
Bliss Rapids Snail (*Taylorconcha serpenticola*)	T	FRFO		Idaho: Type 1			N	Idaho and Oregon Border

1/ Federally Listed Species: E = Endangered; T = Threatened; C = Candidate; XN = Experimental Non-essential Population; CH = Critical Habitat.
2/ BLM Sensitive Species: FRFO = Four Rivers Field Office; PRIN = Prineville District; VALE = Vale District
3/ BLM Rank: Type 1: Threatened, endangered, proposed and candidate: species listed by the FWS or NMFS as threatened or endangered, or proposed or candidates for listing under the Endangered Species Act of 1973.
Type 2: Rangewide/Globally imperiled: species that are experiencing significant 4 declines throughout their range with a high likelihood of being listed in the foreseeable future due to their rarity and/or significant endangerment factors.
This includes species ranked by the NatureServe heritage program network with a Global rank of G1–G3 or T1–T3 or recent data indicate that the species is at significant rangewide risk and this is not currently reflected by heritage program global ranks.
Type 3: Regional/ State imperiled: species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future if factors contributing to their decline continues. This includes Idaho BLM sensitive species that (a) are not in Type 2, (b) have an S1 or S2 State rank (exception being a peripheral or disjunct species), or (c) score high (18 or greater) using the Criteria for Evaluating Animals for Sensitive Species Status or (d) other regional/national status evaluations (e.g., Partners in Flight scores) indicate significant declines.
Type 4: Peripheral: species that are generally rare in Idaho with the majority of their breeding range largely outside the state (Idaho Conservation Data Center 1994). This includes sensitive species that have an S1 or S2 state ranking, but are peripheral species to Idaho.
Type 5: Watch list: these species are not considered BLM sensitive species and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species' biology or statewide trends. The Watch List include species with insufficient data on population or habitat trends or the threats are poorly understood. However, there are indications that these species may warrant special status species designation and appropriate inventory or research efforts should be a management priority.
Oregon: "Sensitive" refers to naturally-reproducing fish and wildlife species, subspecies, or populations which are facing one or more threats to their populations and/or habitats. Implementation of appropriate conservation measures to address the threats may prevent them from declining to the point of qualifying for threatened or endangered status.
4/ Region 6 Forest Sensitive Species: WAW = Willowa-Whitman National Forest; UMA = Umatilla National Forest;MIS = Management Indicator Species
5/ Oregon Department of Fish and Wildlife: LE = Listed Endangered; LT = Listed Threatened; SC = Critical Sensitive Species; SV = Vulnerable Sensitive Species; SP = Peripheral Species

FEDERAL AND STATE LISTED PLANTS; AS WELL AS BLM / FOREST SERVICE SENSITIVE SPECIES

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3]	USFS R6[4/]	ODA[5/]	Potential Habitat within Route	Potential Field Survey Requirement	State (along route)
Vascular Plants									
FEDERALLY LISTED SPECIES									
Howell's spectacular thelypody (*Thelypodium howellii* ssp. *spectabilis*)	T		VALE (Baker)			SE	Y	Y	Oregon
Slickspot Peppergrass (*Lepidium papilliferum*)	T	FRFO,OFO		Idaho: Type 1			Y	Y	Idaho
STATE LISTED SPECIES **BLM / FS FOREST SERVICE SENSITIVE**									
Biennial stanleya (*Stanleya confertiflora*)		FRFO, OFO	VALE	Idaho: Type 2 Oregon: Sensitive			Y	Y	Oregon / Idaho
Bigelow's four-o'clock (*Mirabilis laevis* var. *retrorsa*)							Y	U	Oregon
Calcareous buckwheat (*Eriogonum ochrocephalum* var. *calcareum*)		FRFO		Idaho: Type 3			U	U	Idaho
Cronquist's stickseed (*Hackelia cronquistii*)		FRFO	VALE (Baker, Malheur)	Oregon: Sensitive		ST	Y	Y	Oregon
Cusick's false yarrow (*Cheanactis cusickii)*		OFO		Idaho: Type 2			Y	Y	Idaho
Cusick's lupine (*Lupinus lepidus* var. *cusickii*)			VALE	Oregon: Sensitive		SE	Y	Y	Oregon
Desert pincushion (*Chaenactis stevioides*)		FRFO, OFO		Idaho: Type 4			Y	Y	Idaho
Dimersia (*Dimeresia howellii)*		FRFO, OFO		Idaho: Type 3			Y	U	Idaho
Douglas' clover (*Trifolium douglasii*)		FRFO	VALE	Oregon: Sensitive			U	U	Oregon / Idaho
Greeley's wavewing (*Cymopteris acaulis* var. *greeleyorum*)		OFO	VALE	Idaho: Type 3 Oregon: Sensitive			Y	Y	Idaho
Janish's penstemon *(Penstemon janishiae)*		OFO		Idaho: Type 3			Y	Y	Idaho
Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*)			VALE	Oregon: Sensitive		ST	Y	Y	Oregon
Least snapdragon *(Sairocarpus kingii)*		OFO					Y	Y	Idaho
Malheur cryptantha *(Cryptantha propria)*		FRFO, OFO					Y	Y	Oregon / Idaho
Malheur yellow phacelia (*Phacelia lutea* var. *calva)*		FRFO, OFO		Idaho: Type 3			Y	U	Idaho
Many-flowered phlox (*Phlox multiflora*)			VALE	Oregon: Sensitive			U	U	Oregon
Mingan's moonwort (*Botrychium minganense*)			PRIN; VALE	Idaho: Type 4 Oregon: Sensitive			U	Y	Oregon / Idaho
Mountain moonwort (*Botrychium montanum*)			PRIN; VALE	Oregon: Sensitive			U	Y	Oregon / Idaho
Mulford's milkvetch (*Astragalus mulfordiae*)		FRFO, OFO	VALE	Idaho: Type 2 Oregon: Sensitive		SE	Y	Y	Oregon / Idaho
Oregon semaphore grass *(Pleuropogon oregonus*)			VALE	Oregon: Sensitive		ST	Y	Y	Oregon

Species	USFWS[1/]	BLM Boise District[2/]	BLM Oregon District[2/]	BLM RANK[3]	USFS R6[4/]	ODA[5/]	Potential Habitat within Route	Potential Field Survey Requirement	State (along route)
Owyhee Clover (*Trifolium owyheense*)		OFO	VALE	Idaho: Type 2 Oregon: Sensitive			Y	Y	Oregon / Idaho
Packard's Mentzelia (*Mentzelia packardiae*)			VALE	Oregon: Sensitive		ST	Y	Y	Oregon
Packard's Wormwood (*Artemisia packardiae*)			VALE				U	U	Oregon / Idaho
Red-fruited lomatium (*Lomatium erythrocarpum*)			VALE	Oregon: Sensitive		SE	Y	Y	Oregon
Retrorse sedge (*Carex retrorsa*)			VALE (Baker)	Oregon: Sensitive			U	U	Oregon
Salt heliotrope (*Heliotropium curassavicum*)		FRFO, OFO	VALE	Oregon: Sensitive		SE	Y	U	Idaho
Simpson's hedgehog cactus (*Pediocactus simpsonii)*		FRFO, OFO		Idaho: Type 4			Y	U	Idaho
Smooth Mentzelia (*Mentzelia mollis*)		OFO	VALE	Idaho: Type 2 Oregon: Sensitive		SE	Y	Y	Oregon / Idaho
Snake River Goldenweed (*Pyrrocoma radiata*)		FRFO	VALE	Idaho: Type 3 Oregon: Sensitive		SE	Y	Y	Oregon / Idaho
Sterile Milk-vetch (*Astragalus cusickii* var. *sterilis)*			VALE	Idaho: Type 3 Oregon: Sensitive		ST	Y	Y	Oregon
Stiff milkvetch (*Astragalus conjunctus*)		OFO		Idaho: Type 5			Y	Y	Idaho
White-margined waxplant *(Glyptopleura marginata*)		OFO		Idaho: Type 4			Y	Y	Idaho

1/ Federally Listed Species: E = Endangered; T = Threatened; C = Candidate; NRM DPS = Northern Rocky Mountain Distinct Population Segment; CH = Critical Habitat.
2/ BLM Sensitive Species: Idaho Boise District - FRFO = Four Rivers Field Office, OFO = Owyhee Field Office; Oregon - PRIN = Prineville District, VALE = Vale District
3/ Idaho: Type 1: Threatened, Endangered, Proposed, and Candidate species. These species are listed by the U. S. Fish and Wildlife Service (USFWS) as Threatened or Endangered, or they are Proposed or Candidates for listing under the Endangered Species Act.
Type 2: Rangewide/Globally Imperiled Species - High Endangerment. These are species that have a high likelihood of being listed in the forseeable future due to their global rarity and significant endangerment factors. Species ranked by the network of Conservation Data Centers and Natural Heritage Programs with Global Ranks of G1-G3 or T1-T3 with a threat priority of 1-9 using the USFWS Listing Priority Criteria.
Type 3: Rangewide/Globally Imperiled Species - Moderate Endangerment. These are species that are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species. Idaho BLM sensitive species that are ranked by the network of Conservation Data Centers and Natural Heritage Programs with Global Ranks of G1-G3 or T1-T3 with (a) a threat priority of 10-12 using the USFWS Listing Priority Criteria or (b) an Idaho Native Plant Society ranking of Priority 1-2 or Sensitive--i.e., Sensitive with the majority of the population on BLM-administered lands.
Type 4: Species of Concern. These are species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species. This includes sensitive species that are not Type 3.
Type 5: Watch List. Watch list species are not considered BLM sensitive species, and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats and species biology or statewide trends. This includes (a) Idaho Native Plant Society Monitor and Review species and (b) Idaho Native Plant Society Sensitive species (Types 2, 3, or 4) that are only suspected to occur in a BLM resource area.
Oregon: "Sensitive" refers to naturally-reproducing fish and wildlife species, subspecies, or populations which are facing one or more threats to their populations and/or habitats. Implementation of appropriate conservation measures to address the threats may prevent them from declining to the point of qualifying for threatened or endangered status.
4/ Region 6 Forest Sensitive Species: WAW = Willowa-Whitman National Forest; UMA = Umatilla National Forest;MIS = Management Indicator Species
5/ Oregon Department Agriculture: LE = Listed Endangered; LT = Listed Threatened; SC = Critical Sensitive Species; SV = Vulnerable Sensitive Species; SP = Peripheral Species
U – Species on agency lists required for surveys, but presence of suitable habitat along survey area corridor is unlikely

APPENDIX F

PRELIMINARY HABITAT CATEGORIZATION BASED ON ODFW HABITAT CATEGORIES

Habitat maps with associated ODFW categories will be prepared for ODFW. The habitat maps will be presented in a map book that contains 11 x 17 inch maps, at a scale of 1:24,000, for Idaho Power Company's (IPC's) proposed route and route alternatives. These will be accompanied by a summary table showing the acres of each habitat type, ODFW habitat category, and rational for assigning the ODFW habitat category. The habitat maps will be refined and finalized based on feedback from ODFW. Any potential changes to the proposed route will be addressed using survey results from Phase 2 and Phase 3 of the Work Plan.

The Oregon Department of Fish and Wildlife (ODFW) has developed a Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-000), that provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. Additionally, the policy establishes consistent goals and standards to mitigate the impacts of a project on fish and wildlife habitats. Although mitigation will certainly be a part of the project's final application for certification (due to the potential impacts related to this type of project), mitigation measures or a mitigation outline are beyond the scope of this document, and will instead, need to be determined and developed in a separate document once impacts are assessed. However, the final step of the habitat mapping process will be to categorize survey areas within the framework of the ODFW habitat mitigation categories. All existing wildlife spatial data will be overlaid to aid in the determination of habitat categories. Examples of wildlife spatial data will include, but are not limited, to:

- raptor nest locations,
- streams containing special status fish,
- greater sage-grouse leks,
- sage-grouse core area habitat ranks,
- Washington ground squirrel habitat,
- designated big game winter range, and
- known extent of special status species habitats.

The categories that will be assigned to the habitat types present within the project area shall be consistent with the requirements found in OAR 635-415-000 and will include Categories 1 through 6, which are defined below.

Habitat Category 1: irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.

(a) The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
(b) The Department shall act to protect Category 1 habitats described in this subsection by recommending or requiring:
    (A) Avoidance of impacts through alternatives to the proposed development action; or

(B) No authorization of the proposed development action if impacts cannot be avoided.

Habitat Category 2: essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.

(a) The mitigation goal if impacts are unavoidable is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 2 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.

(c) If neither 635-415-0025(2)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Habitat Category 3: essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

(a) The mitigation goal is no net loss of either habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 3 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.

(c) If neither 635-415-0025(3)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Habitat Category 4: important habitat for fish and wildlife species.

(a) The mitigation goal is no net loss in either existing habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 4 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through reliable in-kind or out-of-kind, in-proximity or off-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.

(c) If neither 635-415-0025(4)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Habitat Category 5: is habitat for fish and wildlife having high potential to become either essential or important habitat.

(a) The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 5 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat.

(c) If neither 635-415-0025(5)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

Habitat Category 6: Habitat that has low potential to become essential or important habitat for fish and wildlife.

(a) The mitigation goal is to minimize impacts.

(b) The Department shall act to achieve the mitigation goal for Category 6 habitat by recommending or requiring actions that minimize direct habitat loss and avoid impacts to off-site habitat.

Category types 1 through 6 will be assigned to the various habitat types based on the decision tree presented Figure 1.

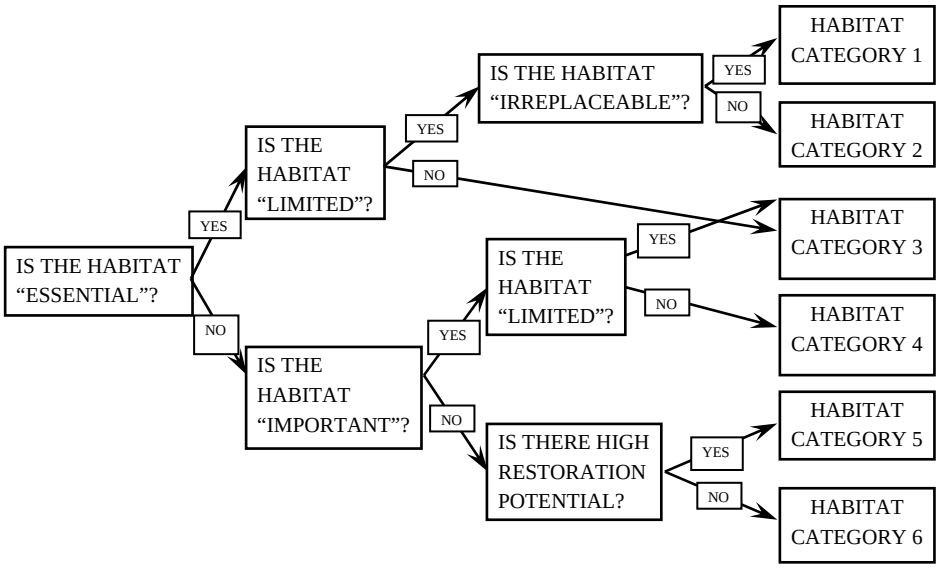


Figure 1. ODFW Habitat Classification System

Table 1 lists the habitat types that are crossed by the project as well as the habitat categories that could be assigned to these habitat types. The habitat categorization types presented in Table 1 are based on a coordination meeting held between IPC and the ODFW on September 30, 2008. (ODFW staff attending the 2008 meeting included Colleen Fagen, James Cadwell, Nick Myatt, and Scott Torland.) The habitat categorization is preliminary at this time, but serves to inform the agencies of the current status of IPC's commitment to address this important aspect of the overall project.

Table 1. Preliminary List of EFSC Habitat Types Crossed by the Project and the Applicable ODFW Habitat Categories.

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
Ponds/Lakes, Streams and Rivers	**Ponds/Lakes** Open water areas, including natural lakes, stock ponds, beaver ponds	Open Water	1 – Threatened or Endangered species present; or spotted frog present 2 – Ponds/lakes that do not contain sensitive species 4 – Stock ponds
	Long-term / Perennial Streams and Rivers Drainages mapped by USGS having permanent (year-round) flow		1 – Threatened or Endangered fish present 2 – Streams that do not contain sensitive species
	Intermittent Streams and Rivers Drainages mapped by USGS as intermittent		2 – Streams that do not contain sensitive species.
Wetland	**Emergent** Herbaceous vegetation dominated by cattails, bulrushes, reed canarygrass, and other emergent plants	Inter-Mountain Basins Alkaline Closed Depression	1 – Wetlands containing Threatened or Endangered species; or raptor nests 2 – Wetlands that do not contain Threatened or Endangered species; or raptor nests
		North American Arid West Emergent Marsh	
		Rocky Mountain Alpine-Montane Wet Meadow	
	Forested Upland streamside forests (defined as areas with a minimum of 40% canopy closure > 20 feet tall), dominated by trembling aspen, cottonwood and willows wild plum, hawthorn	Columbia Basin Foothill Riparian Woodland and Shrubland	1 – Wetlands containing Threatened or Endangered species; or raptor nests 2 – Wetlands that do not contain Threatened or Endangered species; or raptor nests
		Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	
		Northern Rocky Mountain Conifer Swamp	
		Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland	
		Rocky Mountain Lower Montane Riparian Woodland and Shrubland	
		Rocky Mountain Subalpine-Montane Riparian	

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
		Woodland	
	Scrub-shrub Woody vegetation less than 20 feet tall with willows, dogwood and other woody wetland species	Columbia Plateau Silver Sagebrush Seasonally Flooded Shrub-Steppe	1 – Wetlands containing Threatened or Endangered species; or raptor nests 2 – Wetlands that do not contain Threatened or Endangered species; or raptor nests
		North Pacific Shrub Swamp	
		Rocky Mountain Subalpine-Montane Riparian Shrubland	
	Other	Ruderal Wetland	2 – Wetlands that do not contain Threatened or Endangered species; or raptor nests 5 – Low-quality habitat
		Unconsolidated Shore	
Grassland, shrub-steppe and shrubland	**Desert Shrub** Communities on saline soils with shadscale, salt sage, or saltbush-greasewood mixture	Inter-Mountain Basins Greasewood Flat	1 – Washington ground squirrel colonies present 2 – Sensitive species present; or suitable Washington ground squirrel habitat adjacent to documented colonies 3 – Dominated by native species (greater than 75% ground cover is native) 4 – Mix of natives and non-natives, low quality understory (greater than 25% ground cover is native) 5 – Low-quality (weed-infested and/or highly disturbed) habitat. Less than 25% ground cover is native)
		Inter-Mountain Basins Mixed Salt Desert Scrub	
		Inter-Mountain Basins Playa	
	Native Grasslands Grassland areas with few shrubs (not irrigated or cultivated/planted)	Inter-Mountain Basins Semi-Desert Shrub-Steppe	1 – Washington ground squirrel colonies present 2 – Sensitive species present; or suitable Washington ground squirrel habitat adjacent to documented colonies 3 – Dominated by native species (greater than 75% ground cover is native) 4 – Mix of natives and non-natives, low quality understory (greater than 25% ground
		Columbia Basin Foothill and Canyon Dry Grassland	
		Columbia Basin Palouse Prairie	
		Columbia Plateau Steppe and Grassland	
		Northern Rocky Mountain Subalpine-Upper Montane Grassland	

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
		Rocky Mountain Subalpine-Montane Mesic Meadow	cover is native) 5 – Low-quality (weed-infested and/or highly disturbed) habitat. Less than 25% ground cover is native)
	Shrub-steppe with Big Sage Dominated by big sagebrush shrubs, with a variety of other species such as western wheatgrass, Idaho fescue, bitterbrush, basin wild rye.	Inter-Mountain Basins Semi-Desert Grassland Northern Rocky Mountain Lower Montane, Foothill, and Valley Grassland Inter-Mountain Basins Big Sagebrush Shrubland Inter-Mountain Basins Big Sagebrush Steppe Inter-Mountain Basins Montane Sagebrush Steppe	1 – Threatened or Endangered species present (this applies to all habitat types); raptor nests present; Washington ground squirrel colonies present; or greater sage-grouse lek locations present. 2 – Sensitive species present; suitable Washington ground squirrel habitat adjacent to documented colonies; high quality sage-grouse nesting and late brood-rearing habitat present; or big game winter range present 3 – Dominated by native species (greater than 75% ground cover is native) 4 – Mix of natives and non-natives, low quality understory (greater than 25% ground cover is native); or juniper encroachment into shrublands 5 – Low-quality (weed-infested and/or highly disturbed) habitat. Less than 25% ground cover is native)
	Shrub-steppe without Big Sage Shrub areas lacking big sagebrush but supporting other shrubs such as rigid sagebrush, bitterbrush, and rabbitbrush	Columbia Plateau Ash and Tuff Badland Columbia Plateau Low Sagebrush Steppe Columbia Plateau Scabland Shrubland Great Basin Xeric Mixed Sagebrush Shrubland Inter-Mountain Basins Active and Stabilized Dune Northern Rocky Mountain Montane-Foothill	1 – Washington ground squirrel colonies present 2 – Sensitive species present; suitable Washington ground squirrel habitat adjacent to documented colonies; or big game winter range present 3 – Dominated by native species (greater than 75% ground cover is native) 4 – Mix of natives and non-natives, low

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
		Deciduous Shrubland	quality understory (greater than 25% ground cover is native) 5 – Low-quality (weed-infested and/or highly disturbed) habitat. Less than 25% ground cover is native)
		Northern Rocky Mountain Subalpine Deciduous Shrubland	
		Recently burned grassland	
		Rocky Mountain Lower Montane Foothill Shrubland	
	Other	Introduced Upland Vegetation – Annual and Biennial Forbland	5 – Low-quality habitat
		Introduced Upland Vegetation – Annual Grassland	
		Introduced Upland Vegetation – Shrub	
Forest	**Mixed Grand fir/Douglas fir** Forests dominated by Douglas-fir and/or grand fir	Middle Rocky Mountain Montane Douglas-fir Forest and Woodland	1 – Raptor nests present; or old growth stands defined as "overmature" stands (37 or more trees 21+ in dbh/ha, 2 or more snags over 21 in dbh/ha, 2 canopy layers, overstory canopy closure of 10-40%, shrub-sapling layer cover over 40%, understory + overstory combined >70% cover, logs obvious on ground): Definition from Umatilla National Forest Plan, is essential and limited. 3 – Mature stands defined as mature stands (9-20.9 in dbh) (habitat important but not limited, has high restoration potential within lifetime of project) 5 – Grass-forb, Shrub seedling, Pole-sapling defined as Grass-forb, shrubseedling, pole-sapling (1-4.9 in dbh), young (5-8.9 in dbh) (not important, but with restoration potential present but lower than that of mature stands within the life of the project)
		Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	
		Northern Rocky Mountain Mesic Montane Mixed Conifer Forest	
		Northern Rocky Mountain Western Larch Savanna	
		Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	
		Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland	

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
	Monotypic Lodgepole Pine Forests dominated by lodgepole pine	Rocky Mountain Lodgepole Pine Forest Rocky Mountain Poor Site Lodgepole Pine Forest	1 – Raptor nests present; or old growth stands defined as "overmature" stands (37 or more trees 21+ in dbh/ha, 2 or more snags over 21 in dbh/ha, 2 canopy layers, overstory canopy closure of 10-40%, shrub-sapling layer cover over 40%, understory + overstory combined >70% cover, logs obvious on ground): Definition from Umatilla National Forest Plan, is essential and limited 3 – Mature stands (9-?? in dbh) (habitat important but not limited, has high restoration potential within lifetime of project) 5 – Grass-forb, shrub seedling, pole-sapling (1-4.9 in dbh), young (5-8.9 in dbh) (not important, but with restoration potential present but lower than that of mature stands within the life of the project)
	Mountain Mahogany Areas dominated by mountain mahogany	Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	3 – Dominated by mountain mahogany and often transitional between ponderosa pine and shrub-steppe communities
	Ponderosa Pine Woodlands and forests dominated by ponderosa pine	Northern Rocky Mountain Foothill Conifer Wooded Steppe Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	1 – Raptor nests present; or old growth stands defined as "overmature" stands (37 or more trees 21+ in dbh/ha, 2 or more snags over 21 in dbh/ha, 2 canopy layers, overstory canopy closure of 10-40%, shrub-sapling layer cover over 40%, understory + overstory combined >70% cover, logs obvious on ground): Definition from Umatilla National Forest Plan, is essential and limited. 3 – Mature stands defined as mature stands (9-20.9 in dbh) (habitat important but not limited, has high restoration potential within

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
			lifetime of project) 5 – Grass-forb, Shrub seedling, Pole-sapling defined as Grass-forb, shrubseedling, pole-sapling (1-4.9 in dbh), young (5-8.9 in dbh) (not important, but with restoration potential present but lower than that of mature stands within the life of the project)
	Rocky Mt. Aspen Forests dominated by trembling aspen	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland Rocky Mountain Aspen Forest and Woodland	1 – Raptor nests present; or moist areas dominated by trembling aspen, essential and limited.
	Western Juniper Woodland Open woodlands dominated by western juniper	Columbia Plateau Western Juniper Woodland and Savanna	1 – Raptor nests present; or old-growth stands (defined as containing at least 6 junipers at least 18 inches dbh per acre) 4 – Juniper stands along rocky breaks and ridges 5 – Young juniper stands along rocky breaks and ridges with non-native understory
	Mixed Tamarack Mixed forest with dominant tamarack component	No Corresponding ReGAP classification within project area	1 – Raptor nests present; or old growth stands defined as "overmature" stands (37 or more trees 21+ in dbh/ha, 2 or more snags over 21 in dbh/ha, 2 canopy layers, overstory canopy closure of 10-40%, shrub-sapling layer cover over 40%, understory + overstory combined >70% cover, logs obvious on ground): Definition from Umatilla National Forest Plan, is essential and limited. 3 – Mature stands defined as mature stands (9-20.9 in dbh) (habitat important but not limited, has high restoration potential within lifetime of project) 5 – Grass-forb, Shrub seedling, Pole-sapling defined as Grass-forb, shrubseedling, pole-

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
			sapling (1-4.9 in dbh), young (5-8.9 in dbh) (not important, but with restoration potential present but lower than that of mature stands within the life of the project)
	Other	Harvested Forest – Tree Regeneration	5 – Low-quality habitat
		Introduced Upland Vegetation - Treed	
Agriculture	**CRP Lands** Planted to Grassland-steppe	CRP Lands	2 – Sensitive species present; or irrigated pastures and hay meadows within big game winter range 3 – CRP, planted to grassland-shrub steppe that provide important wildlife habitat 4 – CRP, planted to grassland-shrub steppe that lack later seral stage vegetation or are less important due to land management and topographic locale 5 – Orchards, Vineyards, Wheat Fields, Irrigated poplar plantations; or irrigated, grazed pasture and hay meadows. 6 – Agricultural lands with low potential to become productive wildlife habitat.
	Orchards **Vineyards** **Wheat Fields** **Irrigated Poplar Plantations**	Cultivated Cropland	
	Irrigated Pastures and Hay	Pasture/Hay	
	Meadows	Ruderal Upland - Old Field	
Bare ground, cliffs, talus		Barren Land (Rock/Sand/Clay)	1 – Critical bat habitat 2 – Sensitive species present or cliffs with potential raptor nests 3 – Cliffs and talus slopes and rock outcrops of significant size 6 – Bare ground
		Inter-Mountain Basins Cliff and Canyon	
		Quarries Strip Mines and Gravel Pits	
		Rocky Mountain Cliff, Canyon and Massive Bedrock	
Developed		Developed, High Intensity	2 – Non-jurisdictional wetlands; ditches

EFSC Habitat Type	EFSC Habitat Sub-type	ReGAP Ecological System[1]	Habitat Category
		Developed, Low Intensity	containing sensitive species; or fish bearing ditches 5 – Roads to be decommissioned; or ditches with dirt or gravel channel 6 – Long-term roads; industrial areas; residential areas; or ditches with concrete channel
		Developed, Medium Intensity	
		Developed, Open Space (Parks, Golf Courses, Open Space)	

[1] Ecological Systems classification from ReGAP land cover data (2008) and NatureServe community descriptions (http://www.natureserve.org/explorer/servlet/NatureServe?init=Ecol).

