

3.3 VEGETATION, SPECIAL-STATUS PLANT SPECIES, AND NOXIOUS WEEDS

This section presents information on the existing environment and potential effects from the Project, and proposes mitigation of Project effects to vegetation, special-status plant species, and noxious weeds in the Project Area. Potential effects from the Project include permanent and temporary effects to native vegetation communities from vegetation removal, trampling, and treatments for noxious weeds. One or more special-status plant species could be affected by Project construction and operation if such species are present in proposed construction areas. The Proposed Action (including the two options of the Proposed Action), the Alternatives and the No Action Alternative were evaluated as part of this analysis.

3.3.1 Methodology

The evaluation was conducted using BLM planning documents, project-specific field studies, digital data sources, and previously conducted studies. Sources reviewed included:

- Proposed Three Rivers Resource Management Plan and Final Environmental Impact Statement (BLM 1991)
- Three Rivers Resource Management Plan, Record of Decision, and Rangeland Program Summary (BLM 1992).
- Noxious Weed Management Program Environmental Assessment (BLM 1998).
- Decision Record/Finding of No Significant Impact for Noxious Weed Management Program (BLM 1998).
- Andrews Management Unit Record of Decision and Resource Management Plan (BLM 2005)
- Steens Mountain Cooperative Management and Protection Area Record of Decision and Resource Management Plan (BLM 2005).
- BLM Current Vegetative Cover, mapped from 1984 to 1991 as part of the Ecological Site Inventory (ESI) for the Burns District (BLM 2003).
- Oregon Natural Heritage Information Center Ecological Systems Map of Oregon, which links previous GAP vegetation coverages to the National Vegetation Classification System. (ONHIC 2008).
- Echanis Wind Project Special Status Plant Surveys, Summer 2008 (draft) (NWC 2008).
- Echanis Transmission Line (West Alternate) Wildlife Habitat Mapping, Harney County, Oregon (NWC 2010a).
- Echanis Transmission Line (West Alternate) 2009 Special Status Plant Species Investigation, Harney County, Oregon (NWC 2010b).

The analysis in this section was based on information in the Plan of Development (POD) for the transmission line project (Columbia Energy Partners [CEP] 2009) and the Application for Conditional Use Permit for the Echanis Wind Farm (CEP 2007), along with supplemental information provided through personal communications with representatives of CEP.

Project-specific vegetation mapping was completed only for Alternative B – West Route, data from two other sources were used to categorize the vegetation at the Echanis site and the other transmission line alternatives. BLM vegetation data were used for much of this area (BLM 2003). Where the alternatives cross areas that are not included in the Project surveys or in the BLM data, the most recent available data from the Oregon GAP program were used (ONHIC 2008). Because these sources mapped vegetation with different approaches (from aerial interpretation only to comprehensive foot surveys), at different scales (from 640-acre sections to

units less than one acre) and with correspondingly different accuracy quantification of dominance percentages is not possible. Additionally, the data were developed, and in some cases, revised, over a period of 25 years. Appendix B shows how these data sets were incorporated into the vegetation types described in this section. Nomenclature is after Mansfield (2000), with various other sources used for species not covered in his treatment.

For the purposes of this analysis, the Project area was defined to include the area within the 150-foot wide transmission line ROW and all areas affected by the construction and operation of the transmission line, access roads, interconnection stations, substations, turbine towers, power collection systems, and other permanent and temporary project features, including temporary laydown areas and tensioning sites.

The analysis in this section also considered comments received from the public during the EIS scoping process. In general, comments from local organizations and private citizens related to vegetation, special-status plant species and noxious weeds focused on the following key issues:

- Vegetation disturbance and subsequent invasion by nonnative plant species, particularly from access road development.
- Chemicals used to treat noxious weeds.
- Effects to rare plants.

3.3.2 Affected Environment

This section presents a summary of the vegetation, special-status plant species, and noxious weed issues for the entire Project Area. The affected environments for the Proposed Action and Alternative Actions are presented together due to their proximity and shared characteristics.

3.3.2.1 Vegetation

The Project lies at the northern end of the Northern Great Basin and Range ecoregion (Thorson, et al. 2003), most of the drainages flow to internal basins. The Echanis Wind Energy Project is located on private land on Steens Mountain. The transmission line alternatives cross hills and lava beds, descending to the valley floors. Vegetation on the Echanis site and along the transmission line alternatives includes grasslands, shrublands, woodlands, riparian and wetland communities, barren (sparsely vegetated) lands, agricultural land, and developed areas.