APPENDIX G

AGENCY COMMENTS AND RESPONSES

Agency Comments on the February 2009 Draft B2H Biological Survey Work Plan (Plan)

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
1	ES-4	Exec Sum	BLM, G. Wigglesworth	”Please define or include the reference in which the BLM “intuitive controlled” survey method is derived from.”	Section 3.2.5
2	ES-4	Exec Sum	BLM, G. Wigglesworth	“Please address attributes of botanical surveys that will be collected by the contractor for each land owner whether it be federal, state, or private. Negative survey data will also need to be listed as collected information via GPS.”	Appendix A
3			BLM, G. Wigglesworth	“Please refer to Brent Grasty’s input regards use of data collection standards for GeoBOB.”	Appendix A
4	App D	Appendix	BLM, G. Wigglesworth	“As addressed in the Level 1 meeting February 17th in La Grande, OR previously submitted species known to occur on the preferred site are not within the Draft Biological Survey Work Plan and thus need to be added.”	Entire document
5	App D	Appendix	BLM, G. Wigglesworth	“Within the Appendix D chart it is unclear whose land the surveys for Federal and State Listed Plants will occur on. An additional Land Ownership column would be helpful to clarify this point.”	Sections 2.2 and 3.2
6	ES-2	Exec Sum	ODFW, C. Fagan	“The Department is concerned with the term “incidental observation species” and “incidental wildlife”. These species are Oregon state sensitive species and have been identified by the Department as requiring field surveys. Some of these species can be surveyed for concurrently with other species. Recording incidental observations, however, will not be sufficient.”	Term changed to Terrestrial Visual Encounter Surveys; Section 3.1.9
7	ES-2	Exec Sum	ODFW, C. Fagan	“URS erroneously refers to the survey width of raptor nest locations as 0.5 miles on both sides of the B2H centerline. This should be modified to 1.0 miles on both sides of the centerline (2 mile total width).”	Section 3.1.3
8		Exec Sum	ODFW, C. Fagan	“Pygmy rabbit, long-billed curlew, flammulated owl, sharp-tailed grouse, peregrine falcon, three-toed woodpecker, northern waterthrush, and Columbia spotted frog should be added to the executive summary table outlining wildlife surveys.”	Executive summary; and Sections 3.1.2, 3.1.6, 3.1.7, 3.1.8, and 3.1.9
9		Exec Sum	ODFW, C. Fagan	“Significant differences exist between this executive summary table and the similar table (3-1) on page 16. These differences need to be remedied.”	Executive Summary Table, and Table 1
10	2	1.2	ODFW, C. Fagan	“The survey work plan indicates that approximately 400 miles of access roads will be surveyed in addition to the preferred route. According to the survey plan, access road surveys will only occur with the 14 to 16-foot surface disturbance width. The Department does not believe a survey of surface disturbance width is sufficient to assess potential effects from road construction and maintenance. Therefore, the Department recommends that surveys along access roads and other project features be conducted similar to surveys for the preferred transmission line route.”	Section 1.2
11	2	1.2	ODFW, C. Fagan	“This section should be modified to include that surveys will be conducted along alternative routes when identified or adopted. The Department expects the same survey effort to occur along preferred and alternative routes to ensure sufficient information is collected to adequately assess each route and determine a preferred route.”	Section 1.2 (BLM required surveys will be conducted for each alternative route and project features. EFSC required surveys will be conducted on all ownership types in Oregon for routes and project features that will be submitted in the application for site certificate)
12	6	2.0	ODFW, C. Fagan	“The Department supports the approach being taken for vegetation and habitat mapping and believes that this approach **should,** not would as indicated in the work plan, meet the precision level needed for compliance with our Fish and Wildlife Habitat Mitigation Policy (OAR 635-415). There may be some level of uncertainty and potential for modifications and changes as surveys proceed.”	Entire document
13	8	2.2.1	ODFW, C. Fagan	“Vegetation and habitat mapping will also need to occur along access roads and around other proposed project features such as staging and fly yards.”	Section 2.2
14	14-15	3.1	ODFW, C. Fagan	“The Department would like this section of the survey report expanded to better explain what will occur prior to line construction if private land access is not granted to conduct surveys, per discussions at our February 17, 2009 meeting.”	Section 1.4

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
15	15-16	3.2	ODFW, C. Fagan	"A comprehensive reconnaissance survey will need to occur in all areas potentially affected by construction of the transmission line, including access roads, staging areas, and fly yards and along alternative routes."	Section 1.2
16	16	3.2	ODFW, C. Fagan	"Table 3.1 (B2H Schedule for Completing Biological Field Surveys 2009) is incomplete. A large number of species identified by the Department as requiring field surveys are not included and, as pointed out earlier, this table is significantly different from the table presented in the Executive Summary. Species missing from Table 3-1 are burrowing owl, grasshopper sparrow, loggerhead shrike, long-billed curlew, sage sparrow, sagebrush lizard, white tailed jackrabbit, pygmy rabbit, flammulated owl, sharp-tailed grouse, peregrine falcon, three-toed woodpecker, northern waterthrush, and Columbia spotted frog. Also missing are sensitive species habitats as requested in our meeting January 16, 2009. These include rock outcroppings, talus slopes, cliffs, caves, riparian zones, mature timber stands and permanent and seasonal ponds, lakes, wetlands, and springs."	Executive Summary Table, and Table 1
17	17	4.0	ODFW, C. Fagan	"In previous meetings and correspondence, the Department identified additional species requiring field surveys. Some of these species can be surveyed for concurrently with other species, not incidentally to other species. These species are identified in the previous paragraph. For those species that will be surveyed for concurrently with other species, survey protocols need to be included or additional information added to survey protocols already included in the work plan. For example, the Department has indicated that surveys for sage sparrows, grasshopper sparrows, and burrowing owls can occur concurrently with, or be incorporated into, surveys for Washington ground squirrels. However, a survey protocol is needed to document how surveys for Washington ground squirrels will be used to survey for and document these additional species. Again, the Department does not support the term "incidental species". These species are to be surveyed for concurrently not incidentally to other species. A more suitable title would be concurrent species surveys."	Section 3.1.9
18	17	4.0	ODFW, C. Fagan	"At prior meetings, URS indicated that presence of some species will be inferred based on habitat type mapping. These species need to be identified in the survey work plan."	Sections 2.1.1.1, 2.1.3, 3.3.3, and 3.4.1
19	18	4.1	ODFW, C. Fagan	"Table 4-1 is incomplete and needs to be modified to include species and segments to be surveyed identified in this and previous correspondence from the Department. Differences between this table and previous tables in the work plan need to be reconciled."	Executive Summary Table, and Table 1
20	18-21	4.1.1	ODFW, C. Fagan	"The Department supports the proposed Washington ground squirrel survey protocol. It is consistent with other projects and is used by the Department for determining presence. However, species that will be surveyed for concurrently need to be identified and survey methodology provided within this or a separate protocol. Any additional habitat to survey should also be identified."	Section 3.1.9, Appendix B-9, and Appendix E
21	29-30	4.1.5	ODFW, C. Fagan	Sage-grouse-" ODFW believes the survey methodology proposed is good, but requires a few minor modifications. The protocol should expand on what will occur when a bird or birds are located or flushed, such as ground visits to document the lek."	Section 3.1.2, and Appendix B-2
22	29-30	4.1.5	ODFW, C. Fagan	Sage-grouse - "The survey area also needs to be expanded to include suitable habitat from Craig Mountain to the Baker County line, and contiguous blocks of sage brush."	Sage-grouse survey polygons were provided by ODFW staff for input on survey locations. Additional areas were added (i.e. north of the Baker/Union county line to Craig Mtn). Final survey locations will be confirmed with ODFW prior to the initiation of surveys. In addition, ongoing coordination will occur with the agencies to ensure that survey protocols and areas are appropriate. Section 3.1.2, Appendix B-2, and Section 3 Map Set found in Volume II of the BSWP.
23	30	4.2	ODFW, C. Fagan	"The Department identified sensitive habits that should be avoided as part of the project area and, if unavoidable, should be surveyed during the appropriate time of year and day to identify presence or absence of associated sensitive species. These habitats are not expected to occupy a large area of the proposed project. These sensitive habitats need to be better defined in the work plan and include habitats from the Departments additional survey information provided to URS on January 16, 2009."	Sections 2.2, and Section 3.4.1
24	34-45	5.0	ODFW, C. Fagan	"Surveys in Oregon for state listed plant species should occur where habitat is deemed suitable, not based on known occurrences present within the county."	Section 3.2

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
25	48	6.3	ODFW, C. Fagan	"Wetlands will need to be delineated along access roads, other project features, and along alternative routes in addition to the preferred transmission line route."	Sections 3.3, and 4.3
26	48	6.3	ODFW, C. Fagan	"If impacts are expected to wetland habitats, regardless of jurisdiction, additional species surveys may be required, particularly for amphibian species."	Sections 3.3, 3.4.1, and 4.3
27	App D	Appendices	ODFW, C. Fagan	"Appendix D should be updated based on information contained in this letter and from previous discussions occurring between URS and the Department."	Appendix E (was originally Appendix D in older versions of the document)
28	General	General	ODFW, C. Fagan	"The survey work plans needs to describe in detail what types of surveys and information will be collected and reported for alternative routes. At the February 17, 2009 meeting, URS indicated that the applicant was required to treat alternative routes the same as the proposed routes in the EFSC process. However, URS also indicated that only available information would be used for evaluating alternative routes in the draft EIS. The Department is concerned that the difference in information provided for the preferred route and alternatives in the draft EIS will not allow an adequate assessment and comparison of the alternatives, preventing the Department from making a recommendation on a preferred route and potentially delaying project permitting. According to the Council on Environmental Quality's "A Citizen's Guide to the NEPA, Having Your Voice Heard" the identification and evaluation of alternative ways of meeting the purpose and need of the proposed action is the heart of the NEPA analysis. Agencies are obligated to evaluate all reasonable alternatives or a range of reasonable alternatives in enough detail so that a reader can compare and contrast the environmental effects of the various alternatives. Without survey information from alternative routes, the draft EIS may not allow sufficient comparison of various alternatives."	Entire document
29	NA	4.0	BLM, J. Holderman	"I told Jarod and Aaron that one of the proposed alternative routes would pass through potential habitat for the Southern Idaho ground Squirrel (*Spermophilus brunneus endemicus,* SIDGS) a candidate species for listing. Though the majority of the proposed route in Idaho does not fall on BLM lands they should attempt to gain access to conduct surveys if this is a viable alternative. I did mention to him that the majority of private land has not have been surveyed along this proposed route so if no SIDGS locations show along this route it does not mean they don't occur there. Transmissions lines that provide raptor perches could impact SIDGS populations due to increased predation."	Sections 1.4 and 2.2
30	NA	NA	BLM, J. Holderman	"At this time until I know which alternative routes they are considering carrying forward for analysis its difficult to know if they need to consider additional wildlife surveys."	Comment noted
31	NA	4.0	BLM, M. Yzquerdo	"There were a few corrections on Idaho Power (IP) proposed biological survey work plan. The following species will need surveying within the BLM lands: **SPECIES NEEDED TO BE ADDED** • Pygmy rabbit (Farewell Bend through Ladd Canyon) within the right-of-way. • White-tailed jack rabbit (around Farewell Bend through Pleasant Valley) within the right-of way • All bat species • Columbia spotted frog (in all wetland areas)"	Sections 2.1.3, 3.1.8, and 3.1.9; Appendix B-8, B-9, and B-11
32	NA	4.0	BLM, M. Yzquerdo	"**AREA(S) THAT NEED TO BE ADDED** • Northern goshawk (if the line will extend to Lookout Mountain or Pedro Mountain areas 2mi buffer from line) • Information on proposed alternative routes"	Section 3.14
33	NA	NA	BLM, M. Yzquerdo	"I looked at the proposed alternative routes and all alternative routes were not mapped to potential species to survey. If this is the case, I would need to see the entire routes that are being considered because different wildlife species may exists within the alternative routes. Hopefully, IP can provide that information."	Comment noted. The location of the Proposed Route and route alternatives are provided in the latest version of the Work Plan.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
34	NA	4.1.5	BLM, M. Yzquerdo	"I also noticed that some areas cross over or within sage-grouse lek buffers (Virtue Flat, Magpie Peak) and that goes against State direction for sage-grouse guidelines (2mi buffer). Those areas will have to be re-evaluated."	Within Oregon, each area that intersects a sage-grouse lek 2-mile buffer will be evaluated on a case-by-case basis to explore visual obstructions between the lek and t-line, habitat quality within the buffer, current and historical use of the lek, and existing infrastructure near the proposed facility. These evaluations will be coordinated with the agencies.
35	NA	4.0	BLM, M. Caviness	"As we discussed, surveys for the following species need to be conducted on BLM lands: • Pygmy rabbit • Columbia spotted frog • peregrine falcon • all bat species (acoustic surveys for bats would be adequate)."	Sections 2.1.3, 3.1.3, 3.1.8, and 3.1.9
36	NA	4.0	BLM, M. Caviness	"The Malheur field office will be coordinating peregrine falcon surveys this spring in areas that have potential nesting habitat that also occur within the B2H project area. The data collected from this survey effort can be used for the B2H project, however, all proposed powerline sites may not be covered with our in-house surveys and additional surveys by the contractor will be needed. Prior to these surveys we can provide a habitat analysis report identifying potential nesting sites for peregrines with the understanding that this information is sensitive information that cannot be shared or appear in public documents."	Section 2.1
37	NA	7.0	BLM, M. Caviness	"In review of the Data Collection section of the survey report I noticed that the document does not identify the data elements to be recorded during species surveys. This needs to be clearly defined and agreed to by the agencies. There should be a coordinated meeting with all agencies to agree upon standards and criteria required for species survey data that best meet each agency's database requirements. We would like to receive BLM survey data in the format of GeoBob (Geographic Biota Observations). A data dictionary can be provided to the contractor complete with all data requirements. I would refer to Brent Grasty's comments on this section for more specific GPS standard requirements. We require both surveyed areas and located sites collected be delivered to the agency. This should include spatial data showing where target species surveys occurred but no species were found as well as those sites where the species were found to occur." Document does not identify the data elements to be recorded during species surveys. This needs to be clearly defined and agreed to by the agencies. Would like to receive BLM survey data in the format of GeoBOB.	Appendix A; Appendix B-1 through B-11
38	NA	General	BLM, M. Caviness	"Finally, it was unclear during our last meeting that one of the purposes of the meeting was to discuss using existing data in the draft EIS. Some of these areas have never been surveyed for target species so there is no existing information on species occurrence. Most of the data we have is from incidental observations and not formal surveys and therefore we could not conclude a species is not present just from a lack of existing data. In this case we would have to assume that the species is present if there is suitable or potential habitat. Because this topic wasn't fully addressed in our last meeting, I believe it is necessary to reconvene to discuss what information we should put into the draft EIS."	Section 2.1, and Sections 3.0 and 4.0
39	NA	7.0	BLM, B. Grasty	Numerous comments, please see document "B2H BLM Comments on URS BSWP February 2009 rev 2.24.09."	Comment noted
40	2	1.2	EFSC Biologist, Golder Associates	"The work plan describes project features that will be surveyed in addition to the 250-foot buffer on either side of the preferred route. It indicates that approximately 400 miles of access roads will be required for the project and will be surveyed for target species. No surveys are described for buffer areas on either side of the proposed access roads. Does a survey of the road centerline adequately depict the potential effects of the road on wildlife and vegetation resources?"	Section 1.2

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
41	2	1.2	EFSC Biologist, Golder Associates	"The study area is defined for each species in relation to the centerline of the preferred route; however, it is unclear what studies will occur along proposed alternative routes. Based on comments from Stacey Duncan and Aaron English at the February 17th meeting, Idaho Power may rely on existing data to evaluate alternative routes or may implement studies described in this work plan. I recommend clarification of the intensity of studies that will occur along alternative routes."	Section 1.2 and Table 4
42	6	2.0	EFSC Biologist, Golder Associates	"Vegetation mapping will need to take place along access roads and staging/fly yards."	Section 2.2
43	6	2.0	EFSC Biologist, Golder Associates	"Will the corrections to the map based on ground truthing be applied only to polygons that have been field verified, or will the results of ground truthing be extrapolated? (i.e. if 20% of type A are visited and found to actually be type C on the ground, will all type A polygons be re-mapped as type C or only the 20% visited?)"	Section 2.2
44	15	3.2	EFSC Biologist, Golder Associates	"A reconnaissance field survey needs to include all affected areas (access roads, fly yards and staging areas) if it is intended to ground truth vegetation mapping and identify potential habitat for target species."	Section 2.2
45	17	4.1	EFSC Biologist, Golder Associates	"Does ODFW concur that the list of incidental species to be surveyed for is adequate? Other state sensitive species likely use affected areas."	Section 3.1.9 and Appendix E
46	25	4.1.4	EFSC Biologist, Golder Associates	"Based on comments from the February 17th meeting, is the habitat identified for great gray owl surveys sufficiently broad?"	Mark Penniger (with USFS) was contacted on 3/30/09 to clarify survey areas. He agreed that the proposed survey area was adequate for nesting owls.
47	29	4.1.5	EFSC Biologist, Golder Associates	"Based on comments from the February 17th meeting, sage-grouse lek surveys should take place north of the Baker/Union County line, between the preferred route and Craig Mountain."	Sage-grouse survey polygons were provided by ODFW staff for input on survey locations. Additional areas were added (i.e. north of the Baker/Union county line to Craig Mtn). Final survey locations will be confirmed with ODFW prior to the initiation of surveys. In addition, ongoing coordination will occur with the agencies to ensure that survey protocols and areas are appropriate. Section 3.1.2, Appendix B-2, and Section 3 Map Set found in Volume II of the BSWP.
48	29	4.1.5	EFSC Biologist, Golder Associates	"Based on comments from the February 17th meeting, the window for sage-grouse surveys should be flexible to account for seasonal conditions. Idaho Power surveyors should consult with local ODFW biologists on sage-grouse activity."	Section 3.1.2 and Appendix B-2.
49	29	4.1.5	EFSC Biologist, Golder Associates	"Based on comments from the February 17th meeting, aerial sightings of occasional birds should be followed-up with ground searches (or lek presence should be assumed)."	Survey methods for sage-grouse have been modified based on recommendations obtained from the BLM and ODFW.
50	30	4.2	EFSC Biologist, Golder Associates	"The definition of "suitable special status wildlife habitats" needs to be more clearly defined to explicitly include ODFW's requested habitats (i.e. talus, wetlands, mature stands)."	Section 2.2.3
51	30	4.2	EFSC Biologist, Golder Associates	"Route reconnaissance may take place at any time during the year, including times when sensitive species may be less active or dormant. Are incidental observations adequate to evaluate effects to sensitive species where targeted surveys are not used?"	Yes. We are only documenting presence/absence. The surveys under the Terrestrial Visual Encounter Surveys will document observations of species as well as habitat type and condition. This habitat-based approach will be of more use than species targeted surveys because a single season study could likely miss special status species occurrence. Section 3.1.9.
52	30	4.2	EFSC Biologist, Golder Associates	"How will access road alignments be surveyed for incidental species and their habitats? Wetland species in particular will likely face more significant impacts from roads than from towers."	Sections 3.1.9, 3.3, 4.0, and Appendix B-9
53	44	5.1.5	EFSC Biologist, Golder Associates	"Based on comments from the February 17th meeting, provisions for preventing the spread of noxious weeds should be included for all surveys (i.e. clean field gear/vehicles before traveling to a new site)."	The Plan of Development (POD) will include measures that Idaho Power and its contractors will implement to minimize the spread and establishment of noxious weeds. Survey crews will wash all vehicles (including ATVs) at a commercial facility prior to driving them off-road while conducting surveys. Additionally, crews will minimize driving through large infestations of noxious weeds to the extent possible.
54	48	6.2 and 6.3	EFSC Biologist, Golder Associates	"If wetland identification is limited to the reconnaissance crew staking the preferred alternative centerline, wetlands and streams that may be affected by access roads will be overlooked."	Sections 2.2, 3.3, and 4.3
55	48	6.2 and 6.3	EFSC Biologist, Golder Associates	"If disturbance is planned within 100-feet of a wetland, and delineation is initiated, I recommend a "basic amphibian inventory" at a minimum (Olson, Leonard and Bury 1997)."	Sections 2.1.2, 3.3, and 4.3

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
56	48	6.2 and 6.3	EFSC Biologist, Golder Associates	"Surveys for amphibians are generally recommended in appropriate habitats within two-kilometers (1.2 miles) of a proposed disturbance, because nearby breeding sites are often part of the same population. Breeding activity may shift among sites over time, and the population's long-term viability may depend on a wetland that is not occupied during the year that surveys occur."	Sections 3.3, and 4.3
57	48	6.2 and 6.3	EFSC Biologist, Golder Associates	"Amphibian surveys should be considered in wetlands that are not jurisdictional under federal and state standards (i.e. isolated, artificial wetlands under 1 acre). These sites may provide breeding habitat for western toad. Toads have been known to breed in stock watering ponds."	Protocol level surveys will be conducted in wetlands for the spotted frog, which should be able to detect other amphibian species as well. Continued coordination with agencies regarding surveys will occur. Table 1, Section 3.1.8 and Appendix B-8.
58	ES-3	Exec Sum	USFWS, S. Anderson	"Top of page ES-3 states that greater sage-grouse helicopter lek surveys will be conducted between March 30 and April 17 at locations specified by ODFW specialists. This seems like a very narrow window and depending on the weather, these surveys could span March, April, and into May. We want to make sure that you do not miss peak counts, which could occur early or late, again depending on the weather."	Section 3.1.2, and Appendix B-2
59	NA	4.0	USFWS, S. Anderson	"As per our 12/15/2008 email providing information for recommended surveys for Oregon and Idaho species associated with the B2H Project: The Columbia spotted frog was not included in your draft."	Section 3.1.8 and Appendix B-8
60	NA	5.0	USFWS, S. Anderson	"Shining flat sedge (Cyperus bipartitus) in Idaho was missing from the plant list."	This species has not been included in the Work Plan as it is not considered an Idaho BLM/USFS sensitive species.
61	13	2.3.4	USFWS, S. Anderson	"Bottom of page 13, under "Final Habitat Maps", third bullet refers to greater sage-grouse leks. The Service strongly recommends that you also utilize ODFW's sage-grouse high and moderate habitat categories (August 2005 Greater Sage-Grouse Conservation Assessment and Strategy for Oregon). We recommend staying out of the high and medium viability habitats as these encompass vital rearing and wintering habitat."	Section 2.2.3
62	NA	4.0	USFWS, S. Anderson	"Bottom of page 13, under "Final Habitat Maps", third bullet refers to greater sage-grouse leks. The Service strongly recommends that you also utilize ODFW's sage-grouse high and moderate habitat categories (August 2005 Greater Sage-Grouse Conservation Assessment and Strategy for Oregon). We recommend staying out of the high and medium viability habitats as these encompass vital rearing and wintering habitat."	Section 2.2.3
63	NA	4.0	IDFG, R. Ward	From email R. Ward to J. Blades B2H Survey 3/6/2009: 1. In Owyhee county add Great Basin collared lizard, groundsnake, long-nosed snake, Columbia Plateau ground squirrel, and Merriam's shrew. 2. At major river crossings (Boise, Snake) add surveys for bald eagles and migratory shore birds, esp. shorebirds, cranes, and waterfowl.	All species will be recorded during concurrent species-specific protocol surveys or TVES (Table 1 and Section 3.19). In addition, ongoing coordination will occur with the agencies to ensure that survey protocols are appropriate.

BLM Comments on the May 2009 Draft B2H Biological Survey Work Plan (Plan)

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
1	NA	NA	D. Mason	If there is a possibility that an alternative may go into Burns and Prineville Districts as well as Malheur NF and Umatilla, I suggest they get a copy of this document to review and participate in the Sept. meeting as well. After attending the public meeting in Baker this week and talking with IPC staff, it sounds as if this is a real possibility.	Page 1, second paragraph of Section 1.0
2	NA	NA	D. Mason	There is no data collection planned, mentioned or provided regarding fish. I realize the alternatives are still open, but there are details in the document for everything except fish. The final document should include what will be done for each phase for fish data analysis, inventory and impact assessment. Actual surveys may not be necessary, depending on where the route goes, but the plan must be in place. There are multiple listed species, regardless of route choices. Evaluation and consultation is required if the project is anywhere within a Category 1 watershed. Category 1 watersheds are those containing listed fish. We have lots.	Sections 2.1.2 and 3.3.3
3	NA	NA	D. Mason	Buffers of streamside vegetation and other management actions in Category 1 watersheds will need to meet PACFISH and INFISH and the Interagency Biological Opinions. This should be stated in the fish section yet to be written.	Section 2.1.2
4	1-10	1.1	D. Mason	Survey details seem to use a lot of aerial surveys (Sage-grouse, raptors). Details of how to conduct these were spelled out in ODFW comments provided in March 2009. Any of these aerial surveys will need to comply with ODFW and IDFG (if provided) standards and procedures.	Appendix B-2 and B-3
5	NA	NA	D. Mason	BLM cannot 'approve' this document until ESA consultation with NOAA and FWS is completed and concurrence is reached with ODFW and IDFG. Therefore, it is my recommendation that they be provided a copy of the document very soon to allow at least 2 -3 weeks review prior to a meeting.	Comment Noted. Staff from NOAA Fisheries and FWS, ODFW, and IDFG have received previous versions of this work plan and are part of the Biological Working Group.
6	3-10	Table 1	M. Caviness	I don't see any mention of using the GeoBob database to collect data or about using the existing data that already exists in GeoBob.	Appendix A
7	3-10	Table 1	M. Caviness	I also do not understand why the comment in phase III "Follow-up surveys of modifications to route access roads, or lay down area prior to constructions" is only listed for some species and not all. These surveys should be conducted for all species.	Section 4.0
8	3-10	Table 1	M. Caviness	Also, preconstruction aerial surveys to check for active nests should be done for goshawks. (Other species are covered, but goshawks were not).	Section 3.1.4
9	3-10	Table 1	M. Caviness	Surveys for Columbia spotted frogs should occur in the phase II data collection. This is a candidate species with FWS and our GeoBob database shows site occurrences in the general area of one of the proposed routes. Clearance surveys of potential habitat that occurs within tower footprints, access road footprints and other disturbance areas should be conducted before construction.	Section 3.1.8
10	3-10	Table 1	M. Caviness	There is a search protocol for pygmy rabbits and burrows that should be implemented during the phase II construction. The method of data collection listed is not clear and does not appear to follow the protocol for doing pygmy rabbit surveys. In addition, there should be follow-up surveys for pygmy rabbits during phase III if any modification to the route, access areas or lay down area changes. (This should be the same verbiage that exists for most species and that I recommend be there for every species as mentioned above).	Sections 3.1.9 and 4.0; Appendix B-10 and B-11
11	3-10	Table 1	M. Caviness	I don't see any mention of bats, mountain quail, bald eagles or some of the other species that we provided comment on and listed as needing to be considered. It is unclear whether or not these species were meant to be in the category "Terrestrial Visual Encounter Surveys" found on page 6. A list of those species we provided that need to be recorded should be listed in an appendix. These species are in the database that Brent Grasty has been working on and intends to provide to the contractor prior to surveys. The list of species and survey protocols should be included in this study plan.	Section 2.1.3 (Bats) Section 3.1.9 (quail) Section 3.1.3 (bald eagles) Appendix E (all species)

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
12	NA	Appendix E	M. Caviness	Appendix E is not a complete list of BLM special status species and is lacking occurrence information for some species on the Vale district. Please refer to the special status species list the Vale district biologists provided. Among the species not addressed are mountain quail and bats.	Appendix E.
13		2.3, 3.1	M. Caviness	The species list under "Wildlife Field Surveys" for site specific surveys is not complete. We discussed which species should be surveyed. I am not sure why these species were selected and others were not. The list has some species of birds and reptiles, but not others. What criteria were used to select these species and deselect those that were previously discussed?	Coordination with the agencies was utilized to develop survey protocols and species lists. See Appendices B, C, and E.
14	NA	2.3	M. Caviness	Coordination with ODFW needs to occur prior to the planning of any aerial surveys. Surveying for raptors and grouse during these important reproductive periods can be very disrupting to the birds. ODFW has specific protocols for doing these types of surveys. These protocols are species specific on methods and timing. ODFW provided these protocols and requirements in their initial comments, but there seems to be some inconsistencies in the document. It is unclear as to why we are doing lek surveys for sage grouse. ODFW has lek attendance information and specific requirements for what is considered an occupied lek versus unoccupied leks. In addition, the BLM has policy that states how far power lines and associated facilities should be from leks. I am also unclear as to why there are two flights for lek surveys. I understand surveying the project area and survey corridor and looking for new leks, but I don't understand the wording on "active" leks, especially considering the direction given by ODFW on criteria for classifying a lek as "inactive" or unoccupied (ODFW wording). The last sentence under 2.3.2 "The objective of the greater sage-grouse surveys is to identify previously unknown active leks" is unclear. You are surveying to document any new leks. The word "active" is just an unneeded adjective.	Section 3.1.2 and Appendix B-2
15	NA	2.3.2	M. Caviness	Other habitat types that are used by sage grouse during different life cycle stages should also be considered when doing surveys. Impacts to brood-rearing and winter habitat should be considered in the EIS analysis. The buffer required around leks helps in protecting the nesting and brood-rearing habitat, however, occurrences of broods during the ground surveys should be documented and those important areas and habitats should be avoided, if possible, or mitigated.	Section 2.2.3 (i.e., sage-grouse habitat models (including brood-rearing and winter habitats) will be included in the habitat mapping process and ODFW habitat categorization process)
16	NA	NA	M. Caviness	I believe that the Burns field office should be involved in the review based on rumors and previously identified routes crossing into that district. The proposed route I saw goes through an area with a number of leks and other special status species occurrences.	Continued coordination will occur with affected agencies throughout the NEPA process.
17	1-10	1.1	M. Caviness	In Table 1 for pygmy rabbits under phase 2 there is a comment to "see below", but no information to follow up. Surveys for pygmy rabbits should follow the protocol developed by Ulmschneider, et al. Surveys for pygmy rabbits do not just include rabbit sightings. Burrows and droppings are considered as well. Any burrows found should be mapped and those areas avoided. This could occur in phase 3 if a proposed route is going near a burrow or other positive sighting. Please contact me if you need a copy of the survey protocol for pygmy rabbits.	Section 3.1.9 and Appendix B-11
18	NA	NA	M. Caviness	As stated above and at previous meetings, there are other species that should be included in the terrestrial encounter surveys. The list that the BLM, FS and ODFW provided include these as does the information that Brent Grasty is sharing with the database he created to capture field data in the format consistent with GeoBob.	Section 3.1.9; Appendix A, and Appendix E
19	1-10	1.1	M. Caviness	Under existing data in Table 1 please add the agencies (BLM, FS). We are providing some information of documented species sightings that should be incorporated in Phase 1.	Table 1
20	NA	NA	M. Caviness	The Forest Service should review this plan for those forest dwelling species that don't occur on BLM lands. In addition, the agencies should be consulted and agree on survey protocol for those species that overlap jurisdictions.	Comment noted. Forest Service has been included in the project's review. In addition, coordination with the Forest Service was utilized to develop the species lists. See Appendices B, C, and E.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
21	29	3.1.7	M. Caviness	Under 3.1.7 in regards to the burrowing owl, it seems that potential habitat for this species is already being identified for specific segments of the project using GAP. Isn't this premature since we don't have an established route yet? Not sure why this information is in the document for this species only. I recommend omitting it and replacing it with the general survey statement of protocol that you have for the other species based on specific habitat needs.	Section 3.1.9.
22	33-34	4.2	M. Caviness	Under Survey Methods for spotted frogs it is unclear what parts of the protocol you are going to use for survey efforts. You describe the different methods under the protocol, but you do not identify which survey method you are going to use. There should be some coordination with the Fish and Wildlife Service on these surveys as the Columbia Spotted frog is a candidate species. Identifying tadpoles and juvenile amphibians can be somewhat difficult and should be done with someone who is experienced with species identification.	The agencies have provided us with a spotted frog protocol (Appendix B-8). This protocol would be used during surveys.
23	NA	NA	J. Holderman	Candidate ground squirrel called the Southern Idaho Ground Squirrel (*Spermophilus brunneus endemicus)*. If any of the transmission line (and it looks like it could from the map) occurs north of the Payette River the proposed route would fall within this species range. Surveys should be conducted for Southern's. If any of the route falls north of Council Idaho (I don't think it does, but they seem to keep changing the route so I'm not for sure) then surveys need to be conducted for Northern Idaho Ground squirrel (*Spermophilus brunneus*) a listed species.	Surveys would be conducted if the Project crosses this species range. Otherwise, any individuals occurring outside of their known range would be identified during TVES.
24	21-22	2.4	G. Wigglesworth	*'Surveys in Oregon and Idaho will be conducted for listed and candidate species **where both** suitable habitat is found within the survey area and known locations occur within the county or watershed.'* This statement implies that the coupling of habitat and known occurrences render a survey, not each individually. Can this be stated to read '*Surveys in Oregon and Idaho will be conducted for listed and candidate species where suitable habitat is found within the survey area and where known locations occur within the county or watershed.'*	The coupling of habitat and known occurrence within a county or watershed will be used to identify survey areas. Performing surveys throughout a county or watershed outside of potential habitat may not be efficient. Performing surveys in potential habitat outside of the known range of the species may not be efficient.
25	NA	2.4.2	G. Wigglesworth	Add geographic known and suspected occurrence areas.	Comment noted.
26	NA	2.4.3	G. Wigglesworth	Add geographic known and suspected occurrence areas. The following reference may be helpful: Colket, B. 2008. Slickspot Peppergrass (*Lepidium papilliferum*) Field Survey and Predictive Distribution Modeling. Idaho Natural Heritage Program. How will *Spiranthes diluvialis* be addressed? USFWS considers all of Idaho to be potential habitat for this species even though there are no documented occurrences in Owyhee County.	Reference provided will be reviewed for inclusion in the survey plan. See response to comment 20 regarding geographic distribution. *Spiranthes diluvialis* is not listed by the USFWS for Owyhee County in Idaho or for the State of Oregon. BLM IM ID-2003-057 does not list this species for the Lower Snake River District. Therefore, it was not included in this plan.
27	22	2.4.4	G. Wigglesworth	USDA/USDI 1998 not listed in references.	Page 45 of Section 5
28	31	3.2.2	G. Wigglesworth	USDA/USDI 1998 not listed in references.	Page 45 of Section 5
29	NA	APPENDIX C-2	G. Wigglesworth	Known geographic range for each species should be listed. Currently only a few species have this information.	Comment noted. Information on known and potential occurrences from previous versions of the survey plan was erroneously included in this version. Statement was removed.

Agency Comments on the October 2010 Draft B2H Biological Survey Work Plan (Plan)

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
1	NA	Data Collection	BLM	BLM will provide updated GeoBob data because new burrowing owl data has been collected since the data layers were provided. BLM will provide an updated version because the state office has been putting data in all summer. The State Office is putting the bat grid data in, but it is uncertain whether they have completed that task or not. BLM will arrange for the information to be provided.	Page 18 of Section 2.1.1
2	NA		BLM	In our previous review BLM indicated that CSF surveys should be moved to phase 2 of the survey process as it was listed as a phase 3 survey. The response was that it was moved to Phase 2, however, after reviewing their newly edited biological survey work plan CSF surveys are still listed in Phase 3 in the phased study plan table. Please adjust the study plan to reflect the change to phase 2. Also, as previously mentioned, Tetra Tech should contact USGS to inquire about CSF surveys that they have been conducting for the (at least) past two years to determine if there might be some overlap. BLM will provide the contact information at USGS.	Page 31 of Section 3.1.8
3	NA		BLM	BLM has indicated in previous comments that there is a specific protocol for pygmy rabbit surveys. This is well known to all who do pygmy rabbit surveys. There is no description in the plan text to explain how pygmy rabbit surveys will be conducted. The plan says that Tetra Tech will use a specific habitat model to identify habitat. This is of concern to BLM because we have found pygmy rabbits in areas on Malheur Resource Area where we would not have expected them, therefore we have a new search image that differs from other parts of Oregon where surveys have been conducted. The phased study plan table indicates that pygmy rabbit surveys will be part of the terrestrial visual encounter surveys. This process will not work for pygmy rabbits. BLM will provide the survey protocol and the surveyor requirements that we (BLM east side biologists) agreed to for requirements for our statewide pygmy rabbit contract. The person conducting the survey needs to know specifically what they are looking for as surveys for pygmy rabbits require being more targeted than cursory. BLM will also provide information on our new search image in perhaps the form of an addendum to the survey protocol. BLM has a contractor conducting pygmy rabbit surveys in the general area of the newly proposed route. There may be overlap with this survey and the proposed route but this will be determined when we receive the report. We do have a written report that coordinates for part of the survey, but work is ongoing to get the digital files of her survey lines and point locations of identified sites. She will be doing more surveys in 2011 in the same general area. BLM will provide those data as well when it is available. Her new search image applies to this general area as this is the only place in MRA, so far, that pygmy rabbits have been identified. Because of it's close proximity, it is possible that the pygmy rabbits may be found within the boundaries of the new proposed route. If there is a burrow system located within the route we would need to mitigate any pole or road placement.	Appendix B-10; and Page 33 of Section 3.1.9.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
4	NA		BLM	BLM has requested bat surveys at every meeting and comment opportunity. The work plan indicates that Tetra Tech would do the terrestrial visual encounter surveys. This will not work for obvious reasons. We have several special status bat species that must be considered during the planning process. BLM is working with colleagues trying to collect literature on impacts from powerlines to bats, but there is literature out there on the impacts from development in general and of course there would be impacts to habitat fragmentation from removal of vegetation to create roads or other infrastructure. BLM has direction from the WO in regards to white nose syndrome (WNS) to identify and consider any potential roosting, hibernacula or maternity sites in the form of caves or mines. This came out in an Instruction Memo along with the protocol for entry into these special habitats and for use in the handling of bats. BLM will provide Tetra Tech with the WNS protocol because they have caves listed under the "crucial habitat" survey section. The surveyors MUST follow the decontamination protocol if they enter the caves. Tetra Tech should identify these habitats early on and notify the district before doing surveys in the caves so that qualified BLM staff could accompany them. For example, there are certain times we would not want them to enter the caves such as during hibernation and if they were to find a maternity colony they need to leave immediately. There are a lot of BLM Instruction memos that outline safety issues as well. They apply to BLM employees and therefore should apply to the contractors. BLM is working on rounding all that information up and will send it to Tetra Tech as soon as it is available. With regard to foraging BLM suggests that we should assume the special status species are present, but the surveys for the crucial habitats will provide information on potential roosting habitat. If there are a number of cliffs, talus slopes or caves then we should consider doing at least acoustical surveys. It all depends on where these sites might be in relation to the line footprint. At the meeting BLM said that they would either provide the mine location GIS layer we have or overlay that layer and relay whether or not we have underground structures within the project area. BLM needs to ask whether or not we are allowed to share that database. We have recently received a database of cave locations for the district as well. We do not have the coordinates, but will be working on getting that information from the state office. That information we will not be able to share with anyone. It is treated the same as archeological sites. Cave locations are covered by the Cave Protection Act and are exempt from FOIA. If there are mine sites within the project area then BLM recommends doing acoustical surveys and depending on the location, for safety reasons, we may need to mitigate or at least fence the site and clearly mark it. If a mine is encountered the location needs to be documented and the district needs to be contacted. Underground workings should not be entered by surveyors.	Page 19 of Section 2.1.3; and Section 3.4.1 (multiple pages).
5	NA		BLM	BLM wants to be clear that we are to receive our data in the GeoBob format and that if any paper forms are used in the field that they are entered into the system so that we receive only electronic data. This may already be taken care of, but it was unclear in the draft plan. Also, when this was brought up at the October 26 meeting it was suggested that this would be discussed at a later time thus insinuating that there might be some issues.	Appendix A
6	NA		BLM	Long-billed curlew surveys should be conducted. They can be expected in Idaho and near Boardman.	Section 3.1.9
7	NA		BLM	Add surveys for northern water thrush, and burrowing owls. BLM has a survey protocol and will provide it.	Section 3.1.9; and Appendix B-10
8	NA		BLM	You will need to also survey and document bald eagle use areas, nests and roosting areas. There is a nest to the southwest of Huntington that was documented by IPC during relicensing. See (IPC) Toni Holthuiheizen's data from Hells Canyon relicensing studies. There may be others along the proposed routes.	Section 3.1.3; Appendix B-3; and Table 4

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
9	NA		BLM	The protocol we should use for the Depot and for the Baker County project is attached (and a MS Word version attached to this email). For the Baker County project, we should develop survey points that completely cover all potential habitat, so we can do a 'wall-to-wall' survey effort within the designated project area. Also attached is the .pdf of the main article by Conway and Simon 2003 (the protocol is in Appendix A). Also attaching another paper by Conway (2008) that deals more specifically with detecting Burrowing Owl nests.	Section 3.1.9; and Appendix B-10
10	NA		Idaho BLM	Idaho BLM is in concurrence with Oregon relative to survey needs and protocol.	Comment noted
11	NA		Idaho BLM	Species we are most concerned with for surveys are: long-billed curlew, western burrowing owl, Mojave black-collard lizard, western ground snake, golden eagle, California bighorn sheep, and sagebrush obligate birds, specifically; greater sage-grouse, loggerhead shrike, sage sparrow, Brewer's sparrow, sage thrasher, and black-throated sparrow.	Section 2.1.1; Section 3.1.2; Section 3.1.3; Section 3.1.9; and Section 4.2
12	NA		Idaho BLM	Idaho does have a specific long-billed curlew survey protocol that may differ from Oregon's. The protocol can be provided by November 23.	Section 3.1.9; and Section 4.2
13	NA	Global	ODOE	ODOE would like further clarity on an amendment process for the work plan, the sharing of field data and analysis between agencies and contractors, the review process and the timing of information availability. ODOE proposes that IPC, BLM and ODOE establish protocols and processes for these issues early in this review process, perhaps through a Memorandum of Understanding or Programmatic Agreement. We will hopefully be able to clarify this process in the next few months as we begin discussions on the contents of the application and what the minimum requirements will be to enable the Department to deem the application complete and move forward through the siting process.	Comment noted. Continued coordination has occurred with the agencies.
14	NA	Global	ODOE	In general, methods for the species survey protocol are included in the appendices. However, within the text, please identify the specific protocol that will be followed, its reference, and reasoning for selection of that protocol. Thus, tell the reader the reference used (name, date), refer to the appendix if applicable, and explain why the specific protocol was selected. For most species, this can be done in a 1-2 sentences. For some species, reasons for not using a different but popular protocol method may be needed. Please do not refer to "later discussions with agencies" for the methods that will be applied. This is important since this project has been ongoing for several years, review staff has changed, and agreements made between some previous reviewing staff for methods may not be known by the current reviewing staff.	Section 3.1; 3.2; and Appendixes B-3 through B-11
15	NA	Global	ODOE	This document floats between metric and English units. Please use English units.	Entire Document
16	NA	Global	ODOE	Please confirm that all planned wildlife surveys as described in the work plan for uncommon species will be recorded using GPS with behavior notes recording breeding, roosting, or other information that may indicate species use of the habitat.	Appendix A
17	NA	Global	ODOE	B2H Habitat Mitigation Plan. If referred to in the work plan, this mitigation plan, or at least the overall approach to the mitigation plan in light of the phased survey approach, will need to be provided. Otherwise, it is not possible to understand how the work plan will be consistent with the mitigation plan.	Appendix F
18	NA	Global	ODOE	The ODFW Habitat Mitigation Policy is for both fish and wildlife. However, fish and their associated habitat are excluded from field surveys. How can ODFW habitat categories be developed for threatened and endangered fish and their critical habitat if no surveys are conducted? Although the transmission line will not affect fish, impacts will occur from road crossings, culverts, and access road sedimentation. How can mitigation be developed for fish if no surveys are conducted to determine habitat quality for fish (including areas where restoration may be an opportunity for mitigation)?	Section 2.1.2
19	NA	Global	ODOE	Additionally, note that limiting field surveys to only two species indirectly implies that the only areas that would be identified as Category 1 (avoid) would be locations where either of the two species occur. This is not likely.	Section 3.1; Section 3.2; Appendixes B-3 through B-11; and Appendix F
20	NA	Global	ODOE	Habitat Mitigation. How will field surveys, in general, be used to identify mitigation opportunities as will be needed under ODFW's Habitat Mitigation Policy?	Appendix F

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
21	NA	Global	ODOE	State and Federally Listed Species. How will listed state and federal species be recorded that do not have associated field surveys, such as the gray wolf and Canada lynx? Recording (including GPS) of all listed species and/or markings of their presence should occur during all surveys, if encountered.	Appendix A; and Page 4 of Section 1.1 (second to last sentence in the second to last paragraph)
22	NA	Global	ODOE	Survey Locations. There is no discussion in the work plan on special habitats already identified in Oregon and how field surveys would mesh with these habitats. These areas would include USFWS/NMFS critical habitat, Oregon State Lands essential habitat, Oregon Goal 5 resources, proposed and existing BLM areas of Critical Environmental Concern (ACEC), areas with habitat conservation plans, and/or other federal, state, and local areas that have been mapped and identified as supporting important wildlife resources. Helpful would be the mapping of these areas in the work plan, the sensitive wildlife and plant resources that occur in these areas, and how field surveys will ensure that these areas are surveyed etc. The work plans should have a section on these sensitive habitats and confirmation that the appropriate data bases were checked etc.	Section 2.2.2.2
23		3.1.8	ODOE	TVES surveys should include recording all species observed during the survey. Uncommon and sensitive species, as well as threatened and endangered species should be recorded with GPS where possible.	Section 3.1.9; Appendix A; and Page 4 of Section 1.1 (second to last sentence in the second to last paragraph)
24		3.4.2 and Global	ODOE	References to ODFW's Habitat Mitigation Policy tend to focus on vegetation rather than the policy purpose, which is to identify habitats of value for wildlife and fish. The work plan will need to tie the vegetation classifications with wildlife and fish presence. What is the plan to accomplish this effort?	Appendix F
25		3.4.1	ODOE	Please confirm that all crucial habitats will be recorded using GPS.	Section 3.4.1; and Appendix A
26		4.0	ODOE	The preconstruction surveys should not be limited to an unidentified list of wildlife species. At a minimum, it should be assumed that construction or operation that may impact a state or federally listed species or species of concern would be surveyed for following the appropriate federal or state protocols.	Section 4.0
27		4.1	ODOE	What methods will be employed for the preconstruction raptor surveys?	Section 4.1
28		4.2.1	ODOE	Where will spotted frogs be surveyed?	Section 3.1.8; and Appendix B-8
29		4.3	ODOE	Please provide a list of the wetland classifications that the project intends to move forward with for EFSC and NEPA documentation.	See Section 2.4 in Appendix D-3. We anticipate the following classifications associated with this project (Depressional, Riverine flow-through, Riverine impounding, Slope/flats)
30		4.3.1	ODOE	State the methodology that will be followed for the wetland functional classification with reference.	ORWAP will be used. Below is the reference and is Appendix D-3 of the Work Plan. (Adamus, P., J. Morlan, and K. Verble. 2010. Manual for the Oregon Rapid Wetland Assessment Protocol (ORWAP). Version 2.0.2. Oregon Dept. of State Lands, Salem, OR.).
31		Executive Summary	BLM Wigglesworth	**Sensitive Plant Species and Noxious Weed Surveys** States there are *up to **30 plants** identified as T or E by the state of Oregon, Sensitive or Strategic by the Oregon BLM…* Section 3.2 states *'There are **27 species** in these categories…'.*	Page ES-4; Section 3.2; and Appendixes C-1 and C-2.
32		ES-1	BLM Wigglesworth	Corrections on spelling: Mulford's milkvetch - Astragalus mulfordiae Snake River goldenweed - Pyrrocoma radiate	Table ES-1
33		2.4.3	BLM Wigglesworth	See the following reference for areas of potential habitat in Oregon: Colket, Beth. 2008. Slickspot Peppergrass (*Lepidium papilliferum*) Field Survey and Predictive Distribution Modeling. Idaho Natural Heritage Program.	Current available literature states that this species is not found outside of ID. Colket 2008 has been reviewed and volcanic ash layer modeled in Oregon will be overlaid onto plant field maps crossed by the Proposed Route and route alternatives.
34		Appendix A	BLM Wigglesworth	…Standardized data sheets will be used for all biological surveys, all data will be double-checked during entry, and any issues resolved with the persons who gathered the data… *Is there a current example of this data sheet? It would be good to verify that core attributes are being captured and the standardized data sheet.*	See Appendixes A and C-5.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
35		Appendix A	BLM Wigglesworth	**Rare Plant Site Documentation** All target plant species will be surveyed using resource-grade GPS equipment with sub-meter positional accuracy. Individual points will be taken for lone plants or sparse populations. Polygons will be surveyed around large populations. *How is a large population defined, by area or number of plants or both?*	Appendix A footnote.
36		Appendix C-2	BLM Wigglesworth	Due to changes in the proposed route and the addition of the proposed dogleg and the modified dogleg the following changes should be made to the Survey Work Plan: ***ADD*** Artemisia packardiae – occurs approximately 0.4 miles outside of the proposed route near the Owyhee below the dam. Potential habitat also occurs within the Owyhee River Below the Dam Alternative. Mirabilis laevis var. retorsa – Bigelow's four-o'clock – Located adjacent to Proposed Dogleg and Modified Dogleg. NOT in GeoBOB! ***DROP*** No longer located within or in close proximity to the corridors of the proposed route, the proposed dogleg, or the modified dogleg: *Lepidium davisii* (Davis' peppergrass) *Eriogonum chrysops* (Golden Buckwheat) *Ivesia rhypara var. rhypara* (Grimy ivesia) *Amsinckia carinata* (Malheur Valley fiddleneck) Oregon BLM species that have been dropped from the Bureau Strategic list and, thus, no longer carry a special status in Oregon: *Penstemon perpulcher* (Beautiful penstemon) *Langloisia setosissima ssp. Punctata* (Punctate langloisia)	Table ES-1; Appendix C-2
37		Appendix E	BLM Wigglesworth	Why does the list of plants not include 'B2H Special Status and Sensitive species' only 'Federal and State Listed Plants'?	Appendix C-2

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
38		General	USFS / PDHall		Appendix E

Species	Common name	Elevation range	Habitat	Habitat abundance	Population abundance & Distribution
Botrychium minganense	Mingan's moonwort	Moderate - high	Moist meadows in Coniferous forest	Mod. Not many acres of potential micro-habitat compared to amount of coniferous forest; widely scattered.	High. Most abundant of the rare *Botrychiums* (on the W-W). Pops are scattered throughout most of the (BMF) plan area.
Botrychium montanum	Mountain moonwort	1000-2000 m	'Coniferous forest'; adj. to streams and swamps	Mod. Usually restricted to wetter sites than others B. species.	Mod. Well distributed within moderate elevation areas of moist forested habitat.
Phacelia minutissima	Least phacelia	Moderate	Moist meadow, seep edges, barren slopes	Mod. Few appropriate openings in general forest; vernally wet areas and seeps limited over larger plan area.	Low. Populations are clustered in two widely separated areas.
Phlox multiflora	Many flowered phlox	Moderate	Rock outcrop, coniferous forest.	Mod. Habitat is restricted to small outcrops and rocky areas within a 10x10 mile geographic area.	Moderate. Six clusters, all on LGRD.
Trifolium douglasii	Douglas' clover	Low - Moderate	Moist or mesic meadows, prairie remnants, riparian areas, vernally wet areas.	Moderate. Habitat is both riparian and forest edge; can tolerate drier sites than strictly riparian.	High. Mostly within a 15 x 15 mile area on boundary of LGRD and NFJD RD (Umatilla NF).

<table>
<tr><th>Comment ID</th><th>Page #</th><th>Section #</th><th>Agency/ Commenter</th><th>Comment</th><th>Page Number or Section Number where Comment is Addressed</th></tr>
<tr><td>39</td><td></td><td>General</td><td>FS / Jamie Ratliff</td><td>Sensitive species are those recognized by the Region 6 Regional Forester as needing special management to meet NFMA obligations. The latest list of Proposed, Endangered, and Threatened species (PETS) occurring on the forest was received from the FWS on January 31, 2008. The Regional Forester's Sensitive species list for Region 6 (FSM 2670.43) and La Grande Ranger District information regarding the B2H project area were reviewed to determine possible species occurrence. Only those PETS known or suspected to occur in or immediately adjacent to the B2H transmission line corridor are listed (Table 1). Many of the PETS species are already included in the preconstruction data collection protocol proposed by Idaho Power. However, surveys for the white-headed woodpecker and Lewis' woodpecker should be included, as well as habitat surveys for the meadow and silver-bordered fritillary (Table 1). In addition to surveying for raptor nests, all raptor nest sites should be protected by avoiding construction in these areas or by timing activity within these areas to minimize disturbance to nesting raptors.
Table 1. Proposed, Endangered, and Threatened Species that may occur within the proposed B2H transmission line corridor.
<table>
<tr><td>Status[1]</td><td>Scientific name</td><td>Common name</td><td>Occurrence on the Forest[2]</td></tr>
<tr><td colspan="4">Mammals</td></tr>
<tr><td>S</td><td>Canis lupis</td><td>Gray wolf</td><td>D</td></tr>
<tr><td colspan="4">Gray wolves are habitat generalists inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features.</td></tr>
<tr><td colspan="4">Birds</td></tr>
<tr><td>S</td><td>Flaco peregrinus anatum</td><td>American peregrine falcon</td><td>D</td></tr>
<tr><td colspan="4">Tall cliff faces or other rock features for nesting.</td></tr>
<tr><td>S</td><td>Haliaeetus leucocephalus</td><td>Bald eagle</td><td>D</td></tr>
<tr><td colspan="4">Nesting habitat consists of large conifers within 1 km of water containing adequate supply of medium to large fish.</td></tr>
<tr><td>S</td><td>Melanerpes lewis</td><td>Lewis' woodpecker</td><td>D</td></tr>
<tr><td colspan="4">This woodpecker is associated with open woodland habitat, often at lower elevations, near water. In Oregon, it breeds primarily in white oak, ponderosa pine, and riparian cottonwood communities of the river valleys of eastern Oregon, and winters in oak savannah.</td></tr>
<tr><td>S</td><td>Picoides albolarvatus</td><td>White-headed woodpecker</td><td>D</td></tr>
<tr><td colspan="4">Nesting habitat consists of open-canopy stands with mature and overmature ponderosa pine.</td></tr>
<tr><td colspan="4">Amphibians and Reptiles</td></tr>
<tr><td>C,S</td><td>Rana luteiventris</td><td>Columbia spotted frog</td><td>D</td></tr>
<tr><td colspan="4">This species is found at aquatic sites in a variety of vegetation types, from grasslands to forests.</td></tr>
<tr><td colspan="4">Invertebrates</td></tr>
<tr><td>S</td><td>Boloria bellona</td><td>Meadow Fritillary</td><td>S</td></tr>
<tr><td colspan="4">In the west they occur in meadows and openings in aspen or pine forests. The only known site in Oregon is located in Umatilla County.</td></tr>
<tr><td>S</td><td>Boloria selene</td><td>Silver-bordered Fritillary</td><td>S</td></tr>
<tr><td colspan="4">Suitable habitat consists of bogs and marshes, often willowy sites, sometimes tall, wet grass.</td></tr>
<tr><td>S</td><td>Radiodiscus albietum</td><td>Fir pinwheel</td><td>S</td></tr>
<tr><td colspan="4">Most often found in moist and rocky Douglas-fir forest at mid-elevations in valleys and ravines. Known distribution in Oregon is limited to extreme NE (above Weston, Umatilla Co.). In Idaho this species has been found between 1500-5500 ft in elevation.</td></tr>
</table>
[1] E = Endangered, T = Threatened, C = Candidate, S = Sensitive.
[2] D = Documented occurrence, S = Suspected occurrence (FS Pacific Northwest Region 6 Regional Forester's Sensitive Animal List July 2004).</td><td>Appendix E</td></tr>
</table>

<table>
<tr><th>Comment ID</th><th>Page #</th><th>Section #</th><th>Agency/ Commenter</th><th>Comment</th><th>Page Number or Section Number where Comment is Addressed</th></tr>
<tr><td>40</td><td></td><td>General</td><td>FS / Jamie Ratliff</td><td>The LRMP identifies five wildlife species, or groups of species, as MIS (Table 2) (U.S. Forest Service 1990). The habitat requirements of MIS are presumed to represent those of a larger suite of species using the same type of habitat. Three MIS species depend on old growth or mature forest. Preconstruction Crucial Habitat Surveys should include surveys for old-growth and mature forest, specifically for trees ≥ 21” DBH. Surveys should also include snags and logs, which provide habitat for primary cavity excavators and many other species.
Table 2. MIS and their primary habitats.
<table><tr><th>Species</th><th>Habitat</th></tr><tr><td>American ma□ten</td><td>□Old-growth and mature forest</td></tr><tr><td>Northern goshawk</td><td>Old-growth and mature forest</td></tr><tr><td>Pileated woodpecker</td><td>Old-growth and mature forest</td></tr><tr><td>Primary cavity excavators[1]</td><td>Snags and logs</td></tr><tr><td>Rocky mountain elk</td><td>Cover and forage</td></tr></table>[1] Northern flicker; black-backed, downy, hairy, Lewis’, three-toed, and white-headed woodpeckers; red-naped and Williamson’s sapsuckers; black-capped, chestnut-backed, and mountain chickadees; and pygmy, red-breasted, and white-breasted nuthatches.</td><td>Appendix E</td></tr>
<tr><td>41</td><td></td><td>General</td><td>FWS / Gary S. Miller</td><td>The Service offered to provide you with golden eagle GIS data. However, in reviewing this data, along with all the caveats and disclaimers associated with the data, we have determined that this information is not precise enough to meet your needs. We ask that you continue to rely on the golden eagle information provided by Oregon Department of Fish and Wildlife and in the Service's initial NOI comments, dated September 27, 2010.</td><td>Section 2.1. Comment noted, IPC will work with the data they have.</td></tr>
</table>

Agency Comments on the February 15, 2011, B2H Biological Survey Work Plan Kick-off Meeting