The distribution of each vegetation type for the Echanis Wind Farm and for the transmission line alternatives are provided in Figures 3.3-1a through 3.3-1k, and acreages are discussed in Section 3.3.3. However, much of the vegetation in the ROW and on the Echanis Project site would be unaffected by the Project. For each vegetation type, the transmission line alternatives on which it occurs are indicated, as well as whether or not it was mapped at the Echanis Wind Farm site. Due the scale of some of the vegetation data, it is possible that stands of a vegetation type that are smaller than the mapping limits may be present on an Alternative Action where that vegetation type is not indicated.

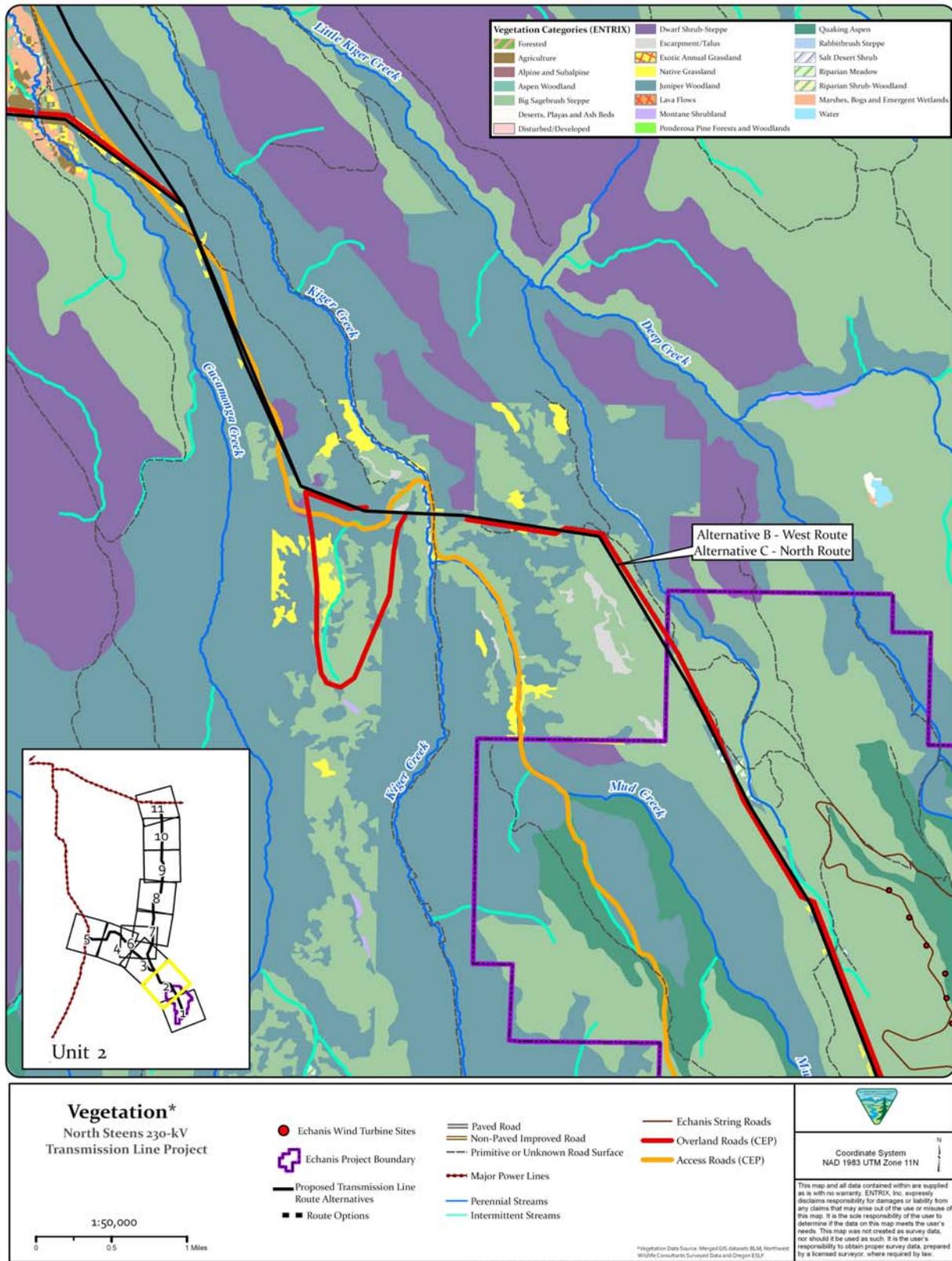


Figure 3.3-1b Vegetation Along the Transmission Line ROWS, Unit 2 of 11.