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
1			USFWS	1) Although bull trout critical habitat will not be surveyed, it needs to be addressed in the Plan. For example, you could add bull trout critical habitat in the second paragraph under 2.1.2 Fish, "In addition, streams containing special status fish (and their critical habitat) will be mapped for the purpose of data collection in Phase 2. Bull trout critical habitat information can be obtained at http://www.fws.gov/pacific/bulltrout/CH2010_Maps.cfm#CHMaps.	Designated critical habitat will be included in habitat mapping. In addition, occurrences of designated critical habitat have influenced the Project's sighting process and will influence the classification of ODFW habitat mitigation categories (discussed in Appendix F; i.e., these habitats would be Category 1).
2			USFWS	2) Under Survey Methods on page 27, you state that the survey area for most raptor nests is 0.5 miles from the corridor… The correct survey area for raptors should be 1.0 miles. Also, in this section you go on to say surveys will be conducted from the centerline, versus corridor as stated above. Please clarify if all surveys will start from the centerline or from the outer edge of the corridor. The Service recommends the later.	The surveys would be conducted from the either side of the 500-foot corridor (as outlined in Appendix B-3). Survey distances have been extended for certain raptor species (i.e., ferruginous hawk surveys out to 1 mile and golden eagle surveys out to 2 miles).
3			USFWS	3) Under 3.3.3 Sensitive Fish Habitat, you state that stream data will be collected at all locations where the project has the potential to adversely impact fish habitat. During what Phase of the Plan will these activities occur.	As discussed in Section 3.3.3, this data would be collected during habitat surveys that would be conducted during Phase 2.
4			NOAA	1. The Survey Work Plan states "Special status and listed fish (Appendix E) will be assumed present in streams that have been documented to contain these species. Fisheries surveys will not be conducted; however, stream data (i.e., stream morphology, riparian vegetation characteristics, and substrate characteristics) will be collected at all locations where the project has the potential to adversely impact fish habitats (see Sections 2.1.2 and 3.3.3)." However, I do not see any where in the Phased Biological Survey Approach when this data will be collected??	As discussed in Section 3.3.3, this data would be collected during habitat surveys that would be conducted during Phase 2.
5			NOAA	2. The Purpose of the Work Plan states that "……This plan contains a list of the specific species that will be surveyed for the timing of the surveys, and detailed protocols for the surveys for each species." Snake River Basin steelhead and Mid-Columbia River steelhead are not identified in the list.	This is because these species will not be surveyed for (i.e., fish presence will be assumed). In addition, both the Snake River Basin steelhead and Mid-Columbia River steelhead are included in Appendix E (i.e., the list of sensitive species that could occur within the Project area); and steelhead in general are discussed in the body of the document (see page 18).
6			NOAA	3. Designated critical habitat also needs to be addressed. For example, Snake River Chinook designated critical habitat is everywhere they were historically regardless of fish presence. Document only speaks to fish presence.	As designated critical habitat has been designated and has a corresponding spatial polygon, these areas do not need to be surveyed for in order to delineate their extent (i.e., their extent is known and available in GIS data format). Know occurrences of unique habitats (e.g., rock outcroppings, talus slopes, cliffs, caves, riparian zones, mature, timber stands, permanent and seasonal ponds, lakes, and wetlands), as well as mapping of known locations of sensitive areas such as ESA designated critical habitat will occur during Phase 1 (as part of the habitat mapping effort). Occurrences of designated critical habitat have influenced the Project's sighting process, will influence the classification of ODFW habitat mitigation categories (discussed in Appendix F; i.e., would be Category 1), and will certainly play a substantial role in the effects analysis; however, they do not play a significant role in the survey process as these areas are of critical importance regardless of survey results (i.e., they are important as fish habitats even if surveys were conducted and did not find any fish present).
7			NOAA	4. There is no mention of the Magnuson-Stevens Act designated Essential Fish Habitat (EFH). Federal regulations at 50 CFR 600 et seq. for EFH consultation will need to be applied.	See response to the previous comment. EFH has been addressed in the Project's sighting studies, and will be addressed in any impact analysis.
8			LSD	1. Has it been established that surveys for Forest Service Sensitive species (e.g., northern goshawk) need to be conducted outside of National Forest lands? Will impacts to Forest Service Sensitive species be analyzed by jurisdiction (i.e., only on National Forest lands) in the EIS?	Impacts will be discussed in the EIS and the ODOE Exhibits. Impacts will not be addressed in this work plan, as the scope of this document is to define the survey methodologies. The scope of the EIS will be determined by the BLM and its third party contractor.
9			LSD	2. It would be helpful to see the modeled habitat that has been identified for each species (to see why surveys included some areas but not others).	Maps of the modeled habitat are presented in the work plan.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
10			LSD	3. Surveys for special status plant and wildlife species will be conducted concurrently" - Special status plant surveys need to be conducted independently from special status wildlife surveys, and need to be conducted during the appropriate periods - one pass through the project area (i.e., the TVE survey) would not seem to suffice based on the appropriate timing required to locate each of the target wildlife species.	This text indicates that they would be done at the same time; not that they would be done by the same surveyors or during the same survey.
11			LSD	4. Table 1 and Table ES1 are difficult to understand the timelines. ES1 has all phases occurring between the months Jan-September; Table 1 states phase 1 will last 12 months, phase 2 will last 12 months, and phase 3 will last 4-6 months.	Comment noted.
12			LSD	5. On page 41: "surveys would be performed within 10 days of clearing." Table ES 1 suggests Phase 3 will occur between March and Sept--does this suggest that clearing could occur before the EIS is even drafted? Phasing and timing is very difficult to figure out (as pointed out in previous comment).	As required by federal law, clearing could not occur before the NEPA process concludes. Dates are preliminary estimates based on current conditions.
13			LSD	6. Washington Ground Squirrel - The survey methods narrative states that surveys will be conducted "within 250 feet either side of the proposed centerlines (500 feet total) and 1,000 feet on either side of the corridor boundaries", while Table 4 on the previous page states that ground squirrel surveys will be conducted only within the 500 foot corridor. Need to clarify where WAGS surveys will occur. Not sure why there is an unsurveyed area between Map Tiles 1 and 22 (on the WAGS survey maps).	Appendix B-2 states that surveys will cover all land within the preferred route corridor and within 1,000 feet of the outer boundaries of the corridor in native grassland, shrub-steppe and where native species were planted in CRP habitats and those CRP habitats are adjacent to native habitats. Table 4 has been changed to reflect that all suitable habitat within the corridor (500 feet total) plus 1,000 feet either side will be surveyed. The unsurveyed areas shown on the map set indicates cultivated wheat fields or pivot fields.
14			LSD	7. The Plan states that ALL raptors will be surveyed. Why then are burrowing owls excluded?	Burrowing owls will be surveyed for and are included in the plan under TVES. The separate discussions are because the protocols are different.
15			LSD	8. Raptor survey methods - Golden eagle surveys need to conform to the current USFWS guidance (February 2010). "At least two" surveys need to occur "at least 30 days apart" and "the first inventory and monitoring surveys should be conducted during courtship when the adults are mobile and conspicuous." Golden eagle surveys need to be conducted by qualified observers, as defined in the Interim Golden Eagle Technical Guidance (USFWS 2010).	That is correct. All staff are qualified to conduct these surveys defined in the guidance report mentioned.
16			LSD	9. Northern goshawk survey methods - A map of the modeled primary habitat would be helpful in discerning why call points are placed where they are - the coverage shown on the call point maps does not appear to be adequate, particularly in many densely-wooded areas. The proposed survey methods should state what the maximum distance between call points will be in suitable habitat areas. By conducting surveys along existing roads, this methodology has an inherent bias, and this bias may impact detectability. If the purpose of this survey is to "identify all northern goshawk nests" in the survey area (as stated in the survey work plan), it is unlikely that this survey method will accomplish the desired result (based on the apparent 250 meter or greater distance between call points). It should be determined whether the Forest Service will accept the results of this non-protocol survey method.	These methods reflect interagency coordination and reflect all suitable habitat based on photo interpretation and extend outside of USFS lands where habitat exists. Acoustical Broadcast Surveys are the best method to cover large areas but they are not without their own limitations. A transect grid, as described by Woodbridge and Hargis was overlaid over initial forested habitat. Using the the above criteria, the final suitable habitat layer was developed and used to define the survey area. Call stations are located in, and cover all suitable habitat within the survey area.. Spacing for the most part reflect the lack of contiguous suitable habitat. Additional text has been added to Appendix B-4 that describes in more detail the methods used to determine suitable habitat and survey area. In addition, a screenshot approach has been developed and provided to the USFS for the project record.
17			LSD	10. "All ground clearing would occur outside of the avian breeding season, which should reduce the risk of removing or damaging active nests." - There should probably be a contingency for nest searches and avoidance of active nests in case vegetation clearing needs to occur during the breeding season (due to an unforeseen change in the project implementation schedule).	This is addressed under Section 4 of the Work Plan (Phase 3).
18			LSD	11. Great grey owl survey methods - The published survey protocol requires 6 survey visits where only 2 visits are identified in the work plan. The narrative states that surveys will be conducted at night, but the adapted protocol provided in Appendix B describes daytime surveys, as well. If an adapted protocol is provided in the survey work plan it should identify specifically how surveys will be conducted and should not include extraneous information regarding methods that will not be used. For example, it is unclear whether follow-up surveys will actually be conducted as part of the adapted protocol.	These methods reflect interagency coordination and reflect all suitable habitat based on photo interpretation and extend outside of USFS lands where habitat exists. The adapted survey methods were developed for the NW Forest Plan and the 6-survey requirement was to be applied within the range of the marbled murrelet. Day time surveys will be used to recon more remote areas and for follow up surveys as outlined in Appendix B.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
19			LSD	12. Flammulated owl survey methods - Not sure that areas with lower canopy cover (used for nesting by flammulated owls) are being captured in combining this survey with the great grey owl survey. It would be good to see the modeled habitat for this species. Also, it is impossible to tell what the specifics of this survey will be based on the protocol that is provided (for example, will there be 10 minute calling periods at each call point and call points every 500 meters, or is something else being proposed?)	Survey areas were delineated based on >60 percent canopy closure which is within suitable nesting habitat for FLOW.). Review of a study conducted by Evelyn Bull in close proximity to our study area showed that the mean canopy cover around FLOW nest trees was 55% and closely represents the model utilized to identify great gray callings stations (60% canopy closure). In addition, large diameter trees excavated by Pileated woodpeckers were the favorite nest site for FLOW and Pileated woodpeckers are positively correlated with old growth forests with high canopy closure. Survey methods include calling at the same locations as GGOW and will be conducted using 10 minute calling/listening periods. The spacing of calling stations in suitable habitat is more dense that a station every 500 m.
20			LSD	13. Three-toed woodpecker survey methods - The survey protocol that is referenced in Appendix B is a general survey protocol and there is a lack of specific information provided in the work plan as to how three-toed woodpecker surveys will be accomplished (e.g., calling/listening periods).	Additional details regarding the methods that would be used can be found in the body of the Work Plan (see Section 3.1.7)
21			LSD	14. Columbia spotted frog survey methods - The survey protocol that is referenced in Appendix B is a general survey protocol and there is a lack of specific information provided in the work plan as to how Columbia spotted frog surveys will be accomplished. The information provided in the narrative (page 31 of the survey work plan) is more useful than the protocol information provided in the appendix...	Comment noted.
22			LSD	15. TVES survey methods - See item #3 above.	See response to item 3 (comment 6) above.
23			LSD	16. Sage grouse leks from Idaho are not mapped. In comparing the B2H Map Title Key, Greater Sage-grouse map to the newly released Greater Sage-Grouse Range-wide Breeding Density Thresholds map from the BLM national website, the main concentration of active leks and large leks is in Idaho. The 2011 Proposed Sage-grouse Survey Areas of 12/6/10 Route, Map Tile 19 doesn't continue into Idaho past milepost 266.8, thus missing many Idaho leks.	Leks will be surveyed out to 4 miles from the corridor and the sage-grouse survey maps have been updated with ID lek data.
24			LSD	17. The Plan states that follow-up ground surveys maybe conducted at suspected lek sites. Why this is not "shall be." Without counts of male birds on the ground from 3 different visits spaced 7-10 days apart (as per Oregon protocol), we can't determine breeding density, nor compare breeding density for each lek to be able to state which leks are more important than others on a range-wide scale.	Any information on suspected leks from aerial surveys will be immediately provided ODFW biologists; they will be responsible for any follow up surveys to conduct male counts and determine breeding densities within the state. As time allows, and if assistance is requested by ODFW, staff will assist.
25			LSD	18. No integration mentioned of the value of geology maps in identifying special status plant habitats. Nationwide, this is often the #1 resource to best identify potential suitable microhabitat. No mention of using soils maps or landscape feature symbols in soil surveys in the same manner. Northwest ReGAP lacks the resolution and precision to be used as the primary source to identify special status plant microhabitats.	Northwest ReGAP includes the use of SSURGO data to differentiate unique soil characteristic and in turn delineate communities such as Sandy vs. other Prairie grasslands (Lennartz 2006). Additional datasets used include species occurrence data from Oregon Natural Heritage Information Center (ORNHIC), Idaho Fish and Wildlife Information System (IFWIS). Observational data was provided by agency botanists and approved by the Agencies Biological Program Lead.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
26			LSD	19. States that helicopter surveys for leks will continue to 2.5 to 3 hours after sunrise. More than 2 hours after sunrise doesn't conform to Oregon sage-grouse lek survey protocols, nor to those of any other state or agency. The birds disperse by that time, thus creating false negatives for fly-overs of known leks and not revealing leks where they may occur. Oregon protocol calls for aerial surveys to be done within a March 15-April 30th window. TetraTech is surveying after that date, when birds on lesser density leks may already have left the lek for the breeding season.	The Survey Methods for Greater sage-grouse in the BSWP has been clarified as follows: The survey area will include IPC's Proposed Route and route alternative corridors and 3 miles on either side of the corridors, within areas that the ODFW and IDFG biologists have identified as areas that could potentially support greater sage-grouse. Areas surveyed in 2010 will not need to be surveyed in 2011. Details of the field survey protocol are provided in Appendix B-2 (Hagan 2005). Depending on survey area and weather conditions, sage-grouse within the project area will start attending leks anywhere from early March (lower elevations in a warm year) and can remain there until mid May (higher elevations after a long winter). The protocol notes that there may be local variation between districts that may dictate minor survey modifications. Helicopter surveys of greater sage-grouse leks will be conducted between March and April; however, due to weather constraints and survey schedule restrictions, some surveys may extend into early May. Best efforts will be made to reschedule if communication with ODFW and IDFG's greater sage-grouse specialists identifies a need. Aerial surveys will be flown between 30 and 100 feet above ground surface. Distance between transects will be 0.5 mile. Helicopter surveys will ideally be conducted within the first 2 hours after sunrise, but due to flight time and survey window restrictions some surveys may extend to 2.5 hours after sunrise; however, no surveys would extend beyond 3 hours. If any leks are observed, the location will be confirmed and documented with the appropriate resource agency.
27			LSD	20. What are the survey dates for many-flowered phlox and Malheur yellow phacelia?	May to August for man-flowered phlox, and May through June for the Malheur yellow phacelia
28			LSD	21. Appendix E should reflect all species potentially occurring in the project area. However, several species discussed in the Bio Resource Study Work Plan that will be surveyed for are not reflected in the Appendix E list. Why is this? Species omitted include: golden eagle, brewers sparrow, northern waterthrush, dimeresia, Malheur yellow phacelia, and Simpson's hedgehog.	These 6 species have been added to Appendix E. However, note that this list (i.e., Appendix E) is not meant to be all-inclusive list from a survey protocol standpoint; and all Type 1-4 special status wildlife species that are observed during surveys would be documented (even if they are not on this list). The species list found in Appendix E was prepared in part by looking at all species that could be encountered based on existing information, life requisites, and species listed by agencies as T&E, Special Status, Sensitive, MIS, etc. The ODFW, BLM, USFS, and NMFS have provided input on this list during multiple review and comment cycles, regarding the likelihood of their presence in the project area. In addition, this list was developed in part from species that require some type of seasonal restriction which may affect construction. It highlights species in which specific surveys have been requested; however, it is not a comprehensive list of species.
29			LSD	22. Appendix E should reflect all species occurring in the project area. The Plan should provide an exclusion table documenting all species considered on BLM, USFS, ODFW, and USFWS lists and the reason why species that are excluded from further evaluation are being excluded?	This list (i.e., Appendix E) is not meant to be all-inclusive list from a survey protocol standpoint. The species list found in Appendix E was prepared in part by looking at all species that could be encountered based on existing information, life requisites, and species listed by agencies as T&E, Special Status, Sensitive, MIS, etc. The ODFW, BLM, USFS, and NMFS have provided input on this list during multiple review and comment cycles, regarding the likelihood of their presence in the project area. In addition, this list was developed in part from species that require some type of seasonal restriction which may affect construction. It highlights species in which specific surveys have been requested; however, it is not a comprehensive list of all species that could occur.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
30			LSD	23. Many sensitive species from the BLM and USFS are not found in Appendix E. Why were these species left out of Appendix E? Species omitted include but are not limited to: Tahoe sucker, woodhouse toad, cope's giant salamander, and a variety of invertebrates and plants.	This list (i.e., Appendix E) is not meant to be all-inclusive list from a survey protocol standpoint. All Type 1-4 special status wildlife species that are observed during surveys would be documented (even if they are not on this list). The species list found in Appendix E was prepared in part by looking at all species that could be encountered based on existing information, life requisites, and species listed by agencies as T&E, Special Status, Sensitive, MIS, etc. The ODFW, BLM, USFS, and NMFS have provided input on this list during multiple review and comment cycles, regarding the likelihood of their presence in the project area. In addition, this list was developed in part from species that require some type of seasonal restriction which may affect construction It highlights species in which specific surveys have been requested; however, it is not a comprehensive list of all species that could occur.
31			LSD	24. Please provide all the sources (e.g., BLM sensitive species lists, ODFW species lists, and USFS sensitive species lists) for the species listed in Appendix E.	See response to comments 28, 29, or 30.
32			LSD	25. Critical habitat has been designated for more fish species than indicated in the table (see NMFS website for mapping of CH).	Table altered to remove un-necessary information. Designated critical habitat will be included in habitat mapping. In addition, occurrences of designated critical habitat have influenced the Project's sighting process and will influence the classification of ODFW habitat mitigation categories (discussed in Appendix F; i.e., these habitats would be Category 1); however, designated critical habitat will not play a substantial role in the survey effort.
33			LSD	26. Fish: the report defined sensitive species as all sensitive species considered (e.g., ESA, FS, BLM, State listed), but then this section refers to listed sensitive and non listed sensitive species. For which species is habitat to be mapped?	"Listed species" includes ESA and state listed species. "Non-listed sensitive species" includes all other sensitive species. Both listed and non-listed sensitive species will be assumed present in all waterbodies/watersheds where data indicates they might be present.
34			LSD	27. On multiple USFWS county species lists, wolverine and greater sage-grouse are listed as candidate species. This is not indicated in the USFWS column in App E.	Typo corrected
35			LSD	28. There are two endangered snails (Bruneau hot springsnail and Snake River physa snail) in Owyhee Co that are not included in the USFWS column in App E.	See response to comments 28, 29, or 30.
36			LSD	29. There is one threatened fish (Lahontan cutthroat trout) in Malheur County that is not included in the USFWS column in App E.	See response to comments 28, 29, or 30.
37			LSD	30. There is one threatened plant (slickspot peppergrass) in Owyhee Co that is not included in the USFWS column in App E.	Slickspot peppergrass is included in Appendix E
38			LSD	31. There are several mammals (Canada lynx, N. ID ground squirrel, S. ID ground squirrel), fish (middle Columbia R. Steelhead, Snake R. basin steelhead, Snake R. Chinook, Snake R. sockeye salmon, Coho salmon), and an invertebrate (bliss rapids snail) that are included in the USFWS column as T, E, and C status that do match with the USFWS county lists.	Species status in Appendix E will be checked.
39			LSD	32. The grouping for fishes was difficult to reconcile with the USFWS list - there are multiple fish included here as T&E that were not on USFWS species list.	Species status in Appendix E will be checked.
40			LSD	33. The grouping for fishes was difficult to reconcile with the ODFW sensitive species list - common names, scientific name (westslope cutthroat trout), and sub-species names did not match in some cases.	Species status in Appendix E will be checked.
41			LSD	34. The ODFW status in the ODFW column for fishes did not match with the ODFW sensitive species list for current status (2008) for multiple species.	Species status in Appendix E will be checked.
42			LSD	35. There are two missing ODFW status in the ODFW column for reptiles and amphibians (Columbia Spotted Frog and Northern Leopard Frog, both should have been critical [SC] but nothing was listed) based on the current (2008) sensitive species list.	Species status in Appendix E will be checked.
43			LSD	36. Need to confirm that the Inland Tailed Frog (included in App E) and the Rocky Mountain Tailed Frog (ODFW sensitive species list) are the same.	Status/name will be checked.
44			LSD	37. There are sixteen additional reptile and amphibian species included on the ODFW sensitive species list that are not included in App E, need to determine why excluded.	See response to comments 28, 29, or 30.
45			LSD	38. There are eight missing ODFW status in the ODFW column for avian species based on the current (2008) sensitive species list.	See response to comments 28, 29, or 30.
46			LSD	39. There are ten additional avian species included on the ODFW sensitive species list that are not included in App E, need to determine why these were excluded.	See response to comments 28, 29, or 30.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
47			LSD	40. There are several avian species were the ODFW status included in App E does not match the status in the sensitive species list.	See response to comments 28, 29, or 30.
48			LSD	41. There are nine additional mammal species included on the ODFW sensitive species list that are not included in App E, need to determine why excluded.	See response to comments 28, 29, or 30.
49			LSD	42. There are two mammal species were the ODFW status included in App E does not match the status in the sensitive species list.	See response to comments 28, 29, or 30.
50			LSD	43. Could not locate the original version of the Washington ground squirrel survey protocol on-line, not certain (based on the citation) where this came from, who wrote it, and if it is common practice to use this protocol.	State and federal agencies have reviewed the proposed Washington ground squirrel protocol, and have made recommendations regarding its implementation. Their recommendations would be incorporated into the protocol.
51			LSD	44. How was the 5,530 ft buffer of the T-line determined for Section 1 Land Cover? I now think I understand this - 1 mi (5,280 ft) plus half of the 500 ft corridor equals 5,530. In section 2.2.2.1 of Vol 1 it notes a 3-mile (15,840 ft) corridor? Did this then get scaled down to one mile on either side? Not sure what else section 1 maps provide as these maps are not referred to directly in Vol 1.	Correct. The reference to the 3-mile corridor was developed to collect all ReGAP vegetation and other layers used to define greater sage-grouse survey areas.
52			LSD	45. In Section 1, is the big game range the winter range? If not we will need this GIS layer. And were elk, deer, and big horn sheep grouped together with this big game range layer?	The big game ranges used in the habitat mapping will be as defined and maintained by the state wildlife agencies.
53			LSD	46. In Section 2, where did the Washington ground squirrel (WGS) burrow data come from? Heritage data?	State agency wildlife data
54			LSD	47. Was the 2011 WGS survey areas determined by aerial interpretation only? If so what year are the aerials from?	The survey area was developed using known locations, aerial images and through coordination with state and federal agencies.
55			LSD	48. How was the 1,035 ft buffer of route features determined? Table 4 in Vol 1 notes that the survey distance for wgs is just within the 500 ft corridor.	Table 4 has been revised. The 1,035 buffer was established using the WAGS no disturbance buffer of 785 feet + 250 feet = 1,035 feet.
56			LSD	49. On the maps there are wgs burrow locations within the buffer, but in areas that are not being surveyed in 2011. Why not survey if there is a known location? Private property constraints? Change in habitat since wgs was observed there?	The areas have been cultivated.
57			LSD	50. In Section 3, how were the 2010 and 2011 sage grouse survey areas determined? Seem to be applied inconsistently, not clear how determined.	Through consultation with the ODFW
58			LSD	51. How were the 2 mi buffer of the lek and 3 mi buffer of the route determined?	Through consultation with the ODFW
59			LSD	52. Where did the raptor point data come from in Section 4? Heritage data?	State and federal agencies data (see table 3)
60			LSD	53. How is the golden eagle habitat layer that is included on this map being used? Will more intense surveys take place in those areas? Not clear from map.	Aerial nest surveys for golden eagles (2 miles from the corridor) would be conducted in areas identified in these maps as golden eagle habitat
61			LSD	54. How was the ferruginous hawk survey areas determined? It seems to start and stop abruptly, was it based on aerial interpretation?	Through consultation with the USFS. The abrupt changes indicate primarily those areas that are cultivated lands.
62			LSD	55. Are the calling stations for N. goshawk or 3 toed woodpecker, or both, not clear from map. How were the locations determined?	They are the same. The locations and number of stations was determined through coordination with the state and federal agencies.
63			LSD	56. What are the N. goshawk observation points, just past observations? Heritage data? They seem to show up on the first map of the set but not on the successive maps, so not clear.	The observation data is based on agency data; the maps will be updated as necessary if additional data is provided by BLM or the USFS.
64			LSD	57. How was the 1/2 mile buffer of route features determined in Section 5, (goshawk and woodpecker)? Table 4 in Vol 1 notes 1/2 mi for N. Goshawk but 1/4 mi for three-toed woodpecker. The map just shows the 1/2 mi buffer.	Survey butters reflect established no-disturbance buffers from USFWS and would be used as seasonal restrictions along any portion of the route where a nest is documented.
65			LSD	58. Are the calling stations for great gray owl or flammulated owl; both? This is not clear on map. Also it seems that some points are the same as the goshawk/ woodpecker call points and some are not. How were the locations determined?	They are the same. The locations and number of stations was determined through coordination with the state and federal agencies.
66			LSD	59. How was the 1/4 mile buffer of route features determined in Section 6 (great gray owl and flammulated owl)?	Survey buffers reflect established no-disturbance buffers from USFWS and would be used as seasonal restrictions along any portion of the route where a nest is documented.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
67			LSD	60. How were the special status plant survey areas determined? Was there a species exclusion list created, where certain areas were determined unnecessary to survey? Because large areas are going completely unsurveyed. It appears that areas are being surveyed if a plant was found there previously and potentially suitable habitat is available nearby. But this does seem to hold true across the whole project area.	Northwest ReGAP includes the use of SSURGO data to differentiate unique soil characteristics and in turn delineate communities such as Sandy vs. other Prairie grasslands (Lennartz 2006). Additional datasets used include species occurrence data from Oregon Natural Heritage Information Center (ORNHIC), Idaho Fish and Wildlife Information System (IFWIS). Observational data was provided by agency botanists. Species occurrence data were then reviewed by botanists and through a process of integrating aerial photo interpretation, GIS datasets including elevation, ReGap land cover, and knowledge of species habitat requirements botanists identified areas of likely habitat for further survey. This process was conducted along the entire route.
68			LSD	61. What is the source of the plant location data? Heritage data?	Datasets used include species occurrence data from Oregon Natural Heritage Information Center (ORNHIC), Idaho Fish and Wildlife Information System (IFWIS). Observational data was provided by agency botanists and approved by the Agencies Biological Program Lead.
69			LSD	62. What is the width of the special status plant survey area? Seems to vary.	250-foot buffer on both sides of the centerline (500 foot total corridor); 250 feet around project facilities, 50-foot buffer along any proposed new roads.
70		Special Status Plants Phase 1	BLM	Table 1. Resource Category. Terrestrial visual encounters. Is this saying that ssp habitat and species are considered target species? When it says all species observed will be recordered is that referring to flora and fauna? Punctuation is misleading.	In this context, "targeted species" means that surveyors would be informed that these species had a high likelihood of occurring and that the agencies have expressed heightened concern over these species. In this context, "all species" refers to wildlife species. Text has been revised in order to clarify this.
71		Special Status Plants Phase 1	BLM	Table 3. should include more specific direction for how microhabitats, geologic outcrops will be detected for special status plant habitats. (low-level aerial photography, google earth, geologic maps). (see B. Palmer, comment #8)	Botanist were instructed to identify, and label with the appropriate sensitive plant, any microhabitats and geologic outcrops using available aerial imagery and supplemental datasets as part of the sensitive plant habitat review (see comment 67). Additional microhabitats and other potential sensitive plant habitat not identified during desktop mapping will be identified during TEVS and surveyed for sensitive plants.
72		Special Status Plants Phase 1	BLM	Table ES-1. Add shading for blooming period for many flowered phlox and phlox multiflora (both may & june).	Shading has been added.
73		Special Status Plants Phase 1	BLM	Add shading to May for Cusick's flase yarrow.	Shading has been added.
74		Special Status Plants Phase 1	BLM	Add all species listed below that will be added to target species list.	See response to comments 28, 29, or 30.
75		Special Status Plants Phase 1	BLM	Is this also a section to include 'methods' for mapping of potential microhabitats of special status plants known or suspected to occur within the survey corridor?	See response to comments 60, 62, and 71 above.
76		Special Status Plants Phase 1	BLM	Shouldn't a map of unique microhabitats for special status plants be constructed…Vegetation maps will also identify unique special status plant habitats (ash or calcareous outcrops, ash lenses, sand inclusions, etc.).	See response to comments 60, 62, and 71 above. Additionally, observation of likely special status species habitats will be documented during the TVES and used to supplement current mapped special status species habitat requiring field survey.
77		Special Status Plants Phase 2	BLM	There are '26' non-federally listed….this number does not match with Appendix C, E.	Appendix E has been updated with the 3 missing species identified in Appendix C
78		Special Status Plants Phase 2	BLM	Howell's & Slickspot Peppergrass (below refers to both species write-ups) Second to last sentence: Confusing…What is a survey period? If it is the timeframe I am not sure what is being conveyed in this sentence. Last sentence: Confusing unless 'if' is a typo.	Text has been revised.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
79		Special Status Plants Phase 2	BLM	Botanists will be cataloging all species encountered in order to provide a total floristic inventory for the corridor. Botanical surveys are conducted in order to determine the environmental effects of proposed projects on all botanical resources, including plant (vegetation) communities, not strictly limited to special status plants. Special status plants are not only those that have been listed by state and federal agencies but include any plants that, based on all available data can be shown to be rare, threatened, or endangered. As stated in the 'Intuitive Controlled Survey' method "…botanists will compile a species list of all plant taxa seen en route and keep track of the plant community or habitat type where each taxon occur. Areas within the project area that are not the focus of a complete survey must be surveyed sufficiently so that the botanist and BLM reasonably believe that few if any additional species would be added to the complete species list for the project area."(Survey Protocols Required for NEPA/ESA Compliance for BLM SSPS. Page 3). I believe it is important to state this in the survey work plan.	Comment noted. Tetra Tech will implement the Special Status Plant protocol as indicated in the work plan. The document Survey Protocols Required for NEPA/ESA Compliance for BLM SSPS. Page 3, was identified as a guidance document for the CA-NV BLM but was identified as part of the OR State Office direction for survey protocol..
80		Special Status Plants Phase 2	BLM	If a target species is located and occurs on fragile soils, the survey method would be modified to protect the habitat from human traffic/disturbance. This will ensure negative impacts are not imposed upon the species and its habitat.	Foot traffic will be limited on fragile soils where target species are present.
81		Special Status Plants Phase 2	BLM	Plant Specimens: A voucher specimen for each sensitive species found, pressed in newspaper and properly labeled, should be submitted to the Vale District if the collection will not adversely affect the health of the population at the site. Any other species considered by the surveyor to be of particular interest also should be collected, identified, and at least one specimen submitted to the Vale District for inclusion in the herbarium.	Comment noted. Any voucher specimens collected would only be done within areas of numerous individuals and would be submitted to Vale District office.
82		Special Status Plants Phase 2	BLM	Photographs should be taken of the areas inventoried, of all special status plants found, and of the habitat associated with each special status plant occurrence.	Inventory protocol will include photographs of all special status plants found, habitats associated with the species, and areas surveyed.
83		Special Status Plants Phase 2	BLM	Please add the microhabitats unique to the Owyhee Uplands and Snake River Plains such as ash outcrops or lenses, sand inclusions, calcareous outcrops… These are the most likely areas to encounter uncommon/special status species.	These areas, if not presently identified during the special status species mapping exercise, will be identified during the TVES if the potential for special status species exists requiring further survey.
84		APPENDIX C.	BLM	What references used for this section?	Appropriate references will be provided in the work plan revision.
85		APPENDIX C.	BLM	Biennial Stanleya – flower color is cream or yellow color. Bigelow's Four o'clock - Flowering time missing. Packard's wormweed – add – grows on basalt rock outcrops in shallow poorly developed soil.	Text added to Appendix C
86		TABLE E.	BLM	ADD ALL SPECIES BELOW Those species missing from table - Idaho species suspected to occur within the survey area– Least snapdragon, Sairocarpus kingii Janish's penstemon, Penstemon janishiae Stiff milkvetch, Astragalus conjunctus Malheur cryptantha, Cryptantha propria Within the survey corridor the following is one BLM Oregon 'Strategic' species either documented or suspected to occur within the survey corridor and should be added to the target list for surveys. Strategic species are not sensitive species for management purposes. Special management efforts do not need to be taken when strategic species are found. Strategic species only need to be recorded when they are located and their locations input into the Geographic Biotic Observations database (GeoBOB), which is the Oregon/Washington BLM database for special status species. Cusick's false yarrow, Chaenactic cusickii Those species to be added to the table as they are suspected in the survey area in BLM Oregon. Information derived after conversation with USFWS in Boise: Packard's milkvech, Astragalus packardiae	These species will be added to Appendix E and C
87		APPENDIX E.	BLM	Under USFWS column species that are categorized as SOC (Species of Concern) should be noted. Not sure but NRM DPSD and CH may just apply to wildlife.	Comment noted.
88		APPENDIX E.	BLM	Biennial Stanley – U for unlikely to encounter currently listed. This should be a Y for Yes as it is highly likely to be encountered.	"U" has been changed to "Y"

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
89		APPENDIX E.	BLM	Section 7 Special Status Plant Survey Map Outside of the apparent vegetation shifts from what appears to be arid lands to coniferous forest or wetland, why are there so many gaps in areas designated for plant surveys? Ownership? (i.e. mile post 220-222, Tile 32). As described in 3.2.5 'Survey Methods','…botanists will maintain a list of all vascular plant species and their habitat associations observed during the survey'. This needs to be a complete floristic survey for the entire corridor.	In an effort to identify special status species habitat for field survey, botanists used available GIS information in a desktop exercise. ORHNIC special status plant occurrence data, elevation models and ReGAP were overlaid on aerial imagery, specialists then identified special status plants within 5 miles of the study area and their habitat requirements. Botanists applied a broad interpretation of ReGAP Ecological Systems resulting in overestimates of special status plant habitat in an effort to avoid under sampling for potential plant habitat. Additionally, botanists identified potential habitat based on combinations of elevation, ReGAP, and imagery interpretation in the absence of occurrence data. Changes in land use such as farming or recently burned areas where accounted for; ownership was not a factor when determining potential plant habitat. Gaps in special status plant habitat would result from a combination of the following: lack of suitable habitat and/or appropriate elevation, or recent changes in land use. Supplementing identified special status plant habitat with local knowledge from Agency Botanists would further improve the quality of this desk exercise. The TVE survey will make note of any special status plant habitat not previously identified as part of the above desk exercise. The additional plant habitat will be surveyed following Tetra Tech's Special Status Plant survey protocol. A comprehensive list of vascular plants and their habitats will be developed as part of this survey. Also, see response to comment 79 above.
90		APPENDIX E.	BLM	Refine maps to include highlighted area with ash outcrops, ash lenses, sand inclusions, calcareous outcrops.	See response to comment 83 above.
91		APPENDIX E.	BLM	Several plants on the target list are lacking as species to be surveyed for on specific tiles. For example: Mentzelia mollis should be a target starting at mile post 263 all the way to the Idaho border. In addition Chaenactis cusickii is often grows in association with mentzelia mollis so should be added to all those sites where Mentzelia mollis is likely to occur. Mirabilis laevis var. retorsa at mile post 260-263 needs to be added to the survey target (I do not believe this isolated population is entered into GeoBOB at this time).	Survey areas for special status plant will be updated accordingly.
92		APPENDIX E.	BLM	The maps need a good comb over with each botanist from each office (BLM/FS) in order to verify all species are accounted for in likely habitats.	These maps and the Work Plan has been provided to the BLM for review. Any additional information they can provide is welcome.
93		WEEDS	BLM	Russian olive was submitted as a noxious weed occurring or mapped within five miles of the corridor. It is recommended this species be put in Appendix C so it can be inventoried for and treated before, during and after construction (Owyhee FO BLM Botanist Elisabeth Corbin).	The Idaho BLM does not list Russian olive as a noxious weed nor is it part of the State of Idaho's 64 noxious weed species.
94		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 1 – expand the northern survey boundary to MP 122 due to an incidental sighting in 2010	Surveys in areas included on map tile 1 will be conducted as requested.
95		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 5, 6, 7, 8 – no surveys are needed west/south of I-84	Comment noted
96		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 9 – starting at MP 182, survey the west side of I-84 where suitable habitat/topography exist (i.e. no need to survey timber, steep slopes, draw bottoms, etc.), survey east of I-84 where suitable topography exists	Surveys in areas included on map tile 9 will be conducted as requested.
97		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 10 – survey all areas identified where suitable topography exists	Surveys in areas included on map tile10 will be conducted as requested.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
98		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 15 to 18 – from MP 258 to Malheur River near MP 237, exclude low elevation and interior of large burns that have no residual sagebrush. Survey all mosaic burns, and areas with, or in the vicinity of intact sagebrush habitat. Surveyors will have to use professional judgment to determine areas to survey as this landscape has been heavily impacted by fire and invasive weeds, however the areas of intact sagebrush have potential to provide sage-grouse habitat. The area from Highway 20 to the Malheur River had use by sage-grouse this winter.	Surveys in areas included on map tiles 15 to 18 will be conducted as requested.
99		Action Item #1: Review sage-grouse survey areas	ODFW	• Map Tile 18 to 19 – exclude where the corridor follows the existing line, from the OR/ID state line to the top of the canyon at approximately MP 258 on the east side of the Owyhee River.	Surveys in areas included on map tiles 18 to19 will be conducted as requested.
100		Action Item #2: Review great gray, flammulated owl, goshawk and three-toed woodpecker survey areas to ensure that all areas need to be surveyed:	ODFW	We reviewed the areas identified for survey and do not have any areas to add or remove from the survey area.	Comment noted.
101		Action Item #3: Review Washington ground squirrel survey area and ensure that all areas need to be surveyed	ODFW	We reviewed the survey areas and found some areas identified for surveys that do not need to be surveyed and other areas that need to be added to the survey.	Comment noted.
102		Action Item #3: Review Washington ground squirrel survey area and ensure that all areas need to be surveyed	ODFW	Washington ground squirrel habitat that is adjacent to cultivated land, does not need to be surveyed if all of the impact will occur in the cultivated area. For example, if all the ground disturbing impact (road, tower footprint, etc.) will be in a wheat field, you do not need to survey the ground squirrel habitat next to the field even if it falls within the designated buffer distance.	Comment noted. It is understood that ODFW will be providing a revised policy for WGS that may differ from this guidance, and IPC will meet the guidance once it is provided. Currently, we have identified all suitable habitat for survey as defined in Appendix B-1.
103		Action Item #3: Review Washington ground squirrel survey area and ensure that all areas need to be surveyed	ODFW	We would like to clarify our set back distance policy due to concerns we have heard from landowners. Ground disturbing impact within Washington ground squirrel habitat may not occur within 785 feet of known burrows. If the disturbance is in cultivated areas, then the 785 feet buffer does not apply.	Comment noted.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
104		Action Item #3: Review Washington ground squirrel survey area and ensure that all areas need to be surveyed	ODFW	The overall area identified for Washington ground squirrel surveys does not adequately cover their potential range along the power line route. Surveys should be conducted in all suitable Washington ground squirrel habitat where ground disturbing impacts may occur west of mile post 83.	Surveys in areas west of mile post 83 will be conducted as requested.
105		Additional Comments	ODFW	Burrowing owls/pygmy rabbits: We are concerned that the Terrestrial Visual Encounter Surveys (TVES) will not adequately survey for presence of burrowing owls and pygmy rabbits. Both of these species are hard to detect visually and both can be identified by sign at the burrow. Furthermore, burrowing owls are often heard before they are seen. To increase the likelihood of detection, TVE surveyors should be trained on identification of burrowing owl and pygmy rabbit sign at burrows and burrowing owl calls.	TVE surveyors will be trained to identify burrowing owl and pygmy rabbit signs.
106		Additional Comments	ODFW	Ferruginous hawk: Surveys need to be extended to the west side of the corridor from mile post 128 to 133.5.	Surveys in areas west of corridor (from mile post 128 to 133.5) will be conducted as requested.
107		Additional Comments	ODFW	Bats: Large snags are not mentioned as important hibernacula or roost sites. These also provide feeding and shelter/nesting sites for other sensitive species. These features should be identified and numerated in at least the direct impact area.	Large snags are identified in Table 1 as a unique habitat feature and would be recorded during TVE surveys.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
108		Additional Comments	USFWS	March 9, 2011 To: Aaron English, Tetra Tech From: Suzanne Anderson, USFWS Subject: In reference to the Service's comments dated February 22, 2011 Specifically comment #2, should the survey distance for raptor nests be 0.5 miles as stated in the January 28, 2010 B2H work plan or 1.0 mile as recommended by ODFW and the Service. I checked with our Portland folks and am passing on the following: The goal of the raptor nest surveys should be to identify potential sources of energy project impact – not just from the construction phase, but also the operational phase. Therefore the Utah FWS guidance (which is focused on avoidance distances for disturbance from project activities – as addressed via aerial surveys out to that disturbance distance) is NOT a good guidance document for raptor nest surveys that need to provide key information to avoid both DISTURBANCE from human activities (such as transmission) as well as insights into project specific "micro-locations" for higher protective efforts associated with use and mortality monitoring, associated adaptive management, and (as necessary) compensatory mitigation. So these disturbance-related buffers in the Utah guidance are not necessarily appropriate for the B2H surveys. For a transmission project of the B2H size (500 Kv), we are most concerned with construction phase-related disturbance to nesting raptors as well as operational-phase collision and displacement. But we are not concerned generally with electrocution for a 500 Kv project. Therefore, the Service suggests 2 mile aerial surveys for golden eagle nests from the centerline of the B2H transmission project. This should provide sufficient information for avoidance during construction as well as data to better locate the towers and wires away from nest areas and other high use (foraging, migration, etc.) habitats, and to develop proper monitoring and adaptive management around these higher risk sites. The Service recommends a 1.0 mile minimum for other raptor species.	IPC shares the FWS's concern regarding the potential impacts that could occur to raptor species from both construction and operation of a high voltage transmission line. As a result of this shared concern, IPC has developed a survey approach that would provide the necessary information for us to limit or eliminate disturbance to nesting raptors, based on established FWS guidance. The goal of the proposed survey effort is to locate nests within areas where disturbance from both construction and operation of the proposed project may impact raptors. IPC recognizes the necessity to micro-site these types of projects during final construction, and the associated need to survey a large enough area to facilitate this micro-sitting effort. This is why the survey distances reported in the Biological Work Plan extend from the outer edge of the 500-foot-wide corridor, as opposed to from the projects centerline. This 500-foot-wide corridor allows for micro-sitting of the project, while still maintaining the survey distances established in current FWS guidance. The Biological Work Plan makes a distinction between raptor surveys that would utilize listening stations (e.g., ground surveys for great grey owls and flammulated owls), and "raptor nest surveys" that would be conducted via helicopters. As noted in Section 3.1.3 of the Biological Work Plan, the default survey area used for raptor nests during the "raptor nest surveys" is 0.5 mile from the corridor; however, note that this is 0.5 mile from the outer edge of the 500-foot-wide corridor, not from the project's centerline (which will allow for micro-sitting). Note that areas greater than a 500-foot corridor may be identified and a 0.5-mile buffer would be extended in those areas as well. The 0.5-mile survey area has been extended in areas that could support raptor species that have been determined (based on the extent of "no disturbance buffers" around these species' nests) to be more sensitive to disturbances than other raptor species. The survey area has been increased to 1 mile from the outer edge of the 500-foot corridor in areas that could support ferruginous hawks, and 2 miles in areas that could support golden eagles (Appendix B-3 provides additional detail on how the survey boundaries were established). Nests of any raptor species that are observed would be recorded during these surveys. Of the total 299 mile length of this project, about 236 miles would fall within areas determined to potentially support ferruginous hawks or golden eagles, and would therefore be surveyed out to at least 1 mile from the 500-foot corridor. The remaining 63 miles of the project that do not support either the ferruginous hawk or golden eagle, and would subsequently only be surveyed out to 0.5 miles from the 500-foot corridor, mainly occur along the northern portion of the project that contains cultivated lands.

Comment ID	Page #	Section #	Agency/ Commenter	Comment	Page Number or Section Number where Comment is Addressed
109		Additional Comments	IPC	IPC would like to modify the survey area at five locations. Please ensure the BSWP includes survey's for all identified species at the following locations and to the revised survey width, as provided: 1. Glass Hill – (Milepost 106 – 115) because of routing changes that could occur-- survey a 2,000' wide corridor for both the main route and the alternative at this location 2. Weatherby area – (Milepost 184-190) to cover both the 69 and 138 kV line routes because of the existing transmission lines being double circuited and the 500 line being placed along the existing 138 kV line route-- survey a 250' wide corridor along the exising ROWs. 3. I84 route towards Brogan – (Milepost 193-199) because of the potential of BLM moving the line completely away from the leks-- survey a 1,000' wide corridor.. 4. Mile post (270-275) because of the potential of moving the route further to the south because of landowner issues-- survey a 1,000' wide corridor. 5. Mile post (286-289) because of the potential of moving the route further to the south because of landowner issues-- survey a 1,000' wide corridor.	These areas will be included in revisions to the various survey maps and will be buffered out to include all species protocols.
110		Additional Comments	BLM	Pygmy Rabbit Survey Criteria for Oregon BLM lands Areas with big sagebrush species including Mountain, Basin and Wyoming sage with more than 5% canopy cover in areas with deeper soils should be surveyed using the Pygmy Rabbit Survey Protocol and data record sheets in Appendix B-11. Results of surveys for pygmy rabbits on the northern part of the Malheur Resource Area have documented burrow systems in micro-sites of deeper soils with some occurrence of sagebrush and taller plants. Soil composition needs to be able to support a burrow system with numerous entrances, but also must be soft enough for digging. We recommend doing these surveys during Phase II of the biological survey process. The pygmy rabbit surveys can be conducted during Phase III of the biological survey process as long as the surveys are performed using the Pygmy Rabbit Survey Protocol in all habitats meeting the above mentioned criteria and not as part of the Terrestrial Visual Encounter Survey (TVES) protocol. The protocol is very straight forward and actually very quick. Looking for the rabbits themselves isn't the best way to survey. The burrows are much easier to see and will require less effort to detect. A great time to survey is when there is fresh snow on the ground, but any time will work if you know what you're looking for. Tracks, burrows and pellets are very easy to see and a surveyor can move very quickly. The contractor the BLM is currently using is covering 8-12 linear miles / day.	On lands not managed by the BLM, surveyors will perform pygmy rabbit protocol level surveys (Appendix B-11) if any pygmy rabbits or evidence of pygmy rabbit activity (rabbit burrows or pellets) is identified during protocol level surveys. On BLM-administered lands, protocol-level surveys for pygmy rabbits will be conducted in all areas with deep soil that contains big sagebrush species (including Mountain, Basin, and Wyoming sage) with more than 5% canopy cover. Surveys will be conducted on BLM-administered lands, regardless of whether or not surveyors identify rabbit activity. Pygmy rabbit surveys will be performed exclusively for the species and will not be conducted concurrent with other survey efforts.
111		Additional Comments	ODFW	**From:** Steve Cherry [mailto:steve.p.cherry@state.or.us] **Sent:** Wednesday, March 16, 2011 10:40 AM **To:** Ray Outlaw **Subject:** RE: B2H: Biological Survey Work Plan Meeting Summary (02-15-2011) Ray, In your summary you section regarding WGS you list that " Survey protocol does not include scat, burrows or other criteria and is based solely on listening for the animal." Looking for holes and scat is a very large part of the survey protocol and is stated in your Biological Survey Work Plan sent out on January 28th . I assume that the reference in your summary is an error and that your surveys will be completed as outlined in the Work Plan. If this is not the case please let me know. Thanks	The draft meeting notes did mis-state the protocol to be used for the Washington Ground Squirrel. The protocols outlined in the BSWP, specifically Section 3.1.1 will be used.

Revised
Final Biological Survey Map Book
Volume II

Boardman to Hemingway Transmission Line Project

Prepared for:

Idaho Power Company

1221 West Idaho Street
Boise, Idaho 83702

Prepared by:

3380 Americana Terrace, Suite 201
Boise, ID 83706
(208) 389-1030
www.tetratech.com

Tetra Tech Project No. 8540146

April 2011

Final Biological Survey Map Book

VOLUME II – BIOLOGICAL SURVEY MAP BOOK (Under Separate Cover)

Section 1	Land Cover Classifications Map Book
Section 2	Washington Ground Squirrel Survey Map Book
Section 3	Sage-Grouse Survey Map Book
Section 4	Raptor Aerial Survey Area Map Book
Section 5	Northern Goshawk and Three-toed Woodpecker Survey Map Book
Section 6	Great Gray and Flammulated Owl Survey Map Book
Section 7	Special Status Plant Survey Map Book

The above maps can be accessed at the following website:

http://projects.ttsvcs.com/eec/NEPA-B2H/default.aspx

ATTACHMENT P-4
DRAFT RECLAMATION AND REVEGETATION PLAN

DRAFT

Reclamation and Revegetation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

February 2013

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Purpose 1
1.2 Goals and Objectives 1
2.0 RECLAMATION 2
2.1 Preconstruction Planning 2
2.2 Preconstruction Surveys 3
2.3 Topsoil Treatment 3
2.4 Revegetation 3
2.4.1 Seedbed Preparation 3
2.5 Seeding Methods 4
2.5.1 Seed Mixes 4
2.5.2 Plantings 4
2.6 Weed Management 5
2.7 Post-Construction Monitoring and Reporting 5
2.7.1 Monitoring 5
2.7.2 Reporting 6
3.0 NOXIOUS AND INVASIVE-WEED CONTROL 6
3.1 Existing Conditions 7
3.2 Preconstruction Weed Surveys 13
3.3 Preconstruction Treatment 13
3.4 Weed Control during Construction 13
3.5 Postconstruction Weed Control and Monitoring 13
4.0 IPC PROPOSED ENVIRONMENTAL PROTECTION MEASURES 14
5.0 PLAN UPDATES 15
6.0 LITERATURE CITED 15

LIST OF TABLES

Table 1. Designated Noxious Weeds Suspected to Occur within the Project Area, Based on State and County Noxious Weed Lists 9

1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 282 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project would include a 500-kilovolt (kV) single-circuit line, and a rebuild of an existing 138-kV and 69-kV double-circuit lines between Boardman, Oregon, and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho). The Project includes ground disturbing activities associated with the construction of above-ground, single- and double-circuit transmission lines involving towers, access roads, staging areas, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines.

1.1 Purpose

This draft Reclamation and Revegetation Plan (hereafter referred to as the Reclamation Plan) describes the framework for the development of the final Reclamation and Revegetation Plan (final Reclamation Plan). The focus of this framework and the final Reclamation Plan is to restore areas that have been impacted by construction activities to preconstruction conditions, and minimize the spread or establishment of invasive-plant species as a result of construction activities. The measures that would be taken to minimize the spread/establishment of invasive-plant species and maintain vegetation during operation of the Project are discussed in the draft Vegetation Management Plan (IPC 2013a).

This plan is applicable Project-wide, and it is expected that modifications to this plan will be made once final agreements are made with applicable federal and state land-managing agencies, as well as counties and individual landowners. The final Reclamation Plan is intended to meet the guidance contained in Chapter 2840 of the Forest Service Manual (USFS 1990) as well as any applicable Bureau of Land Management (BLM) Resource Management Plans and local (i.e., county or city) management plans.

This plan incorporates the Storm Water Pollution Prevention Plan (SWPPP) as well as the Erosion and Sediment Control Plan (ESCP) that will be developed in compliance with the Clean Water Act of 1972 (CWA) and the State of Oregon's Removal-Fill Permit. The SWPPP and ESCP include measures to address erosion and sedimentation that could result from ground disturbing activities. The SWPPP and ESCP are standalone documents; they are incorporated by reference into this document. Environmental Protection Measures (EPMs) developed for the SWPPP and ESCP are detailed in the Species Conservation Plan (IPC 2013b).

1.2 Goals and Objectives

IPC's primary goal for conducting reclamation activities is to restore temporarily disturbed areas to preconstruction conditions to the extent practical, and to limit the introduction or spread of noxious- and invasive-plant species as a result of IPC activities. This goal will be accomplished through the stabilization and protection of existing vegetation; minimizing the extent and scope of initial disturbance; stabilizing soils after disturbance; maintaining soil quality/composition/position; preventing soil compaction; and re-establishing vegetation in disturbed areas that is consistent and compatible with adjacent land uses.

Reclamation goals can be achieved through short- and long-term objectives. The short-term objectives for reclamation are to: stabilize disturbed areas to minimize potential erosion and sedimentation, establish temporary vegetation cover, prevent or minimize the introduction and

spread of noxious and invasive-plant species, and conserve suitable topsoil for long-term reclamation activities. The long-term objective of reclamation is to establish permanent vegetation cover that is similar to pre-disturbance conditions, self-sustaining, and where applicable, resistant to the introduction or spread of noxious and invasive-plant species. Measures to achieve reclamation goals include the following:

- Use proper soil-management techniques, including stripping; stockpiling; and re-applying topsoil material at temporarily disturbed areas to restore soil horizons, maintain the existing seedbank(s) to the extent practical for revegetation, and establish surface conditions that would allow for the rapid re-establishment of vegetative cover.
- Establish stable soil surface and drainage conditions and use applicable best management practices (BMPs) that would minimize surface erosion and sedimentation, as well as facilitate plant establishment.
- Re-establish topography to preconstruction conditions to the extent practicable.
- Conduct preconstruction weed surveys to identify the locations where weed treatments may be necessary in order to reduce the risk of their spread during construction.
- Perform preconstruction weed-control treatments at locations identified by preconstruction weed surveys (e.g., areas with large weed infestations of noxious weeds within or adjacent to the Project's right-of-way [ROW]).
- Perform post-construction treatments (e.g., seeding, removal of weeds, and/or site restoration) to restore areas to pre-disturbance conditions (discussed in the Vegetation Management Plan [IPC 2013a]).
- Conduct post-construction weed and revegetation success monitoring for 3 years, or until success criteria are met (discussed in the Vegetation Management Plan [IPC 2013a]).

2.0 RECLAMATION

2.1 Preconstruction Planning

In order to minimize the extent and scope of initial disturbances that would require reclamation, IPC will conduct preconstruction planning. This includes identifying all construction work areas (e.g., the ROW, access roads, temporary storage areas, fly-yards, etc.) as well as existing site conditions. Disturbance footprints would be modified to the extent practical in order to minimize impacts to natural or sensitive vegetation communities (e.g., relocating or altering construction work areas to locations outside of natural vegetation to the extent practical). This will be done, in part, under the BLM and U.S. Department of Agriculture Forest Service (USFS) permitting process, during the Oregon Energy Facility Siting Council (EFSC) approval process, and during the pursuit of other permits or regulatory requirements (e.g., Section 404 of the Clean Water Act). In addition, IPC will coordinate with the appropriate local, state, and federal agencies in order to ensure that sufficient seed mixes and planting stocks that meet the requirements of these agencies are available prior to construction and that appropriate site-specific plans have been completed. Coordination with local landowners will also occur, in order to determine the expected restoration goals on private lands (e.g., appropriate crop-seed mixes to use during restoration, as well as the location of agricultural drain tiles that would need to be avoided during construction). The final Reclamation Plan will include site-specific restoration plans.

2.2 Preconstruction Surveys

Preconstruction vegetation surveys will be conducted Project-wide to document the vegetation species, evaluate the presence or potential habitat for plant species of special concern (state and federally listed species), determine the overall landscape condition relative to plant growth (healthy plant populations, over-grazed areas, previously disturbed areas, recently burned areas, etc.), and determine the presence and extent of noxious or invasive-plant species in the Project Area. Land uses that are causing or contributing to the establishment, persistence, and spread of noxious- or invasive-plant species will also be documented. Vegetation surveys will be conducted during the growing season and prior to construction, and will provide baseline data to guide reclamation efforts. These surveys will be conducted as part of the planned Phase 3 surveys, as described in Exhibit P of the preliminary Application for Site Certificate (IPC 2013c) and the Revised Final Biological Survey Work Plan (Tetra Tech 2011).

2.3 Topsoil Treatment

IPC and/or its contractor will avoid and minimize ground disturbance where practical; however, even with avoidance and minimization of disturbance, there will still be extensive areas of temporary soil disturbance resulting from construction of the Project. The final Reclamation Plan will identify locations where the management of topsoil is warranted (e.g., stripping off the topsoil layer and storing it separately from sub-soils), such as areas where topsoil currently supports native plant species or in areas that are important to private landowners (e.g., agricultural soils). When soil removal is required, topsoil and subsoil layers will be stored separately, and will be replaced in the proper order during reclamation, in order to preserve the soil stored seedbank as well as maintain soil integrity/quality. Generally, the topsoil layer is considered the upper 6 to 12 inches of soil, but this can vary by soil type, and soils deeper than 12 inches may need to be considered as “topsoil” in certain areas (e.g., farmlands). Furthermore, soils in the dry shrubland and desert like environments may be much thinner than 6 inches in some cases. In areas where topsoil will need to be stripped, it will be removed to a thickness defined by a predetermined depth below the surface (in areas where this depth is known) or to a depth where a distinct color change occurs (in areas where the depth is not known). Appropriate erosion control measures (as outlined in the SWPPP) would be employed both while the soils are stored and during reclamation, in order to prevent erosion and loss of soil. The EPMs developed for topsoil removal and replacement are detailed in the Species Conservation Plan (IPC 2013b).

2.4 Revegetation

Reclamation of temporarily disturbed areas will involve replacing stockpiled subsoil and topsoil (where applicable), restoring pre-existing contours, decompacting soils when necessary, implementing erosion-control measures (e.g., water bars), conducting final cleanup of construction areas, weed treatments (see Section 3), and re-establishing vegetation to a level consistent with preconstruction conditions. Some areas may not have had extensive vegetation before Project construction (e.g., areas that have shallow bedrock, shallow topsoil, steep slopes, or dry desert soils). These areas will be identified during preconstruction surveys and will not be re-seeded during reclamation. The EPMs developed for reclamation are further detailed in the Species Conservation Plan (IPC 2013b).

2.4.1 Seedbed Preparation

As part of the reclamation process, IPC will prepare the seedbed to facilitate the restoration of vegetation to preconstruction conditions. In addition to the reclamation steps described above, seedbed preparation may include the addition of soil amendments to disturbed areas. Soil

amendments (e.g., mulch, fertilizers, tackifying agents, soil stabilizing emulsions) are intended to minimize soil erosion and subsequent sedimentation, conserve soil moisture, provide cover, moderate temperatures to facilitate the germination of seeds, and add nutrients to the soil (in the case of fertilizers). Landowner approval would be required prior to the use of soil amendments, and all amendments would be required to be weed-free. The final Reclamation Plan will identify the requirements and application methods that would be implemented regarding soil amendments (e.g., application rates, types approved per land ownership, anchoring methods). In general, mulch, tackifying agents, and soil stabilizing emulsions would be used in areas where the risk of soil erosion is considered high (e.g., in revegetated areas along slopes); fertilizers would only be used if requested by the land-owner or the land-management agency. The EPMs developed for seedbed preparation are further detailed in the Species Conservation Plan (IPC 2013b).

2.5 Seeding Methods

Unless otherwise directed by the applicable land-managing agency or landowner, seeds will be applied following seedbed preparation using a broadcast spreader, drill, and/or hydroseeder (the method used depends on site conditions and seed mix). Drill seeding would likely be used in areas that have moderate or favorable terrain necessary to accommodate mechanical equipment, while hydroseeding would likely be implemented in areas that contain steep slopes. Seeding will be done after ground-disturbing activities are complete and at the appropriate time of year (preferably in the fall or spring). If there is a lag time between the end of ground-disturbing activities and seeding, measures outlined in the SWPPP will be used to minimize soil erosion. Measures regarding seeding methods are detailed the Species Conservation Plan (IPC 2013b).

2.5.1 Seed Mixes

The choice of seed mixtures will be dependent on the existing vegetation types, the availability of commercial weed-free live seeds, land-management agency requirements, and landowner approval. The final Reclamation Plan will identify proposed seed mixes for use in different regions and land-ownerships, based on specific vegetation communities (e.g., sagebrush, grassland, etc.); it will also include the species, cultivar, percent seed mix, pure live seeds per acre, and the application rate if applicable. Proposed mixes will not be applied prior to landowner notification and approval. IPC will utilize native seed mixes where appropriate and practicable.

In addition to restoring temporarily disturbed areas, IPC will re-seed some permanently disturbed areas. Permanent access roads that are necessary for the long-term operation and maintenance of the Project are considered a permanent impact; however, IPC will re-seed these areas in order to reduce erosion and to maintain a consistent vegetative cover across the road. Roads will be revegetated with a grass mix, which may not be similar to the adjacent vegetation community (e.g., in forested or mature shrubland habitats). Shrubs and taller growing vegetation will not be used on roads because of the potential to adversely affect the safe, long-term use of the roads.

2.5.2 Plantings

In some cases revegetation via seed mixes may not be appropriate. For example, plantings (young plants) may be used when revegetating temporarily disturbed woodland/forested areas, depending on requests and requirements of the land-management agencies or landowners. In instances where the applicable land-managing agency or landowner requests that disturbed woodland/forested areas be revegetated via plantings, and the use of plantings is warranted,

containerized plantings could be used year round, while bare-root planting could be planted during the dormant season. The use of plantings would be determined on a case-by-case basis, and the species composition and planting methods would be approved by the applicable land-managing agency or landowner prior to their implementation.

2.6 Weed Management

Preventing the spread and/or establishment of invasive-plant species and noxious weeds is a crucial component necessary when attempting to successfully revegetate disturbed areas. The efforts that would be taken to manage invasive-plants and noxious weeds are addressed in Section 3 of this document.

2.7 Post-Construction Monitoring and Reporting

2.7.1 Monitoring

IPC will conduct post-construction surveys for 3 years following the conclusion of ground-disturbing activities. If success criteria are not meet after 3 years, monitoring and necessary remedial measures will be conducted until success criteria are meet. Successful revegetation will be determined by annually monitoring of reclaimed areas and comparing them to preconstruction conditions as well as reference sites. Biologists will visit all revegetation sites annually for the first three years. Biologists will note any signs of surface erosion, noxious weed invasion, poor vegetation germination/survival, adjacent land uses and conditions, and disturbances (e.g., grazing, vandalism, off-road vehicle use, etc.). Biologists will note the overall plant community and general health of the area during these initial surveys; however, more quantitative monitoring will also be conducted along established transects. Transects will be established the first year of monitoring and will be placed to ensure that the revegetation area is well represented. The exact number and location of transects will be determined on a site-specific basis.

During transect monitoring, cover sampling will be conducted using the Point Intercept (USDA and USDI 1996) method to assess canopy cover and species composition. The Point Intercept method is designed to capture quantitative data for measuring cover of grass or grass-like plants, forbs, shrubs, and trees. This method consists of placing randomly located, permanently staked 50-meter transects in revegetated areas and reference sites. Overstory and understory species, as well as ground cover that overlaps at a sample point along the transect will be recorded. In some instances this overlapping vegetation will result in vegetative cover greater than 100 percent. Vascular plants will be identified to species while mosses and lichens will be identified only as moss or lichen.

Preliminary suitable reference areas will be identified during preconstruction surveys and will be finalized during the first year of revegetation monitoring. Reference sites will be monitored using the same methods as revegetation sites. Reference sites will be selected that have similar terrain, vegetative characteristics, and site potential vegetation compared to the disturbed areas. Reference sites will provide information regarding:

- Baseline vegetation cover density;
- Baseline species diversity;
- Baseline community composition and dominant species;
- Changes in the plant community not attributable to the Project; and
- Better information on seed mix requirements for any subsequent remediation needs.

Reference areas will be located in vegetation types that reflect the site potential of the reclamation sites. Due to the extent of the Project and potentially high number of revegetated sites, one reference area (e.g., one area for the sagebrush steppe community) would be used to represent potential conditions for multiple revegetated areas along the Project corridor that contained similar vegetation prior to construction (but within the same ecoregion).

Reclamation will be determined successful if the seeded areas have germinated and are demonstrating that they will, over time, achieve a distribution and diversity similar to preconstruction conditions. The abundance of noxious weeds in the revegetated sites will be compared to preconstruction conditions (measured during preconstruction surveys) to determine if levels are greater than preconstruction conditions. As the success criteria would be based on the preconstruction conditions of the site (e.g., weed conditions, as well as vegetation community type) as well as reference sites (e.g., cover sampling data), they would be site-specific and not definable at this stage of the Project. If after a second growing season, problem areas have been identified (e.g., seed germination is lower than expected, or there is a prevalence of noxious weed species present that were not there prior to construction), the area may be treated and may be re-seeded. In some cases, depending on conditions at the reference site and the previous year's weather, sites may not need remedial measures and may need another year to reach success criteria. Treatment may include additional seedbed preparation, control of noxious or invasive-plant species, use of soil amendments, and/or use of another appropriate seed mix.

Monitoring reclamation activities and remedial measures on disturbed private lands (e.g., agricultural lands) will be determined based on agreements made between the landowner and IPC. Monitoring of agricultural lands is not proposed; restoration of agricultural lands will be considered complete upon replacement of disturbed soils and seeding or planting of crops.

2.7.2 Reporting

IPC will document preconstruction observations, construction reclamation activities, and post-construction monitoring in an annual report. A single annual report will be prepared for the entire Project length and will be submitted to the ODOE, BLM, and USFS. The reports will provide a summary of Project reclamation activities and observations, progress towards or achievement of success, identify any specific problem areas along the Project, and will include recommendations for additional corrective actions if necessary. Because construction and reclamation activities will occur in phases, the monitoring report will also be organized by construction phase or spread.

3.0 NOXIOUS AND INVASIVE-WEED CONTROL

Invasive-plant species consist of non-native plants that have been spread beyond their natural range of dispersal by human activities[1]. Invasive-plants are typically adaptable and have a high reproductive capacity. Their introduction causes, or is likely to cause, economic or environmental harm or harm to human health (NISIC 2011). Invasive-plants are of concern because they can spread to new areas rapidly, threaten the genetic integrity of native flora through hybridization, typically flourish in disturbed areas resulting in the exclusion of native vegetation, and can change the structure and function of ecosystems through alterations of geochemical and geophysical processes. "Noxious weed" is a legal term for any invasive-plant species that has been officially designated by a federal, state, or local agency as injurious to

[1] Not all non-native plant species are considered invasive-plants or are detrimental to economic or environmental conditions (e.g., some non-native horticultural landscaping species have low dispersal rates or are unable to survive outside of maintained, landscaped areas).

public health, agriculture, recreation, wildlife, or property (Sheley and Petroff 1999). Noxious weeds are a concern for federal, state, and local agencies because of their potential to degrade wildlife habitat, reduce plant diversity, adversely affect agricultural production, and impact the management of both natural and agricultural systems.

Soil disturbances, such as those caused by the construction of the Project, could result in the establishment of new populations and spread of existing populations of noxious and invasive-plant species. This section of the plan describes the known status of weed species within the Project area, the regulatory agencies responsible for the control of noxious and invasive-plant species, and the steps IPC will take to prevent the establishment and spread of noxious and invasive-plant species that are the result of IPC construction activities. In addition to providing updated information contained within this framework, the final Reclamation Plan will include information on locations of significant weed populations within the Project footprint (based in part on survey results) and the proposed treatment methods for these weed populations, as applicable.

The focus of IPC's noxious weed control efforts will be to prevent the spread of new infestations resulting from IPC's activities. IPC is only responsible for the control of noxious and invasive-plant species that are a result of its construction-related activities. IPC is not responsible for noxious and invasive-plant species that occur adjacent to Project areas, or for controlling or eradicating an infestation that was present prior to the Project. For example, cheatgrass (*Bromus tectorum*) is widespread across large portions of the Project area. Eradication of these existing populations of cheatgrass is not the responsibility of IPC and would not be attempted. However, some preconstruction control efforts will be made to remove existing noxious and invasive-plant species from areas within and near construction sites in order to limit the risk of construction activities spreading existing infestations.

There are five noxious weed control activities for the Project: 1) inventory the existing occurrence, distribution, and abundance of noxious weeds in the Project area prior to construction, 2) monitor and document the occurrence, distribution, and abundance of noxious weeds in the Project area for 3 years following the completion of construction activities, 3) reduce infestations of noxious weeds caused by Project-related activities and prevent the spread of new and existing populations within the Project area both during construction as well as operations of the Project, 4) ensure any populations of sensitive plants along the transmission line are not negatively impacted by weed-control activities, and 5) coordinate and consult with appropriate land-management personnel, as appropriate, regarding noxious weed inventory and control activities conducted by IPC.

3.1 Existing Conditions

The Idaho Noxious Weed Law (Title 22, Chapter 24, Idaho Code) is the basis for the management and control of noxious weeds by the State of Idaho. The Idaho State Department of Agriculture (ISDA) is responsible for administering the state Noxious Weed Law. Noxious Weeds Rules (Idaho Administrative Procedures Act [IDAPA] 02 Title 06 Chapter 22) designate weeds as noxious statewide. Idaho's noxious weeds are divided into three categories defined as follows (ISDA 2011):

- **Statewide Early Detection and Rapid Response Noxious-Weed List (EDRR):** If any of these weeds are found in Idaho, they shall be reported to the ISDA within 10 days following positive identification by the University of Idaho or another qualified authority as approved by the ISDA director. These weeds shall be eradicated during the same growing season as the one in which they are identified.

- **Statewide Control Noxious Weed List:** These weeds are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control and/or eradication may be possible. A written plan for weeds on the Statewide Control Noxious Weed List shall be developed by the control authority that specifies active control methods to reduce the known population in no more than 5 years. The plan shall be available to the ISDA upon request.
- **Statewide Containment Noxious Weed List:** These weeds are known to exist in various populations throughout the state. Weed-control efforts may be directed at reducing or eliminating new or expanding weed populations, while known and established weed populations, as determined by the weed-control authority, may be managed by any approved weed control methodology, as determined by the weed-control authority.

The Oregon State Weed Board (OSWB) was established under ORS 561.650. The OSWB provides direction to control noxious weeds at the state level and develops and maintains the State Noxious Weed List. The OSWB and the Oregon Department of Agriculture (ODA) classify noxious weeds in Oregon in accordance with the ODA Noxious Weed Classification System. There are three designations under the State's system (ODA 2011):

- **Class "A" State Noxious Weed:** A weed of known economic importance that is not known to occur in Oregon or occurs in small enough infestations to make eradication/containment possible; however, its presence in neighboring states make future occurrence seem imminent.
- **Class "B" State Noxious Weed:** A weed of economic importance that is regionally abundant but may have limited distribution in some counties.
- **Class "T" State Noxious Weeds:** A priority noxious weed designated by the OSWB as a target on which the ODA will develop and implement a statewide management plan. "T"-designated noxious weeds are species selected from either the "A" or "B" list.

In addition to the ODA Noxious Weed Classification System used by the state of Oregon, each county in Oregon uses a separate weed classification system and maintains a separate list of county noxious weeds. These lists also use a 3-point designation classification system; however, the definition of each designation differs slightly from the state classification system. The county classification system is as follows:

- **Class "A" County Noxious Weed:** A weed of known economic/environmental importance known to occur in the county in very small numbers to make eradication practicable or not known to occur but its status in surrounding counties makes future occurrence seem imminent.
- **Class "B" County Noxious Weed:** A weed of known economic/environmental importance and of moderate to wide distribution and highly invasive, subject to intensive control or eradication where feasible at the county level.
- **Class "C" County Noxious Weeds:** A weed of known economic/environmental importance and of general distribution that is subject to control or eradication as local conditions warrant.

Table 1 lists the weeds suspected to occur within the counties that would be crossed by the Project and that are found on the state and county noxious weed lists. This is not a comprehensive list of every invasive-plant species or noxious weed that could potentially occur within the Project area, as the exact extent of existing invasive-plant species and noxious weed populations is unknown. The goal of Table 1 is to provide a list of the species expected to occur along the line, based on state and county noxious weed lists. The extent and composition of noxious weeds and invasive-plant species, in relation to the Project area, will be determined during Project-related surveys (including preconstruction surveys).

Table 1. Designated Noxious Weeds Suspected to Occur within the Project Area, Based on State and County Noxious Weed Lists

Scientific Name	Common Name	Idaho State List	Oregon State List	Oregon County List 6
Abutilon theophrasti	Velvetleaf	–*	B	A (Union)
Aegilops cylindrica	Jointed goatgrass	Containment (not known in Owyhee Co.)	B	A (Baker, Malheur) B (Morrow, Umatilla, Union)
Agropyron repens	Quackgrass	–	B	B (Umatilla) C (Malheur, Union)
Alhagi pseudalhagi	Camelthorn	–	A	A (Malheur, Umatilla)
Ambrosia artemisiifolia	Common ragweed	–	B	B (Umatilla) C (Malheur)
Ambrosia tomentosa	Skeletonleaf bursage	–	A	A (Malheur)
Anchusa officinalis	Common bugloss	–	B, T	A (Union)
Asteraceae conyza	Horse weed/mares tail	–	–	B (Union)
Avena fatua	Wild oat	–	–	B (Morrow) C (Union)
Bromus tectorum	Cheatgrass	–	–	C (Malheur)
Cannabis sativa	Marijuana	–	–	A (Umatilla)
Carduus nutans	Musk thistle	Control	B	A (Union, Morrow) B (Malheur, Umatilla)
Carduus pycnocephalus	Italian thistle	–	B	A (Malheur)
Carduus tenuiflorus	Slender-flowered thistle	–	B	A (Malheur)
Carthamus baericus	Smooth distaff thistle	–	A	A (Malheur)
Carthamus lanatus	Wooly distaff thistle	–	A, T	A (Malheur)
Centaurea calcitrapa	Purple starthistle	–	A, T	A (Malheur, Umatilla)
Centaurea diffusa	Diffuse knapweed	Containment	B	A (Baker, Malheur) B (Morrow, Union[5], Umatilla) C (Union[5])
Centaurea iberica	Iberian starthistle	–	A, T	A (Malheur)
Centaurea jacea	Brownray knapweed	–	–	A (Umatilla)
Centaurea macrocephala	Big-headed knapweed	–	–	A (Malheur)
Centaurea maculosa (Centaurea stoebe)	Spotted knapweed	Containment	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)
Centaurea nigrescens	Short-fringe knapweed	–	–	A (Malheur)
Centaurea pratensis (Centaurea debeauxii)	Meadow knapweed	Control (not known in Owyhee Co.)	B	A (Malheur, Union)
Centaurea repens (Acroptilon repens)	Russian knapweed	Control	B	A (Union) B (Baker, Malheur[3], Morrow, Umatilla)

Table 1. Designated Noxious Weeds Suspected to Occur within the Project Area, Based on State and County Noxious Weed Lists (continued)

Scientific Name	Common Name	Idaho State List	Oregon State List	Oregon County List6
Centaurea solstitialis	Yellow starthistle	Containment (not known in Owyhee Co.)	B, T	A (Baker, Malheur, Morrow) B (Umatilla, Union)
Centaurea trichocephala	Featherheaded knapweed	–	–	A (Malheur)
Centaurea virgata (Centaurea triumfetti)	Squarrose knapweed	Early Detection and Rapid Response (not known in Owyhee Co.)	A, T	A (Malheur)
Chondrilla juncea	Rush skeletonweed	Containment	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)
Cichorium intybus	Chickory	–	–	B (Baker)
Cicuta douglasii	Water hemlock	–	–	B (Morrow) C (Baker, Union)
Cirsium arvense	Canada thistle	Containment	B	B (Malheur, Morrow, Umatilla, Union)
Cirsium vulgare	Bull thistle	–	B	B (Baker) C (Malheur)
Conium maculatum	Poison hemlock	Containment	B	B (Morrow) C (Baker, Malheur, Union)
Convolvulus arvensis	Morning glory	Containment	A, T	B (Morrow) C (Baker, Malheur)
Convolvulus sepium	Morning glory	–	–	C (Union)
Crupina Vulgaris	Common crupina	Control (not known in Owyhee Co.)	B	A (Malheur, Morrow)
Cuscuta campestris	Dodder	–	B	B (Baker, Morrow, Umatilla) C (Malheur)
Cynoglossum officinale	Houndstongue	Containment (not known in Owyhee Co.)	B	A (Morrow) B (Malheur)
Cyperus esculentus	Yellow nutsedge		B	C (Malheur)
Cytisus scoparius	Scotch broom	Control (not known in Owyhee Co.)	B	A (Union)
Datura stramonium	Jimsonweed	–	–	A (Malheur)
Dipsacus fullonum	Teasel	–	–	B (Baker)
Echium vulgare	Viper's bugloss	Control (not known in Owyhee Co.)	–	B (Umatilla)
Equisetum arvense	Western horsetail	–	–	C (Malheur, Union)
Euphorbia esula	Leafy spurge	Containment	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)
Euphorbia myrsinites	Myrtle spurge	–	B	B (Baker)

Table 1. Designated Noxious Weeds Suspected to Occur within the Project Area, Based on State and County Noxious Weed Lists (continued)

Scientific Name	Common Name	Idaho State List	Oregon State List	Oregon County List6
Galium aparine	Catchweed bedstraw	–	–	B (Union)
Halogeton glomeratus	Halogeton	–	B	C (Malheur)
Hemizonia pungens	Spikeweed	–	B	A (Morrow)
Hibiscus trionum	Venice mallow	–	–	B (Baker)
Hydrilla venticillata	Hydrilla	EDRR	A	A (Malheur)
Hyoscyamus niger	Black henbane	Control	–	A (Baker)
Hypericum perforatum	Klamathweed (St. Johnswort)	–	B	B (Baker, Malheur, Morrow, Umatilla)
Iris pseudacorus (Iris psudocorus)	Yellow flag iris	Containment	B	A (Baker)
Isatis tinctoria	Dyers woad	Control	B	A (Malheur, Union)
Kochia scoparia	Kochia	–	B	B (Morrow, Umatilla, Union) C (Baker, Malheur)
Lepidium draba (Cardaria draba)	Hoary cress (whitetop)	Containment	B	A (Baker[1], Union, Morrow) B (Malheur, Umatilla, Union[4])
Lepidium latifolium	Perennial pepperweed	Containment	B, T	A (Baker, Malheur[2], Union) B (Umatilla)
Linaria dalmatica	Dalmation toadflax	Containment	B	A (Baker, Morrow, Union) B (Umatilla)
Linaria vulgaris	Yellow toadflax	Containment (not known in Owyhee Co.)	B	B (Baker, Malheur, Morrow)
Lythrum salicaria	Purple loosestrife	Containment	B	A (Baker, Umatilla, Morrow) A (Union, Malheur)
Melilotus officinalis	Sweet clover	–	–	C (Malheur)
Myriophyllum spicatum	Eurasian watermilfoil	Control	B	-
Onopordum acanthium	Scotch thistle	Containment	B	A (Baker, Morrow) B (Malheur, Umatilla, Union)
Panicum miliaceum	Wild proso millet	–	–	A (Malheur)
Phragmites australis	Common reed	Control	A	-
Polygonum cuspidatum (Fallopia japonica)	Japanese knotweed	Control (not known in Owyhee Co.)	B, T	A (Baker)
Potamogeton crispus	Curlyleaf pondweed	Containment	–	–
Ranunculus testiculatus	Bur buttercup	–	–	C (Baker)
Roripa sylvestris	Creeping yellow cress	–	B	A (Umatilla)
Rosaceae spp. (Potentilla recta)	Sulphur (cinquefoil)	–	B	A (Malheur) B (Baker, Union)
Salsola tenuifolia var. *kali*	Russian thistle	–	–	C (Baker, Union)

Table 1. Designated Noxious Weeds Suspected to Occur within the Project Area, Based on State and County Noxious Weed Lists (continued)

Scientific Name	Common Name	Idaho State List	Oregon State List	Oregon County List6
(Salsola iberica)				
Salvia aethiopis	Mediterranean sage	Control (not known in Owyhee Co.)	B	A (Malheur, Morrow)
Secale cereale	Cereal rye	–	–	B (Umatilla, Morrow) C (Union)
Senecio jacobaea	Tansy ragwort	Containment (not known in Owyhee Co.)	B, T	A (Baker, Malheur, Morrow Umatilla, Union)
Silybum marianum	Milk thistle	–	B	A (Malheur)
Solanum elaeagnifolium	Silverleaf nightshade	–	A	A (Malheur)
Solanum rostratum	Buffalobur	Control (not known in Owyhee Co.)	B	A (Baker, Malheur, Union)
Sonchus arvensis	Perennial sowthistle	Control (not known in Owyhee Co.)	–	B (Morrow)
Sorghum halepense	Johnsongrass	Control (not known in Owyhee Co.)	B	A (Malheur) B (Morrow, Umatilla)
Sphaerophysa salsula	Austrian peaweed	–	B	A (Malheur) B (Umatilla)
Taeniatherum caput-medusae (Elymus caput-meduseae)	Medusahead wildrye	–	B	B (Morrow) C (Baker, Malheur)
Tamarix parviflora (Tamarix ramosissima)	Saltcedar	Containment	B, T	A (Baker) C (Malheur)
Tanacetum vulgare	Common tansy	–	–	B (Baker)
Tribulus terrestris	Puncturevine	Containment	B	B (Baker, Malheur, Morrow, Umatilla, Union)
Verbascum blattaria	Moth mullein	–	–	C (Baker)
Verbascum thapsus	Common mullein	–	–	C (Baker)
Xanthium spinosum	Spiny cocklebur	–	B	A (Malheur)

* – = not applicable

[1] Whitetop is listed as an “A” weed in designated areas of the county (i.e., Pine Valley and West Baker Valley and Bowen Valley/Sumpter areas are mandatory control). Whitetop is a “B” weed in all other areas of the county.