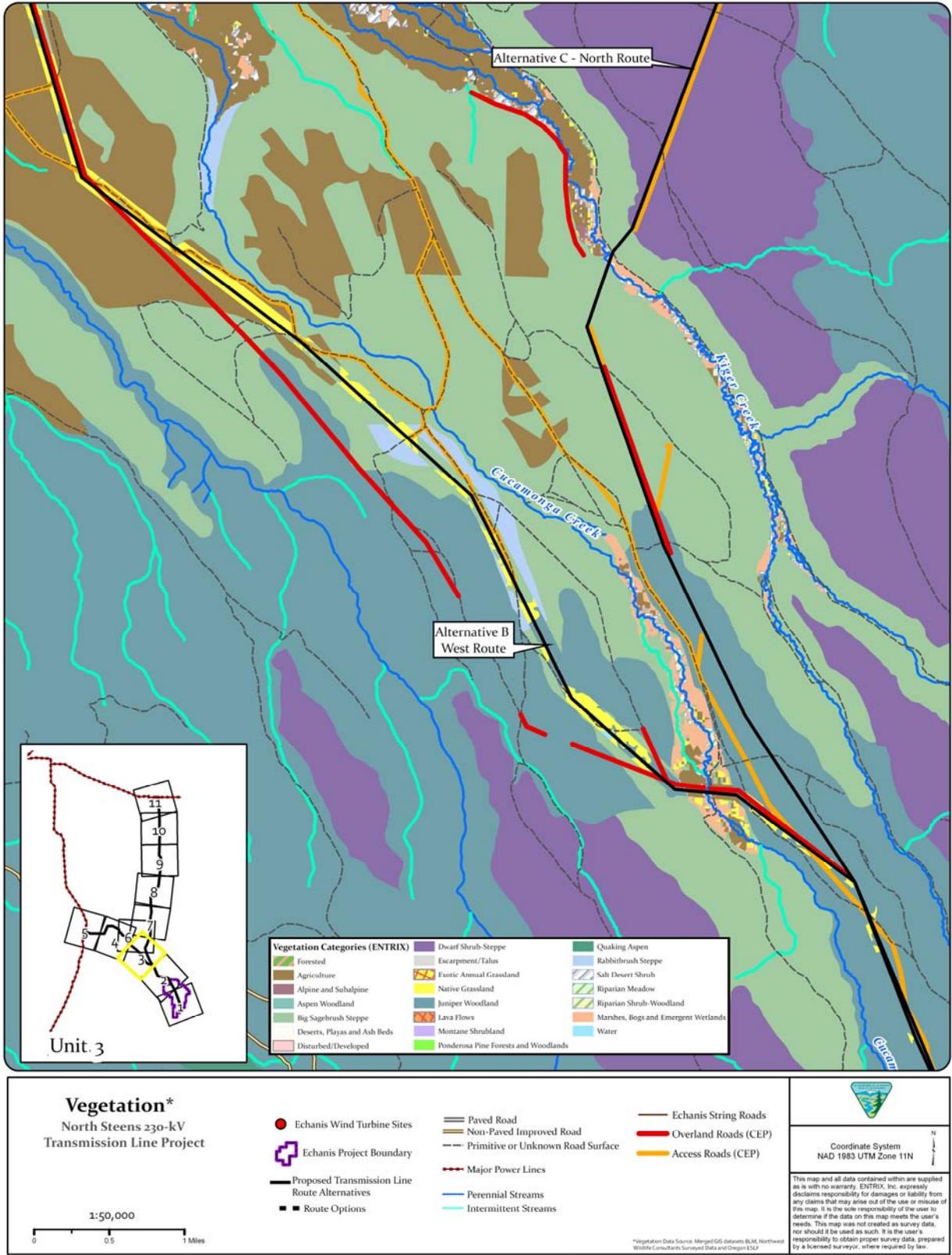


Figure 3.3-1c Vegetation Along the Transmission Line ROWS, Unit 3 of 11.