[2] Perennial pepperweed is an “A” Weed only in that part of Malheur County south of the road leading from the junction of the Malheur County line and McBride Creek Road, west to Leslie Gulch Road, to Lake Owyhee and the area south of the road leading from the Rinehart Ranch to the Crowley Road, west to Highway 78, north to the Malheur County line. It is a “B “weed in all other parts of the county.

[3] Owners or occupants in Malheur County, Oregon, having Russian knapweed are required to control a minimum 20 percent of their annual infestation per discreet parcel of land per year. This includes the 50-foot buffer, plus additional amounts to total 20 percent of the infestation.

[4] Class B in Union County south of Catherine Creek Drainage and Class A north of this drainage.

[5] Class B in Union County South of Willow Creek Drainage, and Class C south of this drainage.

[6] This column includes the county lists from any county in Oregon crossed by the Project.

3.2 Preconstruction Weed Surveys

During preconstruction surveys, the locations of noxious weeds and invasive-plant species would be documented with a handheld global positioning system (GPS) instrument and used to develop a map. Species, relative abundance, and surrounding land uses will be recorded. Preconstruction weed maps would be used to document the weeds IPC is responsible for introducing and/or spreading by comparing the map against post construction levels. The map will also be used to identify areas for preconstruction treatments.

3.3 Preconstruction Treatment

Mapped noxious and invasive-plant species locations may be treated, within the disturbed construction area, prior to construction. Weed species on Idaho's EDRR list and Oregon's OSWB Class T list will be treated prior to the start of ground disturbing activities. For other weed species, the decision whether to treat the weeds prior to the start of construction activities will be based on the nature and extent of the infestation, surrounding conditions (e.g., the predominance of weeds outside Project areas), landowner permission, land-managing agency requests, timeliness of land-managing agency approval, and the construction schedule. Treatment options could consist of mechanical controls, hand spraying of herbicides, and biological controls; the exact method of control would be approved by the land-managing agency or landowner prior to use. All use of herbicides would comply with the label restrictions, as well as federal, state, and/or county regulations / landowner agreements. EPMs developed for the control of noxious and invasive-plant species during preconstruction are detailed in the Species Conservation Plan (IPC 2013b).

3.4 Weed Control during Construction

Measures would be taken during construction to further minimize the risk of spreading or introducing noxious and invasive-plant species. Known locations of existing infestations would be avoided to the extent practical. When infected areas cannot be avoided, soil removed from these areas would be clearly identified as coming from infected areas; it would be stored separately from uninfected soils, and returned to the area in which it was taken, following construction. Vehicles would be cleaned of soil and herbaceous materials prior to arriving at job-sites, in order to limit the risk of construction equipment serving as a vector for the spread of noxious and invasive-plant species. The final Reclamation Plan would provide the location of all cleaning stations that would be used, and how the removed materials would be captured or treated so that the cleaning stations would not become infected. All areas that would be used on a regular basis during construction (e.g., storage areas) would be kept clear of noxious and invasive-plant species during construction, to prevent these areas from becoming a source population for weed spread. Reclamation efforts in disturbed areas would entail measures to further minimize the risk of spreading or introducing noxious and invasive-plant species (e.g., using weed-free materials). All applicable and required BLM and USFS protocols for preventing and controlling noxious- and invasive-plant species would be followed on applicable federally managed lands. EPMs developed for the control of noxious and invasive-weed species during construction are detailed in the Species Conservation Plan (IPC 2013b).

3.5 Postconstruction Weed Control and Monitoring

Postconstruction weed control and monitoring is a critical component of a successful reclamation and revegetation effort. A detailed discussion of the efforts that would be taken to control and monitor weeds after construction is completed can be found in the Vegetation Management Plan (IPC 2013a).

4.0 IPC PROPOSED ENVIRONMENTAL PROTECTION MEASURES

The following are the EPMs proposed by IPC to ensure successful reclamation and revegetation of disturbed areas. A full list of the EPMs proposed by IPC to avoid and minimize impacts to biological resources, as well as additional measures requested or required by the applicable agencies, can be found in the Species Conservation Plan (IPC 2013b).

REC-1 Qualified company personnel and contractors will facilitate avoidance of noxious weed infestations where possible and identify new infestations.

REC-2 Pre-construction weed treatments will be limited to areas expected to have unavoidable ground-disturbing activities and have potential to spread weeds due to construction activities. Treatments will be conducted prior to the start of ground-disturbing activities. Pre-construction treatment may include (but is not limited to) using mechanical control and herbicides. The Reclamation Plan will discuss control options. It will also include appropriate times for pre-construction noxious weed treatments based on phased in-services dates for line segments.

REC-3 All herbicide applications will comply with label restrictions, federal, state and/or county regulation, and landowner agreements. No spraying will occur prior to notification and approval from the applicable land management agency or landowner. Private property will be sprayed only if written approval is obtained. State and federal herbicide recording requirements will be followed, including BLM and USFS recording requirements. The Reclamation Plan will contain a list of approved herbicides, target species and application times and rates.

REC-4 Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle (ATV), backpack sprayers, or with hand sprayers as conditions dictate. Herbicide applications will be conducted by licensed operators or under the supervision of a licensed operator in accordance with state laws.

REC-5 Herbicide use near special status species and water bodies will follow label requirements; state and federal law; BLM and USFS recommendations; and will be in compliance with Oregon and Idaho's NPDES permit requirements.

REC-6 Project vehicles and equipment will arrive at the job site clean of soil and herbaceous material. When Project vehicles demobilize from the job sites where noxious weeds are present, they will use appropriate decontamination measures as defined in the Reclamation Plan.

REC-7 Project-related storage and staging yards, fly yards, and other areas subject to regular long-term disturbance will be treated for noxious weeds as necessary.

REC-8 If topsoil is removed, care will be taken to ensure it is not mixed with the underlying subsoil. Topsoil will be stored in a separate stockpile. It will be returned to the area it was taken from and will not be spread in adjacent areas. If topsoil is not suitable for backfill, then it will be spread in another previously disturbed areas or transported to a predetermined offsite disposal area.

REC-9 Subsurface soils and waste rock will be spread where practicable and in close proximity to the disturbance (within the ROW). This material will be spread uniformly to match existing contours and covered with topsoil—when available—and re-seeded.

REC-10 Straw, hay, mulch, gravel, seed, and other imported materials must be certified weed-free. If certified weed-free materials are not available then alternative materials will be used.

REC-11 Temporarily disturbed lands within the ROW will be re-contoured to match surrounding landscapes. Re-contouring will emphasize restoration of the existing drainage patterns and landform to pre-construction conditions, to the extent practicable. (Tower pads and roads will not be re-contoured.)

REC-12 Areas within the ROW, lay-down or staging yards, and other areas of extensive vehicle travel and material storage may contain compacted soils. These soils will be de-compacted on a case-by-case basis.

REC-13 IPC may use soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis.

REC-14 Reclamation seeding methods will include broadcast seeding, drill seeding or hydro seeding/hydro mulching (or a combination of methods). Seeding methods will be chosen based on the type of seed, disturbance level, soil type, terrain and precipitation levels for the area to be reclaimed. Reclamation techniques will be described in more detail in the Reclamation Plan.

REC-15 Final cleanup will ensure all construction areas are free of construction debris including—but not limited to—assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place

5.0 PLAN UPDATES

Once the preferred route is selected, final engineering is completed, and complete coverage of the Project area is conducted, a final Reclamation Plan can be prepared. The final Reclamation Plan will be updated prior to the start of construction. As the construction order and schedule are refined, the final Reclamation Plan will be updated to include the schedule for baseline vegetation and weed surveys, identification of any areas for preconstruction noxious weed treatment, and provide a more detailed reclamation schedule and plan.

6.0 LITERATURE CITED

IPC (Idaho Power Company). 2011. Revised Plan of Development. Boardman to Hemingway Transmission Line Project. November.

IPC. 2013a. Draft Vegetation Management Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013b. Draft Species Conservation Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013c. Preliminary Application for Site Certificate. Boardman to Hemingway Transmission Line Project. February.

ISDA (Idaho State Department of Agriculture). 2011. Idaho's 64 Noxious Weeds. Available online at: http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/watchlist.php

NISIC (National Invasive Species Information Center). 2011. Invasive Species. Available online at http://www.invasivespeciesinfo.gov/whatis.shtml. Modified February 8, 2011.

ODA (Oregon Department of Agriculture). 2011. Oregon Noxious Weed Policy and Classification System 2011. Available online at: http://oregon.gov/ODA/PLANT/WEEDS/docs/weed_policy.pdf

Sheley, R.L., and J.K. Petroff. 1999. Biology and Management of Noxious Rangeland Weeds. Oregon State University. Corvallis, Oregon.

Tetra Tech. 2011. Revised Final Biological Survey Work Plan. Boardman to Hemingway Transmission Line Project. Prepared for Idaho Power Company. April.

USDA and USDI (U.S. Department of Agriculture, and U.S. Department of the Interior). 1996. Sampling Vegetation Attributes Technical Reference BLM/RS/ST-96/002+1730. Bureau of Land Management.

USFS (U.S. Department of Agriculture, Forest Service). 1990. FSM Chapter 2840—Reclamation. Available online at http://www.fs.fed.us/im/directives/fsm/2800/2840.txt

ATTACHMENT P-5
DRAFT VEGETATION MANAGEMENT PLAN

DRAFT

Vegetation Management Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

February 2013

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Purpose 1
1.2 Goals and Objectives 1
2.0 VEGETATION MANAGEMENT 2
2.1 ROW Maintenance 3
2.2 Slash/Debris Management 4
3.0 NOXIOUS- AND INVASIVE-PLANT CONTROL 6
3.1 Post-Construction Noxious Weed Control and Monitoring 6
4.0 REPORTING 7
5.0 PLAN UPDATES 8
6.0 LITERATURE CITED 8

LIST OF TABLES

Table 1. Abundance Ratings for Noxious- and Invasive-Plant Species during Monitoring Surveys 7

LIST OF FIGURES

Figure 1. Right-of-Way Vegetation Management 5

1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 282 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project would include a 500-kilovolt (kV) single circuit line, and a rebuild of an existing 138-kV and 69-kV double-circuit lines between Boardman, Oregon, and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho). Operation and maintenance of the Project will include the management of vegetation along the line, as well as measures to minimize the spread or establishment of invasive-plant species.

1.1 Purpose

This draft Vegetation Management Plan describes the framework for the development of the final Vegetation Management Plan. The focus of this framework and the final Vegetation Management Plan is to describe the methods in which vegetation along the transmission line would be managed during operation of the Project. This document describes the measures IPC will undertake to control noxious and invasive-plant species and prevent the introduction of these of these species within the Project Site Boundary. The measures that would be taken to restore areas that have been impacted by construction activities, including minimizing the spread or establishment of invasive-plant species as a result of construction activities, are discussed in the draft Reclamation and Revegetation Plan (IPC 2013a).

This plan is applicable Project-wide, and it is expected that modifications to this plan will be made once final agreements are reached with applicable federal and state land-managing agencies, as well as with counties and individual landowners. The final Vegetation Management Plan is intended to meet the guidance contained in Chapter 2840 of the Forest Service Manual (USFS 1990) as well as any applicable Bureau of Land Management (BLM) Resource Management Plans and local (i.e., county or city) management plans.

1.2 Goals and Objectives

IPC has three goals for conducting vegetation management during operation of the Project:

1. Access: IPC's access goal for conducting vegetation management is to maintain work areas adjacent to the Project that will allow vehicle and equipment access; this access is necessary for operations, maintenance, and repair of the Project.
2. Safety/reliability: IPC's safety and reliability goal for vegetation maintenance is to maintain the safety and reliability of the transmission line, by preventing tall vegetation from coming into contact with conductors.
3. Weed Control: IPC's goal regarding weed control during Project operation is to limit the introduction or spread of noxious- and invasive-plant species as a result of IPC activities. This goal is closely tied to the goals and objectives found in the draft Reclamation and Revegetation Plan regarding noxious and invasive-plant species control during construction (IPC 2013a). As a result, there is overlap between the discussion found in this plan regarding noxious- and invasive-plant species and that found in the draft Reclamation and Revegetation Plan. However, the discussion of noxious- and invasive-plant species in the Vegetation Management Plan is primarily focused on the control of these plant species during ongoing vegetation management activities.

2.0 VEGETATION MANAGEMENT

IPC must maintain work areas adjacent to electrical transmission structures and along the ROW to allow access for vehicles and equipment necessary for operations, maintenance, and repair. Furthermore, vegetation management under the transmission line minimizes the potential for fires and power outages that can result when vegetation comes into contact with conductors. Vegetation management is expected to be minimal for the Project, as the vast majority of the Project crosses through areas that contain low-lying vegetation (e.g., grasslands and shrublands). As these vegetation types would not grow to heights that could interfere with the transmission line, they would not be maintained or cleared under the line during operation of the Project.

Vegetation management would be conducted in compliance with the American National Standards Institute (ANSI) Pruning Standards Best Management Practices for Utilities, and the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) and North American Electric Reliability Council's (NERC's) Standard FAC-003-1 Transmission Vegetation Management Program (TVMP)[1] and IPC's TVMP. The vegetation management program would accomplish the following tasks:

- Trim trees and tall shrubs to the extent that the clearance lasts for the duration of the cycle.
- Remove vegetation, as necessary, to provide required electrical clearance and improve access to facilities.
- Remove tall growing vegetation within tower structures. Clear brush and grass around wood poles to help protect structures from range fires.
- Facilitate a low-growing plant community that stabilizes the site, inhibits the growth of tall-growing shrubs and trees, and provides habitat for wildlife.
- Lines that are 138 kV, 161 kV, 230 kV, and above are patrolled, at a minimum, once a year to identify hazardous vegetation, within or adjacent to the rights-of-way, that could fall in or onto transmission lines or associated facilities. These hazardous trees, snags, or "hot spots" are removed. Any trees that will become a clearance violation prior to the next scheduled maintenance cycle are evaluated, and trimmed or removed.

Clearing of vegetation near Project components would be accomplished using manual (i.e., hand pulling, looping by hand crews), and mechanical methods (i.e., chainsaws, weed trimmers, rakes, shovels, mowers, brush hooks, and Slash Buster [a track-driven machine]), or a combination of these methods. The specific methods depend on site-specific conditions, such as slope, access, size/extent of vegetation, previous agreements with landowners, and the presence of sensitive resources. Herbicides may also be used to control vegetation in selected areas, in order to meet vegetation maintenance objectives. All herbicide applications will comply with label restrictions, federal, state and/or county regulation, and landowner agreements. No spraying will occur prior to notification and approval from the applicable land-management agency or landowner. Private property will be sprayed only if written approval is obtained. State and federal herbicide recording requirements will be followed, including BLM and U.S. Department of Agriculture, Forest Service (USFS) recording requirements. Herbicide use near special status species and water bodies will follow label requirements; state and federal law;

[1] FAC-003-1 requires transmission owners to prepare, and keep current, a formal TVMP. The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications. Available at: http://www.nerc.com/files/FAC-003-1.pdf

and BLM and USFS recommendations. Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by IPC for effectiveness will be used within 100 feet of aquatic resources. IPC will also comply with the Idaho and Oregon NPDES permits related to the use of herbicides in and adjacent to waterbodies.

The portion of the Project that crosses through the Blue Mountain region contains forested and woodland habitats. Unlike the portion of the Project that crosses low-lying vegetation (e.g., grasslands and shrublands), these forested/woodland areas contain vegetation that would need to be maintained within the ROW in order maintain access, safety, and reliability of the Project. The vegetation management that would be conducted along these forested/woodland portions of the Project is discussed in the following sub-section.

2.1 ROW Maintenance

Vegetation management practices along the ROW will be conducted in accordance with IPC clearing specifications and vegetation management plans (Idaho Power 2008). As stated above, these practices would comply with the standards set by the ANSI Pruning Standards Best Management Practices for Utilities, and by OSHA and NERC requirements.

A wire-border zone method will be used during maintenance of the ROW in forested/woodland habitats to control tall vegetation and to ensure adequate ground-to-conductor clearances. This method results in two zones of clearing and revegetation: the wire zone and the border zone. The wire zone includes the linear area along the ROW located under the wires as well as the area extending 10 feet outside of the outermost phase-conductor. After initial clearing, vegetation in the wire zone would be maintained to consist of native grasses, legumes, herbs, ferns, and other low-growing vegetation that remain under approximately 20 feet tall at maturity. The border zone is the linear area along each side of the ROW extending from the edge of the wire zone to the edge of the ROW. Vegetation in the border zone would be maintained to consist of tall shrubs or short trees (up to 34 feet high at maturity), grasses, and forbs. These cover plants along the border zone benefit the ROW by competing with and excluding undesirable plants. As shown in Figure 1, no clearing would be conducted in areas where the height of mature trees would not come within 50 feet of the wires (e.g., a canyon or ravine crossing with high ground clearance at mid-span). Minimum clearance values are affected by circuit voltage, terrain, span length, ruling span length, conductor size and tension, anticipated wind conditions, and structure framing parameters.

Transmission lines are inspected and cleared on long-term cycles based on 3 years for urban and rural valley areas and 6 years for mountain areas; however, shorter clearing cycles may occur if conditions dictate out-of-cycle trimming is needed to maintain the wire-border zone objectives. The wire and border zone for the Project are shown in Figure 1. During operations, vegetation growth will be monitored and managed to maintain the wire-border zone objectives. The methods for maintaining vegetation within the wire and border zones would be similar to those described above; with the exception that mechanical as opposed to manual methods would be employed due to the scope and extent of area to the treated.

In addition to the cyclical inspection cycles described above, Transmission Patrolmen patrol and inspect lines once a year to identify any transmission defects and any vegetation hazards that may develop between the long-term clearing cycles. During these inspections, the Patrolman will identify hazardous vegetation, within or adjacent to the rights-of-way, that could fall in or onto the transmission lines or associated facilities and cause an outage. The Patrolman will evaluate the hazardous vegetation as to the level of threat posed by categorizing the vegetation as an “imminent threat”, “medium hazard”, or “low hazard”. Any issues found are reported to the Line Clearing Specialist and documented on a Transmission Line Patrol Report. Any vegetation

issue categorized as an "imminent threat" will also be reported to System Dispatch. If possible, the Patrolman will take photos of the "imminent threat" vegetation for further evaluation by the Line Clearing Specialist. The Line Clearing Specialist prioritizes and schedules any remedial action for all reported vegetation issues (see Exhibit B of the Application for Site Certificate for a description of the scope and schedule for the Project's routine inspections).

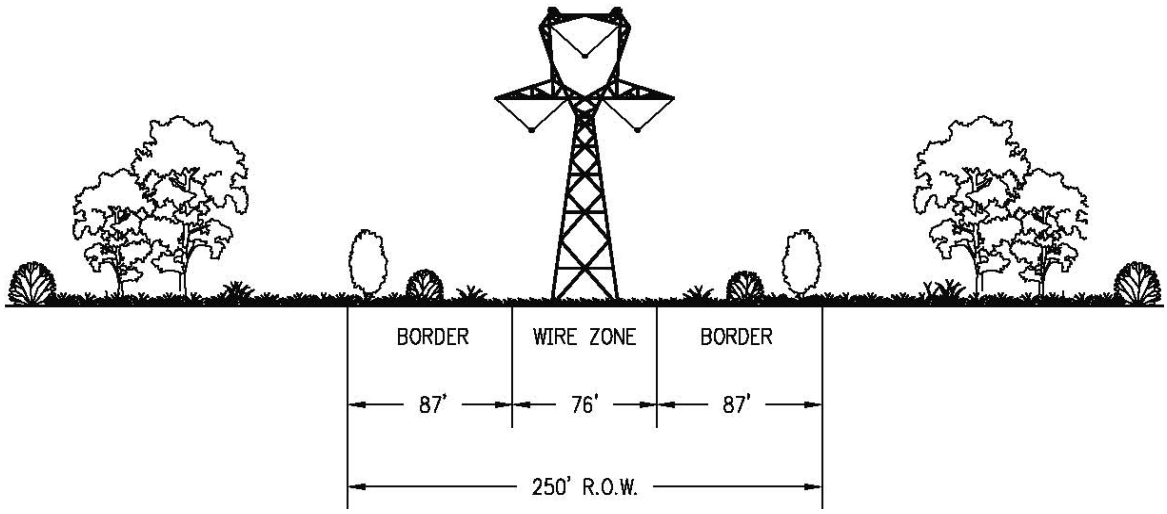
Imminent Threat Trees are any vegetation issue that poses an imminent threat of causing a line outage and that has a high risk of failure in the next few days or weeks. These imminent threats are normally tall trees that have one or more drastic defects that could cause the tree to fail and fall in or onto transmission lines and cause an outage. An "imminent threat" could also be vegetation that is good condition but that has grown so close to the transmission line that it could be brought into contact with the line through a combination of conductor sag and/or wind-induced movement in the conductor or the vegetation. Hazard Trees are any vegetation issue that poses a threat of causing a line outage, but that has either a low or medium risk of failure in the next month. These hazards are normally trees that have one or lesser defects that could cause the tree to fail and fall in or onto transmission lines and cause an outage.

Upon identification of an "imminent threat" or "hazard" tree, the Transmission Patrolman will contact the Line Clearing Specialist, who will evaluate the vegetation and arrange for the tree to be removed or trimmed as soon as possible. In certain simple situations, the Transmission Patrolman may remove or trim the vegetation immediately. If the "imminent threat" or "hazard" is initially identified by the Line Clearing Specialist, he or she will arrange for the tree to be removed or trimmed as soon as possible, or do the work personally. Any trees that will become a clearance violation prior to the next scheduled maintenance cycle will also be reported, evaluated, and trimmed or removed. The Transmission Patrolmen are trained to recognize "imminent threat" and "hazard" trees by the Line Clearing Specialist, a certified arborist.

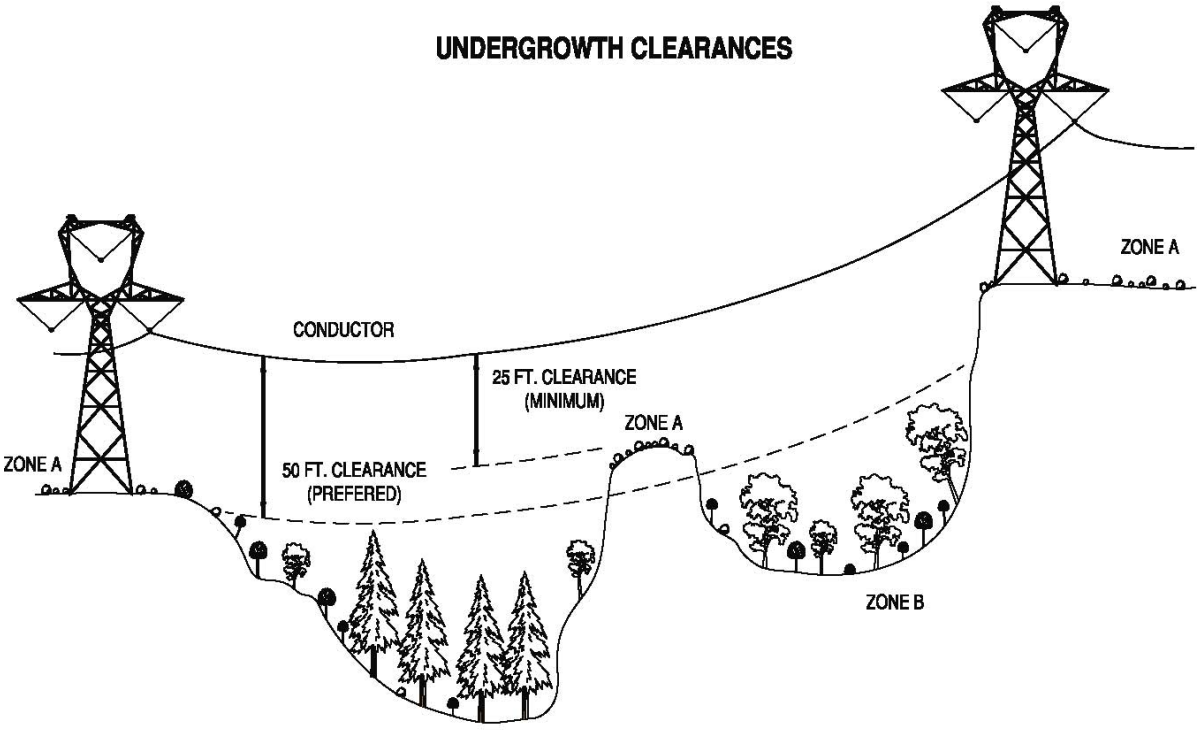
On federal and state ground, IPC prefers to clear cut all tall growing trees in the right-of-way. Clear-cut methods are crews using chain saws, or track-driven machines such as Slash Buster and the Brontosaurus. On private property, removal is IPC's first choice, but if not approved IPC will proceed to trim the trees. The typical trimming methods used are a top trim or side trim.

2.2 Slash/Debris Management

As the vast majority of the Project crosses through areas where little to no vegetation management would be conducted, substantial slash and debris is unlikely to be generated along most portions of the Project during operations. However, maintenance and construction along the portion of the Project that crosses through the Blue Mountains (i.e., within forested and woodland areas) could generate timber slash and debris. In general, this slash/debris can be either 1) chipped, with the chips scattered along the ROW or removed; 2) lopped and scattered on site; or 3) piled on site. IPC's preferred method for handling slash is to lop and scatter the slash on site, as long as the scattered material does not block access, represent a safety hazard, or adversely affect management goals for the area. As much of the forested/woodland habitat crossed by the Project occurs on National Forest System lands, the method for managing slash/debris in these areas would be determined based on the requirements and recommendations by the USFS.



Single Circuit 500kV



Zone Plant Species

Zone A: Grasses, legurnes, herbs, ferrs and low growing shrubs.

Zone B: all deciduous and conifer trees.

Zone Definition

Zone A: When the conductor to ground clearance is less than 50', all tree species should be removed.

Zone B: When the conductor to ground clearance is greater than 50', all tree specie should be removed if they have less than 50' of clearance, 25' minimum.

Figure 1. Right-of-Way Vegetation Management

3.0 NOXIOUS- AND INVASIVE-PLANT CONTROL

Invasive-plant species consist of non-native plants that have been spread beyond their natural range of dispersal by human activities[2]. Invasive-plants are typically adaptable and have a high reproductive capacity. Their introduction causes, or is likely to cause, economic or environmental harm or harm to human health (NISIC 2011). Invasive-plants are of concern because they can spread to new areas rapidly, threaten the genetic integrity of native flora through hybridization, typically flourish in disturbed areas resulting in the exclusion of native vegetation, and can change the structure and function of ecosystems through alterations of geochemical and geophysical processes. "Noxious weed" is a legal term for any invasive-plant species that has been officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildlife, or property (Sheley and Petroff 1999). Noxious weeds are a concern for federal, state, and local agencies because of their potential to degrade wildlife habitat, reduce plant diversity, adversely affect agricultural production, and impact the management of both natural and agricultural systems.

The known status of weed species within the Project area, as well as efforts to control weeds during construction, is provided in the draft Reclamation and Revegetation Plan. This plan addresses the control of noxious- and invasive-plant species during operations of the Project.

3.1 Post-Construction Noxious Weed Control and Monitoring

Noxious weed populations within the Project area would be primarily controlled through the use of herbicides. Focused noxious weed control efforts would be conducted for three years following the completion of construction activities. Noxious weed control outside of the 3-year period would only occur if 1) disturbed areas are not meeting pre-construction conditions and adjacent land uses are consistent with the objective of managing weed populations and/or 2) maintenance activities have caused or contributed to the spread or establishment of noxious weeds.

Any required herbicide spraying during the Project's operations will most likely occur from May to June in order to target noxious weeds as they are sprouting; however, fall treatments may occur depending on the weed species. Following annual spraying, a monitoring survey will be conducted to document the relative density, locations, and adjacent land uses of noxious weeds in the Project area. The locations of noxious weeds and invasive-plant species would be documented with a handheld Global Positioning System (GPS) instrument. Monitoring surveys will be conducted following the same methods used for the preconstruction survey (see the discussion of preconstruction surveys in Exhibit P of the preliminary Application for Site Certificate [IPC 2013b], as well as in the draft Reclamation and Revegetation Plan [IPC 2013a]). The relative abundance of each noxious weed will be recorded for the following three zones: Zone 1—immediate area of disturbance (i.e., roadbed, laydown yard, or pulling and tensioning site), Zone 2—within 30 feet of the immediate area of disturbance, and Zone 3—in the area greater than 30 feet from the immediate area of disturbance. Pedestrian surveys will be conducted in zones 1 and 2. Zone 3 will be surveyed at a reconnaissance level based on what is visible adjacent to the 30-foot buffer. The abundance will be recorded using the following eight abundance categories: rare, locally rare, occasional, locally occasional, frequent, locally frequent, abundant, and locally abundant; as defined in Table 1.

[2] Not all non-native plant species are considered invasive-plants or are detrimental to economic or environmental conditions (e.g., some non-native horticultural landscaping species have low dispersal rates or are unable to survive outside of maintained, landscaped areas).

Table 1. Abundance Ratings for Noxious- and Invasive-Plant Species during Monitoring Surveys

Abundance Rating	Definition
Rare	Difficult to find; limited to 1 or very few individuals or colonies; < 1 percent of the total sample unit area; found in more than 1 place along the sample unit.
Locally Rare	Difficult to find; limited to 1 or very few individuals or colonies; < 1 percent of the total sample unit area; found at only 1 site within the sample unit.
Occasional	Widely scattered individuals or colonies but not difficult to find; 1–5 percent of the total sample unit area; found in more than 2 sites within the sample unit.
Locally Occasional	Scattered individuals or colonies but not difficult to find; 1–5 percent of the total sample unit area; found in only 1 or 2 sites within the sample unit.
Frequent	Easily found but not dominant in any one place; 5–25 percent of the total sample unit area; a moderate number of occurrences over a good portion of the sample unit.
Locally Frequent	Easily found but not dominant in any one place; 5–25 percent of the total sample unit area; a moderate number of occurrences over a small portion of the sample unit.
Abundant	Easily found; dominant or co-dominant in 1 or more areas; > 25 percent of the total sample unit; a high number of occurrences over most of the sample unit.
Locally Abundant	Easily found; dominant or co-dominant in 1 or more areas; > 25 percent of the total sample unit; a high number of occurrences over a small portion of the sample unit

Using the prior years' survey information, post-construction weed treatment will be planned by IPC and coordinated with the applicable land-managing agency to ensure treatment will be conducted at the proper growing period and during favorable environmental conditions. Spraying will be conducted by IPC or a licensed qualified contractor. The intent of applying herbicide will be to treat only the areas which contain weed infestations, rather than a broad application. Weed spraying will involve the use of appropriate chemicals to control the targeted species. It is anticipated that most spraying will be conducted using all-terrain vehicle (ATV)-mounted spray equipment supported by one or more 4-wheel-drive (4WD) pickups equipped with water tanks. Pickups will carry the necessary chemicals, dyes, fluid pumps, tools, and water to provide a base station for refilling ATV spray tanks. ATVs will use handheld spray guns with 25- to 50-foot hoses attached to spray tanks or 8- to 12-foot spray booms. The spray booms will be used for treating larger areas on roadbeds and gentle-to-moderately-steep terrain.

EPMs developed for the control of noxious and invasive-weed species during the Project's operations are detailed in the draft Species Conservation Plan (IPC 2013c), and the draft Reclamation and Revegetation Plan (IPC 2013a). The final Reclamation and Revegetation Plan will provide site-specific information on noxious and invasive-weed species, relative abundance of weeds, and treatment methods that would be used prior to, during, and after construction.

4.0 REPORTING

IPC will document the monitoring results in an annual report. It is expected that a single annual report will be prepared for the entire Project length, and that this report will be submitted to each of the applicable federal or state agencies. The reports will provide a summary of Project vegetation management activities and observations, progress towards or achievement of success, identify any specific problem areas along the Project, and will include recommendations for additional corrective or adaptive management actions if necessary.

5.0 PLAN UPDATES

Once the preferred route is selected and final engineering is completed, a final Vegetation Management Plan will be prepared. The final Vegetation Management Plan will be updated prior to the start of construction.

6.0 LITERATURE CITED

IPC (Idaho Power Company). 2013a. Draft Reclamation and Revegetation Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013b. Exhibit P –Fish and Wildlife Habitat and Species. In: Preliminary Application for Site Certificate. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013c. Draft Species Conservation Plan. Boardman to Hemingway Transmission Line Project. February.

ISDA (Idaho State Department of Agriculture). 2011. Idaho's 64 Noxious Weeds. Available online at: http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/watchlist.php

NISIC (National Invasive Species Information Center). 2011. Invasive Species. Available online at http://www.invasivespeciesinfo.gov/whatis.shtml. Modified February 8, 2011.

ODA (Oregon Department of Agriculture). 2011. Oregon Noxious Weed Policy and Classification System 2011. Available online at: http://oregon.gov/ODA/PLANT/WEEDS/docs/weed_policy.pdf

Sheley, R.L., and J.K. Petroff. 1999. *Biology and Management of Noxious Rangeland Weeds.* Oregon State University. Corvallis, Oregon.

USFS (U.S. Department of Agriculture, Forest Service). 1990. FSM Chapter 2840—Reclamation. Available online at http://www.fs.fed.us/im/directives/fsm/2800/2840.txt

ATTACHMENT P-6
DRAFT SPECIES CONSERVATION PLAN

DRAFT

Species Conservation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

February 2013

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Purpose 1
1.2 Goals and Objectives 1
2.0 AVOIDANCE DURING PROJECT SITING 1
3.0 CONSERVATION MEASURES PROPOSED BY IPC 2
3.1 Relocation/Avoidance of Sensitive Plant Species 11
4.0 AGENCY REQUIRED SEASONAL/SPATIAL RESTRICTIONS 11
5.0 ENVIRONMENTAL COMPLIANCE TRAINING 18
6.0 WILDLIFE INJURY/MORTALITY MONITORING AND REPORTING 18
7.0 LITERATURE CITED 19

LIST OF TABLES

Table 1. IPC Proposed Species Conservation Measures 3
Table 2. Federal RMPs and Forest Plan 12
Table 3. Seasonal and Spatial Restrictions Contained in the BLM Resource Management Plans and USFS Plans Applicable to the Project 14
Table 4. Seasonal and Spatial Wildlife Restrictions recommended by the ODFW 16
Table 5. Seasonal and Spatial Fisheries Restrictions recommended by the ODFW 16

LIST OF FIGURES

Figure 1. Administrative Boundaries Crossed by the Project 13

1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 282 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project would include a 500-kilovolt (kV) single-circuit line, and a rebuild of an existing 138-kV and 69-kV double-circuit lines between Boardman, Oregon, and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho).

1.1 Purpose

This draft Species Conservation Plan contains the avoidance and minimization measures that would be implemented in order to reduce the likelihood, scope, and extent of Project related impacts to species. These would include 1) routing the project to avoid sensitive wildlife areas to the extent practical; 2) implementing conservation measures proposed by IPC; 3) implementing agency required seasonal and spatial timing restrictions on federally managed lands; and 4) implementing a wildlife injury/mortality monitoring program. The mitigation measures that would be required due to the impacts that could not be avoided or minimized are discussed in the draft Habitat Mitigation Plan (IPC 2013a). The measures that would be implemented in order to restore disturbed areas to preconstruction conditions to the extent practical, as well as monitor and maintain vegetation during operations of the Project, are discussed in the draft Reclamation and Revegetation Plan and the draft Vegetation Management Plan (IPC 2013b,c).

1.2 Goals and Objectives

Construction and operations of a transmission line can result in impacts to wildlife species and their habitats. IPC's goal for this Species Conservation Plan is to develop measures that have been or would be implemented in order to avoid and minimize potential Project-related impacts to plant and wildlife species and their habitats to the extent practical.

2.0 AVOIDANCE DURING PROJECT SITING

During initial siting of the Project, avoidance of sensitive resources was taken into consideration by IPC. Sensitive resource areas that were avoided to the extent practical during the initial siting process included, but were not limited to, Bureau of Land Management– (BLM-) designated areas of critical environmental concern (ACECs), BLM-designated wilderness study areas, all waterbodies (including wetlands, wild and scenic rivers, special status streams), Endangered Species Act– (ESA-) listed critical habitats, areas with sensitive wildlife resources (e.g., sage-grouse leks, Washington ground squirrel colonies, raptor nests), U.S. Department of Agriculture Forest Service– (USFS-) designated visual resource retention and preservation lands, USFS-designated inventoried roadless areas, city and town boundaries, the Boardman Bombing Range, and irrigated cropland. Furthermore, the Project was designed to follow existing developments and utility corridors, such as existing roads and power lines, to the extent practical in order to consolidate impacts to areas that have already been disturbed as opposed to impacting undisturbed areas. IPC also conducted extensive public outreach, in the form of the Community Advisory Process (CAP), as well as consulting with land-managing agencies regarding possible route locations for the Project. A route that completely avoided impacts to all sensitive resources was not possible due to the distribution of sensitive resources across the landscape, and as avoidance of one sensitive resource can often result in the route becoming located within range of another sensitive resource (e.g., avoiding forested habitats can results in the route passing through shrubland habitats) input from the public and land-managing

agencies has resulted in alternate corridor segments that weight avoidance of one resource against another. For additional details regarding the siting process and the constraints considered when developing the Proposed Corridor and alternate corridor segments, see the Project Siting Studies (IPC 2010, 2012).

- The Proposed Corridor in Baker County, between State Route 203 and State Route 84, was routed east of the National Historic Oregon Trail Interpretive Center (NHOTIC) to minimize visual impacts of the Project on the interpretive center (see Exhibit R – Scenic Resources of the Preliminary Application for Site Certificate [pASC; IPC 2013d]). However, routing the Project to the east of the NHOTIC would result in the Project passing through an area between State Route 66 and State Route 84 that contains extensive sage-grouse Core and Low-Density Areas (i.e., Category1 and 2 habitats). As a result, the BLM-sponsored Flagstaff Alternate Corridor Segment was developed to pass west of the NHOTIC and outside of the Category 1 and Category 2 sage-grouse habitats between State Route 66 and State Route 84.
- During the CAP process, a route between Harper and the Idaho border was identified; however, this route passed through a BLM wilderness study area. Therefore, the Proposed Corridor was moved north to avoid this study area. As a result, however, the new Proposed Corridor crossed through areas where impacts to private lands resulted in some public opposition. The Malheur S Alternate Corridor Segment was developed which was located south of the Proposed Corridor as well as the BLM wilderness study area; however, this alternate corridor segment added an additional 3.9 miles to the route's length.
- Washington ground squirrel colonies (as well as a 785-foot buffer around the colony in suitable habitat) are designated as Category 1 habitats. These colonies are present along the portion of the Project located near the Boardman Bombing Range. This area also contains lands owned by The Nature Conservancy that are managed with the goal of protecting the Washington ground squirrel. The Proposed Corridor near the Boardman Bombing Range has been altered multiple times based on survey results and known occupied habitats in this area in order to avoid this Category 1 habitat, The Nature Conservancy grasslands, the Boardman Bombing Range, and to address private landowner concerns regarding future potential development of their property in the area.

3.0 CONSERVATION MEASURES PROPOSED BY IPC

Table 1 lists the conservation measures proposed by IPC to avoid and minimize impacts to species and their habitats during Project construction and operation, as well as where each measure would be applied (i.e., private, state, and/or federal lands). These conservation measures may be referenced as environmental protection measures (EPMs) or best management practices (BMPs) in other documents. Additional measures that do not specifically affect wildlife species or their habitats (e.g., measures to protect cultural resources or other sensitive non-wildlife resources) can be found in Appendix E of the Project's Plan of Development (IPC 2011).

Table 1. IPC Proposed Species Conservation Measures

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
Storm Water Pollution Prevention				
SW-1	A Storm Water Pollution Prevention Plan (SWPPP) and Erosion and Sediment Control Plan (ESCP) will be created and implemented to cover construction-related ground disturbing activities associated with the Project. The SWPPP and ESCP will specify Best Management Practices (BMPs) that will be implemented to minimize sediment and other pollutants from impacting waters of the U.S. and state.	✶	✶	✶
SW-3	The SWPPP and ESCP will identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion and will be modified as necessary to account for changing construction conditions and schedules.	✶	✶	✶
SW-4	Temporary and permanent BMPs will be used to control erosion, sediment and other pollutants associated with construction related activities. BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.	✶	✶	✶
SW-5	Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP and ESCP.	✶	✶	✶
SW-6	Upon completion of construction, permanent erosion and sediment BMPs will be installed in accordance with the SWPPP and ESCP.	✶	✶	✶
Spill Prevention				
SPC-1	A Spill Prevention, Control, and Countermeasure (SPCC) Plan will be prepared by the construction contractor and implemented as applicable for the Project and will detail protective measures to prevent and contain oil and other petroleum products spills and leaks.	✶	✶	✶
SPC-2	Construction spills will be promptly cleaned up and contaminated materials will be transported and disposed of in accordance with local, state, and federal requirements.	✶	✶	✶
SPC-3	Fueling areas within staging area will be contained. If fueling is conducted in other areas along the ROW, BMPs will be implemented to prevent spills.	✶	✶	✶
SPC-4	If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor will be used to contain and clean up the spill. Potential contractors will be identified prior to the start of construction activities.	✶	✶	✶
SPC-5	For spills in standing water, absorbent materials will be used as appropriate to recover and contain released materials on the surface of the water. If the standing water is considered a water of the state, it will be reported immediately to the appropriate agency.	✶	✶	✶
SPC-6	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; the responsible party (if identifiable); and local, state, and federal regulations will	✶	✶	✶

	determine the appropriate cleanup method(s) for these areas.			

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
SPC-7	Any oil spills to waters of the state/US are reportable. Oil spill notification is required for spills on land of 25 gallons or greater in Idaho. In Oregon an oil spill on land of 42 gallons or greater requires notification. Notification is required for hazardous material spills of reportable quantities (quantities are listed in the Code of Federal Regulations).	✶	✶	✶
SPC-8	Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas away from streams or wells and away from storm drains or other drainages..	✶	✶	✶
SPC-9	Vehicle and equipment maintenance will be conducted at off-site maintenance facilities or within staging areas and with appropriate containment. If emergency maintenance is necessary, appropriate containment and materials to clean-up a spill will be provided.	✶	✶	✶
SPC-10	Pumps and temporary fuel tanks for the pumps will be stored in appropriate containers.	✶	✶	✶
Reclamation				
REC-1	Qualified company personnel and contractors will identify noxious weed populations for avoidance and treatment and, where possible, identify new infestations.	✶	✶	✶
REC-2	Preconstruction noxious weed treatments will be limited to areas expected to have unavoidable ground-disturbing activities, areas expected to have the potential to spread weeds due to construction activities, and large populations. Treatments will be conducted prior to the start of ground-disturbing activities and may include (but are not limited to) mechanical control and herbicides. Preconstruction treatment is dependent on timely approval of treatment plans by the land-managing agency; if pre-treatment will delay the start of construction it will not be implemented.	✶	✶	✶
REC-3	All herbicide applications will comply with label restrictions, federal, state and/or county regulation, and landowner agreements. No spraying will occur prior to notification and approval from the applicable land management agency or landowner. Private property will be sprayed only if written approval is obtained. State and federal herbicide recording requirements will be followed, including BLM and USFS recording requirements. The Reclamation Plan will contain a list of approved herbicides, target species and application times and rates for pre- and post-construction treatments.	✶	✶	✶
REC-4	Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle (ATV), backpack sprayers, or with hand sprayers as conditions dictate. Herbicide applications will be conducted by licensed operators or under the supervision of a licensed operator in accordance with state laws.	✶	✶	✶

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
REC-5	Herbicide use near special status species and water bodies will follow label requirements; state and federal law; and BLM and USFS recommendations. IPC will comply with Oregon and Idaho NPDES permit requirements.	✶	✶	✶
REC-6	Project vehicles and equipment will arrive at the job site clean of soil and herbaceous material. When Project vehicles demobilize from the job sites where noxious weeds are present, they will use appropriate decontamination measures as defined in the Reclamation Plan.	✶	✶	✶
REC-7	Project-related storage and staging yards, fly yards, and other areas subject to regular long-term disturbance will be treated for noxious weeds.	✶	✶	✶
REC-8	If topsoil is removed, care will be taken to ensure it is not mixed with the underlying subsoil. Topsoil will be stored in a separate stockpile. It will be returned to the area it was taken from and will not be spread in adjacent areas. If topsoil is not suitable for backfill, then it will be spread in another previously disturbed areas or transported to a predetermined offsite disposal area.	✶	✶	✶
REC-9	Subsurface soils and waste rock will be spread where practicable and in close proximity to the disturbance (within the ROW). This material will be spread uniformly to match existing contours and covered with topsoil—when available—and re-seeded.	✶	✶	✶
REC-10	Straw, hay, mulch, gravel, seed and other imported materials must be certified weed-free.	✶	✶	✶
REC-11	Temporarily disturbed lands within the ROW will be re-contoured to match surrounding landscapes. Re-contouring will emphasize restoration of the existing drainage patterns and landform to pre-construction conditions, to the extent practicable. (Tower pads and roads will not be re-contoured.)	✶	✶	✶
REC-12	Areas within the ROW, lay-down or staging yards, and other areas of extensive vehicle travel and material storage may contain compacted soils. These soils will be de-compacted on a case-by-case basis.	✶	✶	✶
REC-13	IPC may use soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis.	✶	✶	✶
REC-14	Reclamation seeding methods will include broadcast seeding, drill seeding or hydro seeding/hydro mulching (or a combination of methods). Seeding methods will be chosen based on the type of seed, disturbance level and area, soil type, terrain and precipitation levels for the area to be reclaimed. Reclamation techniques will be described in more detail in the Reclamation Plan.	✶	✶	✶
REC-15	Final cleanup will ensure all construction areas are free of construction debris including—but not limited to—assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.	✶	✶	✶

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
Transportation				
TR-2	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 near residential and commercial areas and along major highways and interstates.	✶	✶	✶
TR-7	Unauthorized vehicles will not be allowed within the construction right-of-way (ROW) during construction activities. IPC may not have the authority or ability to enforce this provision on all lands and will work with the land-managing agency or private land owner as necessary.	✶	✶	✶
TR-8	Construction vehicles on un-posted Project roads will travel at speeds that are reasonable and prudent for the conditions.	✶	✶	✶
TR-13	Roads developed specifically for the Project that are not needed after construction of the Project will be reclaimed as specified in the Reclamation, Revegetation, and Weed Management Plan.	✶	✶	✶
Fire				
FIRE-1	A Fire Prevention and Suppression Plan that meets all State, and Federal requirements will be prepared prior to the start of construction activities. This will include identification of minimum fire prevention equipment that must be available, training, identification of key contacts and contact procedures, and what to do in case of a fire..	✶	✶	✶
Operation and Maintenance				
OM-1	IPC will comply with the road maintenance standards of the federal or state agency controlling the land.	✶	✶	
OM-2	Roads that are the responsibility of IPC to maintain will be maintained to have crossroad drainage to minimize the amount of channeling or ditches needed. Water bars will be installed at all alignment changes (curves), significant grade changes, and as requested by the federal or state agency.	✶	✶	✶
OM-3	If during the course of O&M activities or emergency response activities the existing service road drainage structures are damaged, they shall be repaired/restored as soon as possible.	✶	✶	✶

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
OM-5	Federal and state agencies may restrict general public On roads used by IPC for the Project. In cases of restricted access, IPC will physically close the road with a gate where appropriate. Gates will be locked with an IPC lock and a federal-agency lock. The O&M plan will be updated to reflect current road closures and gate locations as necessary. The effectiveness of gates is dependent on existing topography and in flat areas, it may not be possible to physically restrict access.	✶	✶	
OM-6	Project vehicles and equipment will arrive at the job site clean of soil and herbaceous material. When Project vehicles demobilize from the job sites where noxious weeds are present, they will use appropriate decontamination measures as defined in the Reclamation Plan.	✶	✶	
OM-7	To help limit the spread and establishment of noxious-weed species in disturbed areas, desired vegetation needs to be established promptly after disturbance. IPC will rehabilitate significantly disturbed areas as soon as possible after ground-disturbing activities and during the optimal period. Rehabilitation will be consistent with the Reclamation and Revegetation Plan (IPC 2013b). IPC will not reseed disturbed areas that occur within large patches of non-native vegetation (e.g., cheat-grass dominated) where it is unlikely the reseeded species would out-compete the surrounding non-native vegetation.	✶	✶	✶
OM-8	If noxious-weed species occur within IPC's ROW as a result of IPC activities, IPC will coordinate treatment with the BLM, USFS, or other land owner as applicable. When determining whether treatment is necessary and whether it will produce the desired results, IPC will consider surrounding site conditions and whether weed-control activities will be conducted by other parties. IPC is only responsible for controlling noxious weeds to pre-disturbance levels.	✶		✶
OM-9	Routine and corrective O&M activities in streams with sensitive fish species shall be conducted when possible, within the designated in-water work periods for each particular stream.	✶	✶	✶
OM-10	Woody vegetation management within 100 feet of streams will be completed by hand crews.	✶	✶	✶
OM-11	Herbaceous plants and low-growing shrubs will be left in place if they do not interfere with the safe O&M of Project lines and equipment.	✶	✶	✶
OM-12	IPC will use existing stream crossings or new, permanent crossings that were approved as part of the Project, and IPC will not create additional crossings without prior agency permitting and approval.	✶	✶	✶
OM-13	Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by IPC for effectiveness will be used within 100 feet of aquatic resources.	✶	✶	✶

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
OM-14	Sensitive plant or wildlife populations that occur within or adjacent to the ROW and work areas will be marked on the ground, where practical, to ensure they are avoided. If species are discovered during work, IPC will establish a spatial buffer zone and immediately contact the appropriate land-managing agency. Unless IPC is informed otherwise, work outside the buffer area will continue. If IPC needs to work within the buffer area, it will work with the appropriate land-managing agency to develop a mutually acceptable solution that allows the work to be completed within the scheduled outage window and/or in a timely manner. After the Project is complete or no longer poses a threat to the population, any marking will be promptly removed to protect the site's significance and location from unwanted attention.	✶	✶	
OM-15	If any sensitive plants or wildlife species require relocation, permission will be obtained from the appropriate land management agency and others as required.	✶	✶	
OM-16	If sensitive wildlife species are killed or injured due to construction or O&M activities, the appropriate land management agency and the Oregon Department of Fish and Wildlife (ODFW) or Idaho Department of Fish and Game (IDFG) will be notified.	✶	✶	✶
OM-17	Nesting, roosting, and perching birds—especially osprey—can cause power outages if their feces or nesting materials interfere with conductors, insulators, or air gaps. IPC, in consultation with the U.S Fish and Wildlife Service (FWS), manages nesting on distribution line structures to reduce conflicts. Such management may include relocating nests, modifying structures, and providing nesting platforms. IPC will consult with the FWS and the appropriate land management agency when a problem nest is located on federal lands.	✶		
OM-18	For purposes of compliance with the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act of 1940, IPC will adhere to its Avian Protection Plan (March 2011) that provides protocols for minimizing electrocution and collision events and managing nests, including the protection of nests during vegetation management activities	✶		
OM-29	O&M activities shall comply with the Fire Protection and Suppression Plan.	✶	✶	✶
Wildlife				
PRC-1	Seasonally, crucial winter range for bighorn sheep (as mapped by ODFW) and critical bighorn sheep lambing areas will be avoided during construction	✶	✶	✶
PRC-2	No construction activities will take place in elk critical winter range between November 15 and March 31 without an approved exception.	✶	✶	✶
PRC-3	No construction activities will take place in mule deer critical winter range between November 15 and March 31 without an approved exception.	✶	✶	✶

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
PRC-4	Identified bald eagle nest sites within 0.75 mile of transmission line construction (access roads, tower platforms, and lay-down yards) will be surveyed for occupancy in mid-February. If a site is occupied, a seasonal restriction will be enacted through August 1. Two additional surveys of occupied sites will be conducted by May 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction will be removed and construction can commence	✶	✶	✶
PRC-5	Suitable burrowing owl (nesting) habitat, or identified nesting areas within 0.25 miles of construction sites will be surveyed for active burrowing owl nest sites between March 1 and April 1 . If an active nest site is located, a seasonal closure will be enacted, starting March 15 and ending August 1. Two additional surveys of occupied sites will be conducted by May 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction will be removed and construction can commence.	✶	✶	✶
PRC-6	Suitable ferruginous nesting habitat, or identified nesting areas within 0.25 miles of construction sites will be surveyed for active ferruginous hawk nest sites between March 1 and April 1. If an active nest site is located, a seasonal closure will be enacted, starting March 15 and ending August 1. Two additional surveys of occupied sites will be conducted by May 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction will be removed and construction can commence.	✶	✶	✶
PRC-7	Suitable golden eagle nesting habitat, or identified nesting areas within 0.50 miles of construction sites will be surveyed for active golden eagle nest sites between February 15 and March 15. If an active nest site is located, a seasonal closure will be enacted, starting March 15 and ending August 1. Two additional surveys of occupied sites will be conducted by May 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction will be removed and construction can commence.	✶	✶	✶
Migratory Birds				
PAC-1	Upland habitat suitable to nesting migratory birds will be surveyed prior to ground clearing between April 1 and June 15 for active nests. No seasonal restrictions will be imposed on clearing upland habitat between June 16 and March 31. Ground clearance in riparian habitats will be allowed between August 1 and March 30, with the exception of a seasonal constraint for impacts to fisheries resources.	✶	✶	✶
PAC-2	Any modifications to the preferred route or changes to the location of any Project features that result in construction being located outside the surveyed area will be assessed and documented according to the protocols and methods defined in the construction Plan of Development (POD).	✶	✶	✶
Special Status Plants				
PPC-1	Surface disturbance will not be allowed in potential slickspot peppergrass habitat, except where ground surveys 1 year prior to construction have determined no populations or habitats are present.	✶		

Table 1. IPC Proposed Species Conservation Measures (continued)

Species Conservation Measures		Applicable to Land Ownership		
Number	**Measure**	**Federal**	**State**	**Private**
PPC-2	Surface disturbance will not be allowed in potential Howell's Spectacular Thelypody habitat, except where ground surveys 1 year prior to construction have determined no populations or habitats are present.	✶		

3.1 Relocation/Avoidance of Sensitive Plant Species

To prevent direct impacts from occurring to federal or state listed plant species, IPC will use existing databases and Project surveys to microsite Project components away from known occurrences of listed plant species to the extent practical (disturbances would be excluded within buffer zones required by the Oregon Department of Agriculture [ODA]). It is anticipated that for Project components such as new access roads, fly yards or tower locations, it will be possible to microsite these components to avoid directly impacting federal or state listed plant species occurrences; however, it may not be possible to avoid listed plants that are located along existing disturbances (e.g., existing access roads that would be improved as part of the Project) or the reroute may impact other sensitive resources. For example, re-routing an existing road in order to avoid a sensitive plant species could result in additional impacts to other sensitive resources due to the construction of a new roadbed as opposed to utilizing an existing roadbed. In many cases, federal or state listed plant species located along existing access roads that need improvement may still be avoided during construction if the plant is located along the existing road's outer shoulder (e.g., the road bed could be shifted in order to avoid disturbing the outer shoulder). The applicable federal and state agencies (e.g., the U.S. Fish and Wildlife Service [FWS] as well as the ODA[1]) would be consulted prior to moving any federal and state listed species. Furthermore, an incidental take permit (under the ESA) would be required for any federally listed plant located on federally managed lands that requires transplanting.[2] A Public Land Action Permit would be required for any Oregon state listed plant that is located on Oregon state–managed lands that requires transplanting.

At this time, four state-listed plant species are known to occur along existing access roads that would need improvement. This includes the Cronquist's stickseed (*Hackelia cronquistii*), Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*), Mulford's milk-vetch (*Astragalus mulfordiae*), and Snake River goldenweed (*Pyrrocoma radiata*; see Exhibit Q in the pASC [IPC 2013d]),[3] The exact location, number, and species composition of listed plant species within the Project area will be determined during preconstruction surveys.

4.0 AGENCY REQUIRED SEASONAL/SPATIAL RESTRICTIONS

Federally managed lands crossed by the Project are governed by various land-use plans. This includes three BLM Resource Management Plans (RMPs), one Bureau of Reclamation RMP, and one USFS land and resource management plan (Forest Plan). These plans are listed in Table 2, while Figure 1 displays the extent of federal lands crossed by the Project that are under the jurisdiction of each of these plans. See Exhibit L in the pASC (IPC 2013d) for more details regarding federal land-use plans.

[1] Idaho has not designated State listed Threatened or Endangered species

[2] Based on current information, there are no federally listed plant species located on federally managed lands that would require transplanting.

[3] Based on current information, there is only one population of Snake River goldenweed located on state-managed lands that may require relocation, and subsequently require a Public Land Action Permit.

Table 2. Federal RMPs and Forest Plan

Administrative Unit	Applicable Plan Name	Plan Publication Date
Idaho		
BLM Boise District, Owyhee Field Office	Owyhee RMP	1999
Oregon		
BLM Vale District		
– Malheur Resource Area	Southeastern Oregon RMP	2002
– Baker Resource Area	Baker RMP	1989
Wallowa-Whitman National Forest (NF)	Forest Plan, Wallowa-Whitman NF	1990
Bureau of Reclamation	Owyhee Reservoir RMP	1994

The BLM and USFS have identified seasonal and spatial restrictions within their RMPs and Forest Plans that govern when and where Project-related disturbances can occur on federally-managed lands. IPC (and its construction contractor) will comply with all spatial and timing restrictions on federally-managed lands that are required within the applicable approved RMPs and Forest Plans (i.e., on lands where these various plans apply; see Figure 1). In some cases, however, IPC (or its construction contractor) may request exceptions to the spatial and timing restrictions applicable to BLM-managed lands, based on site-specific conditions (e.g., lack of wildlife use in an area during the seasonal restriction, based on survey results). These exception requests would follow established BLM exception processes, and would be dependent on approval by applicable BLM Field Offices. The USFS does not have an exception process to their seasonal and spatial restrictions; therefore, no exceptions to the USFS restrictions would be requested.

Table 3 lists the seasonal and spatial restrictions found within the current applicable BLM RMPs and the Wallowa-Whitman National Forest Plan. Note that this table only lists the measures found in the currently published plans; some of these plans are currently being or will likely be revised in the coming months or years (e.g., the Baker RMP is currently being revised, and the draft plan contains multiple seasonal and spatial restrictions; however, these restrictions would not apply until the draft plan is finalized and approved). Furthermore, this table only lists the measures that explicitly state a seasonal or spatial restriction and are applicable to wildlife/fish/plants. Other restrictions from these RMPs and Forest Plan would apply to the Project as well (e.g., BMPs or restrictions that do not directly relate to biological resources), and may be referenced in other non-biological Project-related plans.

The Oregon Department of Fish and Wildlife (ODFW) has recommended seasonal and spatial restrictions related to wildlife they manage (see Tables 4 and 5). The ODFW has indicated that they may allow exceptions to these restrictions, on a case-by-case basis, if site specific conditions allow (e.g., winter restrictions may be waived during a mild winter). The ODFW is currently working with the applicable federal agencies (e.g., BLM, USFS, FWS) to determine appropriate seasonal and spatial restrictions that they should recommend for the protection of raptor species on state and private lands.

The FWS may request additional seasonal or spatial restrictions related to migratory birds or ESA listed species; and the Idaho Game and Fish Department (IDFG) may request restrictions based on wildlife they manage (likely related to big game winter range, in-stream work windows, fish passage rules, and sage-grouse). IPC will continue to work with the FWS and state wildlife agencies regarding these possible restriction recommendations.

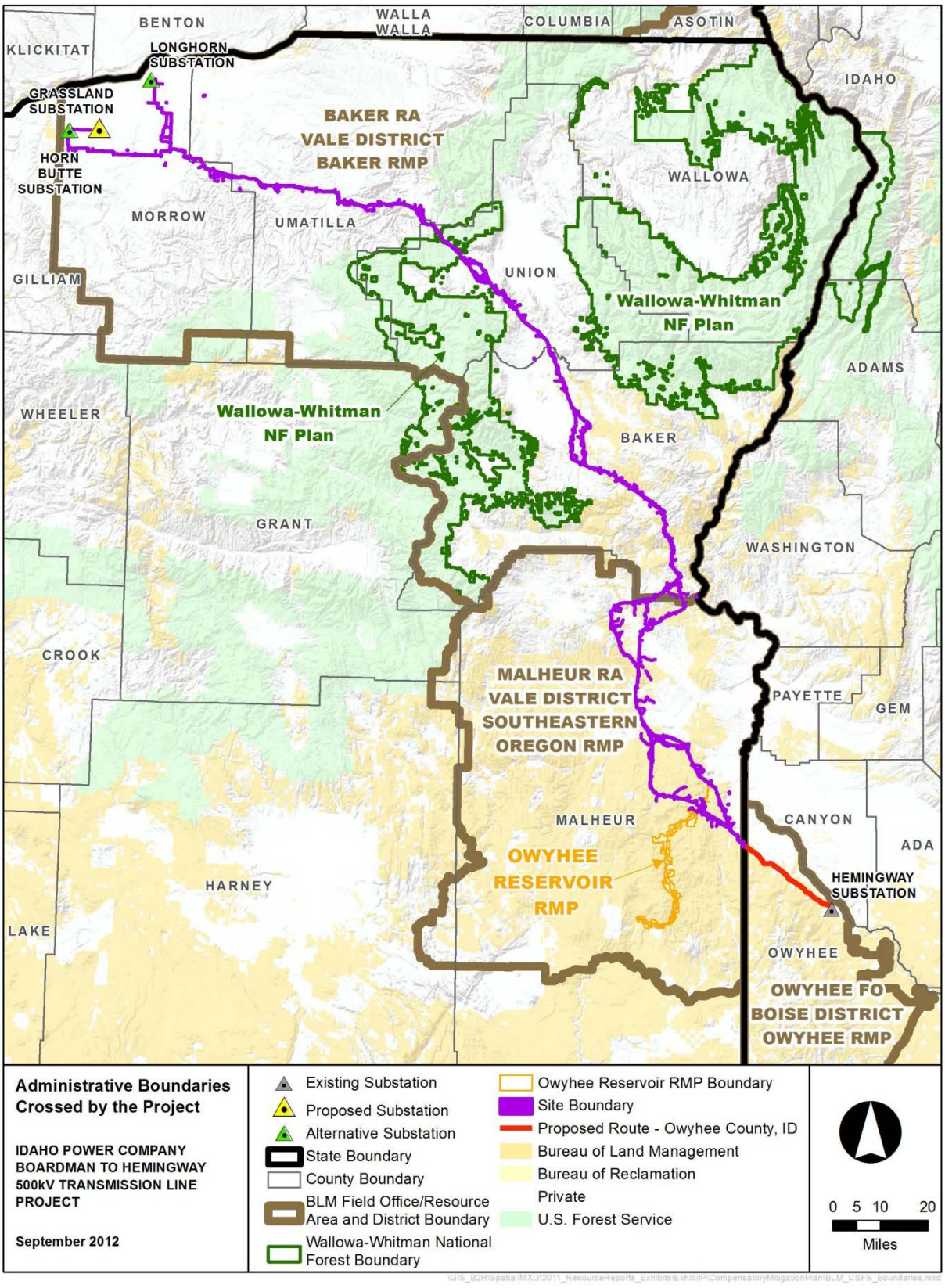


Figure 1. Administrative Boundaries Crossed by the Project

Table 3. Seasonal and Spatial Restrictions Contained in the BLM Resource Management Plans and USFS Plans Applicable to the Project

Federal Agency	Plan	Restriction	Spatial Restriction	Date Range	Applicable Resource
BLM	Owyhee Resource Management Plan (RMP)	Protect raptor nests and manage adjacent vegetation to ensure adequate habitat for prey species. Authorize no human caused disturbance within a 0.5 mile radius of any known golden eagle nest between February 1 and June 30 and other species' nests between March 15 and June 30. Disturbance is defined as any activity which could result in frequent flushing of adults or young, nest abandonment or significant loss of prey base.	0.5 mile radius	February 1 to June 30	Golden eagle
BLM	Owyhee RMP	Protect raptor nests and manage adjacent vegetation to ensure adequate habitat for prey species. Authorize no human caused disturbance within a 0.5 mile radius of any known golden eagle nest between February 1 and June 30 and other species' nests between March 15 and June 30. Disturbance is defined as any activity which could result in frequent flushing of adults or young, nest abandonment or significant loss of prey base.	0.5 mile radius	March 15 to June 30	Raptors
BLM	Southeastern Oregon RMP	Sage grouse breeding activity could be disrupted by lease activity during the strutting season. A No Surface Occupancy (NSO) stipulation will be applied within 0.5 mile of these sites between March 1 and June 1 of each year. The authorized officer may grant exception to the stipulation if site specific environmental analysis indicates that an action would not interfere with sage grouse strutting. The authorized officer may modify the size and timeframes of the stipulation if monitoring indicates that current sage grouse use patterns are inconsistent with dates established for animal occupation, or if the proposed action could be conditioned so as to not interfere with sage grouse strutting. This stipulation may be waived by the authorized officer if monitoring determines that all or specific portions of the lease area no longer satisfy this functional capacity.	0.5 mile radius	March 1 to June 1	Sage-grouse leks

Table 3. Seasonal and Spatial Restrictions Contained in the BLM RMPs and USFS Plans Applicable to the Project (continued)

Federal Agency	Plan	Restriction	Spatial Restriction	Date Range	Applicable Resource
BLM	Southeastern Oregon RMP	Sites near Harper which have special status plant habitat which would be adversely impacted by surface disturbance. No Surface Occupancy (NSO) stipulations will be applied within these areas to protect those values. This stipulation may be waived by the authorized officer if the plant species is no longer classified as special status.	Locations of special status plant habitat	Year-round	Special status plants
BLM	Southeastern Oregon RMP	Big game tolerance to leasing activities varies by species and is influenced by the intensity, duration, and timing of disturbance. In areas with big game winter range, no development would be allowed from December-March 1 of each year. The authorized officer may grant exception if site specific analysis indicates that an action would not interfere with habitat function or compromise animal condition. The authorized officer may modify the size and timeframes of the stipulation if monitoring indicates that current animal use patterns are inconsistent with dates established for animal occupation. This stipulation may be waived by the authorized officer if monitoring determines that all or specific portions of the project area no longer satisfy this functional capacity.	Big game winter range locations	December to March 1	Big game
Bureau of Reclamation	Owyhee Reservoir RMP	Establish a special protection/buffer area (at least 50 feet and preferably 100 feet) from the edge of perennial streams and springs; avoid facility development in special protection/buffer areas.	50-100 feet	Year-round	Perennial streams and springs

Note: No seasonal or spatial restrictions are identified in the U.S. Department of Agriculture, Forest Service (USFS) plans applicable to this Project.

Table 4. Seasonal and Spatial Wildlife Restrictions recommended by the ODFW

Species / Area	County/ Watershed	Requirement/ Recommendation	Restriction	Date Range	Applicable Resource / Area
Big Game Winter Range	All	Recommendation	Prohibit Construction	Dec 1–March 31	Mule deer, Rocky Mountain elk
Big Game Summer Range	Where applicable	Recommendation	Prohibit Construction	April 15–June 1	Calving periods
Sage-Grouse	Baker/Malheur	Recommendation	Prohibit Construction	March 1–June 30	Lekking and nesting habitat
Washington Ground Squirrels, active colony	Umatilla/Morrow	Recommendation	Prohibit Construction	March 15–June 15	785 foot buffer around colony

Table 5. Seasonal and Spatial Fisheries Restrictions recommended by the ODFW

Basin	Waterbody	Requirement	Date Range	Applicable Resource[1]
Columbia	Willow Creek	Standard Guidelines recommended to Oregon Department of State Lands (DSL)	July 1–December 31	RT, STS
Columbia	Columbia R.–upstream JD river	Standard Guidelines recommended to DSL	December 1–March 31	CHF,CHS,CO,STS
Umatilla River	Butter Creek	Standard Guidelines recommended to DSL	July 1–December 31	RT
Umatilla River	Birch Creek	Standard Guidelines recommended to DSL	July 1–October 31	STS,RT
Umatilla River	McKay Creek above reservoir	Standard Guidelines recommended to DSL	July 1–December 31	RT
Umatilla River	Meacham Creek (above north fork)	Standard Guidelines recommended to DSL	July 1–October 31	STS,RT,BUT,WF
Grande Ronde	Grande Ronde–Wallowa River to Hwy 244 bridge	Standard Guidelines recommended to DSL	July 1–October 15	CHS,STS,RB,BUT
Grande Ronde	Catherine Creek to Incl. little Catherine Creek	Standard Guidelines recommended to DSL	July 1–October 15	CHS,STS,RB,BUT
Powder River	Powder River–mouth to Phillips Reservoir	Standard Guidelines recommended to DSL	July 1–October 31	RB
Powder River	Powder River tributaries	Standard Guidelines recommended to DSL	July 1–August 31	RB.BUT
Snake River res. Trib.	Burnt River	Standard Guidelines recommended to DSL	July 1–October 31	RB,BT

Table 5. Seasonal and Spatial Fisheries Restrictions recommended by the ODFW (continued)

Basin	Waterbody	Requirement	Date Range	Applicable Resource[1]
Malheur	Willow Creek, below Malheur Reservoir	Standard Guidelines recommended to DSL	open	
Malheur	Malheur River (below Namorf Dam)	Standard Guidelines recommended to DSL	open	
Owyhee	Owyhee (below Dam)	Standard Guidelines recommended to DSL	November 1–March 31	RB,BT
Owyhee	Succor Creek	Standard Guidelines recommended to DSL	October 1–March 31	RT

[1] RT = Redband Trout; STS = Summer Steelhead; CHF = Chinook Salmon, Fall; CHS = Chinook Salmon, Spring; CO = Coho Salmon; BUT = Bull Trout; RB = Rainbow Trout

5.0 ENVIRONMENTAL COMPLIANCE TRAINING

Prior to the start of construction, all construction workers will be required to participate in environmental education. The training will ensure that all Project personnel understand and are aware of the environmental requirements and protection measures, as well as the importance of compliance. At a minimum, the program will include the following topics: biological, cultural, paleontological, and other environmental requirements and protection measures.

6.0 WILDLIFE INJURY/MORTALITY MONITORING AND REPORTING

As described in IPC's Avian Protection Plan (IPC 2008), the Project area would be monitored during both construction and operations for any injured or dead avian species. This monitoring program includes the initial response, handling, and reporting of carcasses/injured-birds discovered incidental to Project construction, maintenance, and operations. Investigators performing other monitoring activities (e.g., see monitoring programs described in the draft Reclamation and Revegetation Plan and the draft Vegetation Management Plan) will also participate in the wildlife monitoring program. Project personnel will be trained in the methods necessary to carry out this monitoring program.

If construction, maintenance, or operations personnel discover an injured or dead bird, they will notify IPC's Environmental Affairs Department. IPC's Environmental Affairs Department will advise field personnel regarding bird identification, handling, and disposal. IPC will apply for and maintain all required state and federal permits for handling and disposal of bird carcasses and handling of injured animals. IPC will coordinate the collection of state endangered, threatened, sensitive, or other state protected species with the ODFW and IDFG. IPC will coordinate the collection of federally listed endangered or threatened species, or bald or golden eagles with the FWS.

In the event that a carcass or injured bird is found, the IPC biologist will complete an incident form, which will include basic information such as: 1) location of the mortality/injury; 2) identification of the bird species; 3) habitat associated with the mortality/injury; 4) cause of death/injury; 5) pole type, configuration, and hardware present on the pole; and 6) modifications made. The information is entered into an avian mortality database and is analyzed annually and will be included in the annual Project Wildlife Monitoring and Mitigation Report. If IPC identifies certain sections of the Project as having a high risk of injury or mortality to wildlife based on this data, IPC will perform risk reduction measures (e.g., such as installing flight diverters) in consultation with the ODFW, IDFG, and FWS. All risk reduction measures will be consistent with Avian Power Line Interaction Committee (APLIC) standards for electrocution and collision.

In addition to the avian injury/mortality monitoring and reporting described above, if construction, maintenance, or operations personnel discover injuries or mortalities to any of the nongame wildlife species listed in OAR 635-044-0130(1), they will notify an IPC wildlife biologist or contact IPC's Environmental Affairs Department. The biologist or IPC's Environmental Affairs Department will advise field personnel regarding identification, handling, and disposal. IPC will apply for and maintain all required state and federal permits for handling and disposal of carcasses and handling of injured animals. IPC will coordinate the collection of state endangered, threatened, sensitive, or other state protected species with the ODFW. IPC will coordinate the collection of federally-listed endangered or threatened species, or bald or golden eagles with the FWS.

7.0 LITERATURE CITED

IPC (Idaho Power Company). 2008. Idaho Power Avian Protection Plan.

IPC. 2010. Siting Study. Boardman to Hemingway Transmission Line Project. August.

IPC. 2011. Revised Plan of Development. November.

IPC. 2012. Boardman to Hemingway Transmission Line Project Supplemental Siting Study. June.

IPC. 2013a. Draft Habitat Mitigation Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013b. Draft Reclamation and Revegation Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013c. Draft Vegetation Management Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013d. Preliminary Application for Site Certificate. Boardman to Hemingway Transmission Line Project. February.

ATTACHMENT P-7
DRAFT HABITAT MITIGATION PLAN

DRAFT

Habitat Mitigation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

February 2013

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Purpose and Goals 1
2.0 REGULATORY CONTEXT 1
2.1 ODFW Habitat Mitigation Policy 1
2.1.1 Habitat Categorization 2
2.2 ODFW Greater Sage-Grouse Mitigation Policy 3
2.2.1 Sage-Grouse Habitat Categorization 3
2.3 Other Regulations 4
3.0 TEMPORARY AND PERMANENT IMPACTS 4
4.0 MITIGATION REQUIREMENTS 4
5.0 MITIGATION OPTIONS 5
5.1 Permittee-Responsible Mitigation 6
5.2 Performance Measures (Success Criteria) 7
6.0 MONITORING PLAN 7
6.1 Reporting 7
7.0 PLAN AMENDMENT 8
8.0 REFERENCES 8

1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 282 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project would include a 500-kilovolt (kV) single-circuit line, and a rebuild of an existing 138-kV and 69-kV double-circuit lines between Boardman, Oregon, and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho).

1.1 Purpose and Goals

Section 3.3.7 of Exhibit P in the Energy Facility Siting Council (Council) Application for Site Certificate (IPC 2013a), as well as the draft Reclamation and Revegetation Plan (IPC 2013b), Vegetation Management Plan (IPC 2013c), and Species Conservation Plan (IPC 2013d), discuss the avoidance and minimization measures that would be implemented in order to reduce the potential impacts of the Project on fish and wildlife habitats. This draft Habitat Mitigation Plan outlines IPC's proposal regarding how the Project would mitigate for impacts that could not be avoided or minimized. This document is in draft form; final details regarding the location of mitigation sites, site-specific mitigation plans and ratios, as well as mitigation schedules and other related details will be included in the final Habitat Mitigation Plan.

2.0 REGULATORY CONTEXT

This section describes the regulatory environment in which this draft Habitat Mitigation Plan was developed, and how habitats were characterized in accordance with these regulations.

2.1 ODFW Habitat Mitigation Policy

Under Oregon Administrative Rule (OAR) 345-022-0020, the Council must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with the Oregon Department of Fish and Wildlife (ODFW) Habitat Mitigation Goals and Standards of OAR 635-415-0025 before issuing a Site Certification. OAR 635-415-0025 defines the ODFW Fish and Wildlife Habitat Mitigation Policy, which provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The definition of these six category types is listed below:

- **Category 1** is defined as irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage. The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
- **Category 2** is defined as essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population, or unique assemblage. The mitigation goal for Category 2 is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.
- **Category 3** is defined as essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population. The mitigation goal for Category 3 is no net loss of either habitat quantity or quality.

- **Category 4** is defined as important habitat for fish and wildlife species. The mitigation goal for Category 4 is no net loss in either existing habitat quantity or quality.
- **Category 5** is defined as habitat for fish and wildlife having high potential to become either essential or important habitat. The mitigation goal for Category 5 is to provide a net benefit in habitat quantity or quality.
- **Category 6** is defined as habitat that has low potential to become essential or important habitat for fish and wildlife. The mitigation goal is to minimize impacts.

2.1.1 Habitat Categorization

Habitats located within the analysis area were classified into the six category types in accordance with OAR 635-415-0025, as described in detail within Exhibit P of the preliminary Application for Site Certificate (pASC; IPC 2013a). Data from the Regional Gap Analysis Project (ReGAP) were used as the base layer-for this effort. ReGAP contains wetland location/spatial information; however, more accurate wetland data are available. Therefore, ReGAP data were augmented with data from the Oregon Wetland Cover (OWC) database to more accurately depict currently available wetland data. Vegetation community and habitat condition information collected during surveys (e.g., wetland data collected during wetland surveys, as well as vegetation types and exotic species percent-cover collected during terrestrial visual encounter surveys) were used to further refine the base-layer data. Wildlife data collected during surveys was then overlaid onto this base-layer using ArcGIS. Fish presence plays a role in the categorization of stream habitats. Fish were assumed present in all perennial streams. Fish were assumed present in intermittent streams if the Oregon Streamflow Duration Assessment Method (or OSDAM) data indicated that the stream contained macro-invertebrates, or if ODFW and Idaho Department of Fish and Game (IDFG) biologists indicated that the intermittent stream contained fish when water is present.

Attachment P-2 of Exhibit P contains the metrics and habitat components used to classify habitats into these six category types, based on the presence of habitat characteristics and species observations. These metrics and habitat components were first reviewed by land managers and biologists from the ODFW, U.S. Department of Agriculture, Forest Service (USFS), U.S. Fish and Wildlife Service (FWS), National Oceanic and Atmospheric Administration, and the Bureau of Land Management (BLM) during the interagency meetings (as discussed in Section 3.3.1 of Exhibit P [IPC 2013a]). Additional meetings to discuss these methods as well as the preliminary maps were held with the ODFW in September 2011; and with the BLM, ODFW, USFS, FWS, Oregon Department of Energy (ODOE), and the BLM in November 2011 and September 2012.

As surveys have not been completed within the entire Site Boundary because of limitations on access to private lands, there are areas where survey information is not currently available. In these areas, ReGAP, agency designated habitats (e.g., ODFW designated big game habitats), known occurrences of special status species, and conditions in adjacent surveyed areas were used to approximate the appropriate category type. For example, in order to estimate the current land conditions found in the areas not surveyed, aerial photo interpretation was used to compare adjacent unsurveyed areas to surveyed areas (e.g., if a survey conducted in a sagebrush habitat determines that it is of high quality with few invasive species, and an un-surveyed area directly adjacent is similar in appearance to the surveyed area based on aerial images, then the unsurveyed area would be classified in accordance with the conditions found in the surveyed area; see discussion in Exhibit P, Section 3.3.2, in the pASC [IPC 2013a]). Complete survey coverage of the Project corridor(s) will be required as a condition of site certification for the Project. The habitat categorization, as well as the associated impact values and mitigation requirements, will be recalculated once complete survey information is obtained.

2.2 ODFW Greater Sage-Grouse Mitigation Policy

The ODFW has developed a conservation plan for the protection of the greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) and their habitat within Oregon, and this plan was adopted by the Oregon Fish and Wildlife Commission in April 2011. This plan provides guidance to public land-management agencies and other land managers regarding sage-grouse conservation (ODFW 2011). The plan utilizes a core area approach, as developed by Doherty et al. (2011, as cited in ODFW 2011), to protect sage-grouse habitats. This landscape approach establishes Core Areas and Low-Density Areas based on metrics that assess sage-grouse populations and habitat abundance. The ODFW has stated that the goal of these Core Areas is to "assist in identifying the most productive habitat areas for sage-grouse and those areas that should be protected from habitat loss and fragmentation" (ODFW 2011). When this is not possible, ODFW recommends that actions be identified to minimize the impacts to sage-grouse and their habitats within the analysis area (ODFW 2011). Because Core Areas are established around high densities of sage-grouse, they protect about 90 percent of the population while encompassing approximately 38 percent of the species' range within Oregon. Sage-grouse habitat categorization is discussed in Exhibit P, Section 3.3.5.1 in the pASC (IPC 2013a).

2.2.1 Sage-Grouse Habitat Categorization

Although Core Areas are typically classified as Category 1 habitats under the core area approach, Core Areas are designated at a landscape level and as a coarse filter to guide development; therefore, they are subject to site-specific refinements to determine appropriate habitat categorization. The ODFW is working closely with IPC to evaluate the site-specific conditions in Core Areas along the Project to determine if these areas should be classified as Category 1 or Category 2 habitats under the core area approach. The three criteria the ODFW are using to determine if Core Areas would be classified as Category 1 under the core area approach include the following: 1) are the habitats those upon which sage-grouse depend; 2) is there evidence of sage-grouse presence; and 3) is the site-specific habitat both essential and irreplaceable. If the Core Area does not fulfill all three elements, then it would be classified as Category 2 under the core area approach.

A desktop assessment of Core Areas along the Project was conducted by the ODFW (with support from IPC's contractor) on November 30, 2012. The ODFW determined during this assessment that some portions of the Core Area crossed by the Project did not contain the necessary elements required for that area to be classified as Category 1. As a result, these areas have been classified as Category 2 habitats for this Project. Attachment P-9 of Exhibit P (IPC 2013a) contains a record of this ODFW assessment, as well as maps of the Core Areas that have been classified as Category 2 habitats. The remaining portions of the Core Area have been classified as Category 1 habitats (i.e., those areas not included in Attachment P-9 of Exhibit P in the pASC). This process is ongoing at this time, and more information will be provided as it becomes available.[1]

All Low-Density Areas were classified as Category 2 habitats, as required by the Core Area approach.

[1] In the event that the Project impacts Category 1 habitat following ODFW's refinement of the habitat categorization in Core Areas, IPC will either refine the Project location to avoid Category 1 habitats or ask the Council to exercise balancing authority under OAR 345-022-0000(2). Should the Council elect to exercise its balancing authority and allow the Project to impact Category 1 habitat, IPC will work with the Council and ODFW to develop a mitigation proposal for impacts to Category 1 habitat.

Other sagebrush habitats (i.e., those located outside of Core and Low-Density Areas) were classified in accordance with the directions provided by the ODFW (see Attachment P-2 in Exhibit P [IPC 2013a]).

2.3 Other Regulations

The Project will comply with applicable federal wildlife regulations such as the Endangered Species Act of 1973 as amended (ESA), the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act. Additional mitigation measures may be required as a result of the National Environmental Policy Act (NEPA) assessment and would be incorporated into this Draft Habitat Mitigation Plan as applicable (see Section 7.0).

3.0 TEMPORARY AND PERMANENT IMPACTS

The Project would result in both temporary and permanent impacts to habitats.

Temporary impacts during construction would include direct effects, such as ground disturbance to areas that would be to restored to preconstruction conditions following completion of the Project; these include areas along temporary access roads, laydown areas, fly yards, pulling and tensioning sites, and construction areas around tower pads. Temporary impacts from construction would also include indirect effects, such as general disturbance of wildlife resulting from noise and/or the presence of workers and construction equipment in and near wildlife habitats. Temporary impacts during operations would result from the periodic disturbance associated with inspection and maintenance of the line. These impacts would result in a temporary loss of habitat quality or utility, which would last for the duration of the disturbance, as well as the length of the recovery period for ground disturbances. For example: the recovery period for agricultural areas that were directly disturbed could be as short as 1 to 3 years; grasslands and herbaceous wetlands would generally recover within 3 to 7 years; shrublands may require 30 to 100 years to recover (with the longer recovery periods associated with disturbances in mature sage-brush habitats located in arid regions or for specific sage-brush species; e.g., *Artemisia tridentata* ssp. *wyomingensis*); and forested and woodland areas could take anywhere from 50 to many hundreds of years to reach preconstruction conditions (depending on the condition of the area prior to construction).

Permanent impacts would be associated with areas that are disturbed during construction, but which are not allowed to restore to preconstruction conditions. Permanent impacts would occur along new access roads, new or expanded substations, and tower bases, as well as within the permanent right-of-way (ROW) and vegetative maintenance zone along portions of the Project that cross forested/woodland habitats. These impacts would either result in a loss of habitat utility (e.g., in areas occupied by tower bases) or a conversion of one habitat type to another (e.g., conversion of forested habitats to shrub and grass habitats in the permanent maintenance ROW).

4.0 MITIGATION REQUIREMENTS

Separate mitigation ratios will be proposed for temporary and permanent impacts because the difference in the severity of these impacts varies. IPC is currently working with ODFW to develop mitigation ratios applicable to the Project.

The ODFW has developed a white-paper (ODFW 2012) that outlines methods for calculating mitigation related to direct and indirect impacts to sage-grouse habitats. IPC will work with ODFW to develop a mitigation proposal for direct and indirect impacts to sage-grouse habitat.

5.0 MITIGATION OPTIONS

In designing mitigation measures, IPC will take the following steps:

- Determine the extent of mitigation that is required by assessing the level of impact to fish and wildlife habitats (i.e., ODFW Habitat Categories as defined in OAR 635-415-0025), the indirect impacts to sage-grouse habitats (per recommendations from the ODFW), and any forthcoming requirements from the federal agencies.
- Ensure that proposed mitigation is sufficient to meet:
  - Requirements in the OARs 345-022-0020 and OAR 635-415-0025;
  - ODFW Goals and Standards;
  - Any species-specific requirements provided by ODFW; and
  - Any additional requirements that may be contained in the BLM authorization.
- Identify appropriate mitigation sites to compensate for impacts.
- Identify actions that could be taken to improve habitats at each mitigation site. Some examples include:
  - Juniper removal, as well as fence-marking or fence-removal in sage-grouse habitats.
  - Reducing or removing noxious weeds and invasive-plant species (in areas not affected by the Project; i.e., beyond those weeds required to be treated as part of the reclamation and revegetation efforts).
  - Excluding livestock grazing.
  - Removing or redesigning existing culverts that are preventing fish passage.
  - Restoring natural stream channels and hydrology.
  - Restoration of native species.
  - Reducing the risk of wildfire through installation and maintenance of fuel breaks.
  - Closure and decommissioning of existing roads.
  - Where possible, and with the concurrence of the land owner or managing agency, controlling access that compromises habitat effectiveness. If mitigation is implemented on federal or state managed lands, it may not be feasible to control or otherwise restrict access.
- Ensure that each mitigation site is protected for the life of Project impacts (e.g., through a conservation easement), and that habitat improvements conducted at the site are maintained and effective.
- Ensure that mitigation projects/efforts begin prior to or as close to the initiation of Project impacts as possible.
- Conduct periodic (every 3 to 5 years) on-site mitigation effectiveness monitoring for the life of Project impacts.
- Coordinate with the ODFW and applicable land-managing agencies during mitigation development and implementation, in order to ensure appropriate and successful mitigation is conducted.

There are a variety of approaches or actions that IPC could take to offset or replace habitats impacted by the Project. The options that are available for mitigation include permittee-responsible mitigation, purchasing credits in a conservation bank, in-lieu fee programs, and funding state and/or federal habitat enhancement programs. At this time, no conservation bank, in-lieu fee program, or state/federal programs have been identified within the Project area.

Should these options become available in the future, IPC will investigate them as the preferred options for mitigation. Coordination with the applicable wildlife and land-management agencies is ongoing in order to identify potential mitigation sites and opportunities and it is anticipated that the agencies will identify potential mitigation projects as part of the sage-grouse "mitigation blueprint," which they are currently preparing for the Project.

5.1 Permittee-Responsible Mitigation

IPC's preferred mitigation options are mitigation banks, in-lieu fee programs, or funding state/federal programs; however, these options have not yet been identified within the Project area. Therefore, permittee-responsible mitigation may be required. Under a permittee-responsible mitigation approach, IPC would identify, fund, operate, and monitor the mitigation site (or IPC would identify and fund the site, but another entity would operate and monitor the site). IPC is currently coordinating with the appropriate land-management and wildlife agencies regarding potential areas where permittee-responsible mitigation could be conducted. When evaluating appropriate mitigation opportunities, IPC would consider the following:

- The overall objectives of mitigation project and how the project will address the habitat needs for targeted species (e.g., sensitive fish species when evaluating stream restoration projects, big game species when evaluating big game enhancement projects, or sage-grouse when evaluating sage-brush restoration projects).
- External factors that could affect the likelihood of mitigation success, such as: the geographic area of the potential mitigation project as well as surrounding land uses; baseline information on existing habitat quality; ecological value of the area as it relates to targeted species; and the area's ability to meet desired habitat goals.
- The location of the project in regards to in-kind in-proximity mitigation (as mitigation for Category 2 and 3 habitats would be required to achieve the goal of in-kind in-proximity mitigation).
- Preference will be given to projects that:
    - Implement activities to protect, maintain, and/or enhance existing habitats occupied by targeted species (e.g., areas occupied by sage-grouse when determining areas for sage-grouse mitigation), or areas where natural re-introductions are likely once restoration is successful;
    - Would occur in areas that require minimal manipulation, as these sites will have the highest likelihood of meeting habitat requirements in the shortest time frame; and
    - Are located within in-kind, in-proximity sites to the Project.

Permittee-responsible mitigation would require:

- Development of a detailed habitat mitigation implementation plan that includes an enhancement/restoration design, measurable performance standards, success criteria, a monitoring and maintenance plan, and a reporting protocol and schedule specific to each mitigation site.
- Legally valid protection of the mitigation site.
- Acquisition of lands for mitigation sites may involve agreements or purchase negotiations with private or public landowners.

5.2 Performance Measures (Success Criteria)

The criteria used to measure success would depend on the extent of impacts and the final mitigation strategy (e.g., success criteria could be different if mitigation is conducted through payments to a conservation bank as opposed to permittee-responsible mitigation sites). The criteria used to measure mitigation success would be site-specific, would depend on the goals and objectives of the mitigation site, and would need to be developed for each individual mitigation site prior to the onset of mitigation efforts. IPC will work with ODFW to develop success criteria for mitigation.

6.0 MONITORING PLAN

Monitoring conducted at reclamation sites related to temporarily disturbed areas, and the associated annual reports to the applicable agencies, are discussed in IPC's draft Reclamation and Revegetation Plan (IPC 2013b). Monitoring conducted as part of the "Wildlife Injury and Mortality Reporting System" is discussed in IPC's Species Conservation Plan (IPC 2013b). This section (i.e., Section 6.0) addresses monitoring related to mitigation sites.

Mitigation monitoring will be conducted to ensure that that the Goals and Standards in OAR 635-415-0025 are met, and inform the development of additional mitigation requirements if it is determined that the Goals and Standards are not met. For mitigation conducted through a permittee-responsible mitigation program, IPC will conduct periodic monitoring surveys at the mitigation site for the life of Project impacts. Monitoring methods would depend on site-specific mitigation goals, and would be based on accepted monitoring techniques approved by the applicable land-managing agencies. Monitoring frequency will be dependent upon the type of mitigation and likelihood of meeting success criteria. For example, large areas that are revegetated may be monitored on an annual basis for the first few years and then every 3 to 5 years once plants have become established. Areas with juniper removal may be monitored every 3 to 5 years immediately following mitigation and every 5 to 10 years thereafter. Species and relative density will be assessed and compared to baseline data collected prior to the start of mitigation activities and to desired future conditions. If success criteria are not achieved, or do not look like they will be achieved, remedial actions will be taken.

For mitigation conducted via purchasing credits in a conservation bank, in-lieu mitigation programs, or by funding state and/or federal habitat enhancement programs, the entity responsible for the mitigation site will also be responsible for the monitoring program and for submitting reports to applicable agencies.

6.1 Reporting

IPC will document the progress of mitigation efforts to applicable federal and state-management agencies in a progress report that will be provided following the periodic monitoring surveys. These reports will also contain recommendations from IPC regarding any additional remedial actions that may be necessary. It is expected that the applicable federal and state management agencies will provide comments and counter suggestions, or approval of IPC's suggestions if remedial efforts are required (i.e., corrective measures if revegetation or mitigation efforts were not successful). Separate monitoring reports may be prepared for each individual mitigation site. Reports will contain information regarding the mitigation actions taken during the reporting period, the success of these actions (based on predefined success criteria established for that mitigation site), and a description of the methods used to monitor the mitigation site.

7.0 PLAN AMENDMENT

This Habitat Mitigation Plan is currently in draft form. This plan will be amended as new information becomes available, or as a result of negotiations between IPC and the applicable agencies. The timing of the completion of the Habitat Mitigation Plan will largely depend on the timing for review of IPC's pASC by applicable agencies and subsequent workgroup meetings (i.e., IPC will submit a final Habitat Mitigation Plan with its final Application for Site Certificate).

8.0 REFERENCES

Doherty, K.E., D.E. Naugle, H.E. Copeland, A. Pocewicz, and J.M. Kiesecker. 2011. Energy development and conservation tradeoffs: systematic planning for greater sage-grouse in their eastern range. Pages 505-516 in S.T. Knick and J.W. Connelly, editors. *Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and Its Habitats.* Studies in Avian Biology 38. University of California Press, Berkeley, California, USA.

IPC (Idaho Power Company). 2013a. Preliminary Application for Site Certificate. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013b. Draft Reclamation and Revegetation Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013c. Draft Vegetation Management Plan. Boardman to Hemingway Transmission Line Project. February.

IPC. 2013c. Draft Species Conservation Plan. Boardman to Hemingway Transmission Line Project. February.

ODFW (Oregon Department of Fish and Wildlife). 2011. *Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat.* Salem, Oregon.

ODFW. 2012. Implementing Habitat Mitigation for Greater Sage-Grouse under the Core Area Approach.