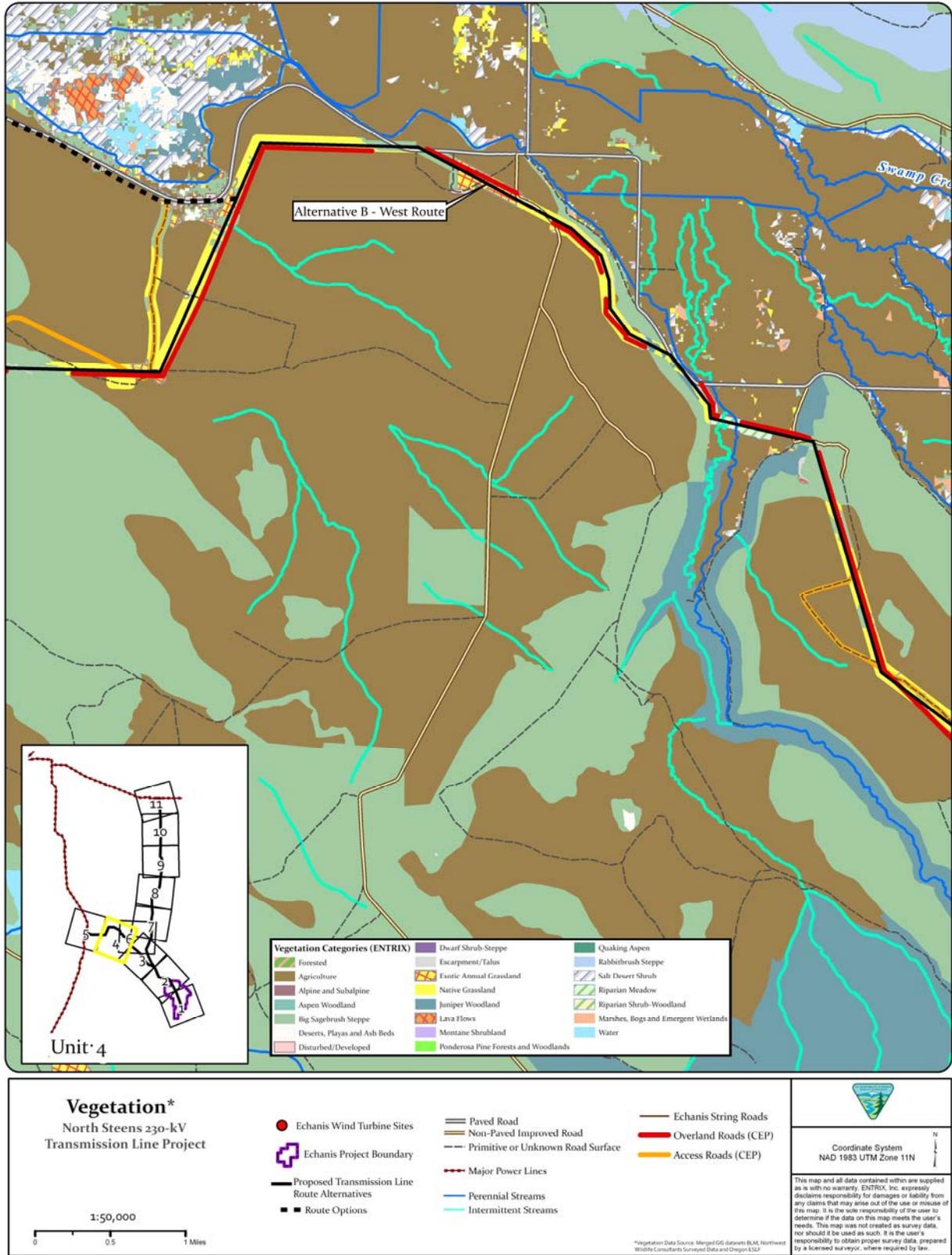


Figure 3.3-1d Vegetation Along the Transmission Line ROWS, Unit 4 of 11.

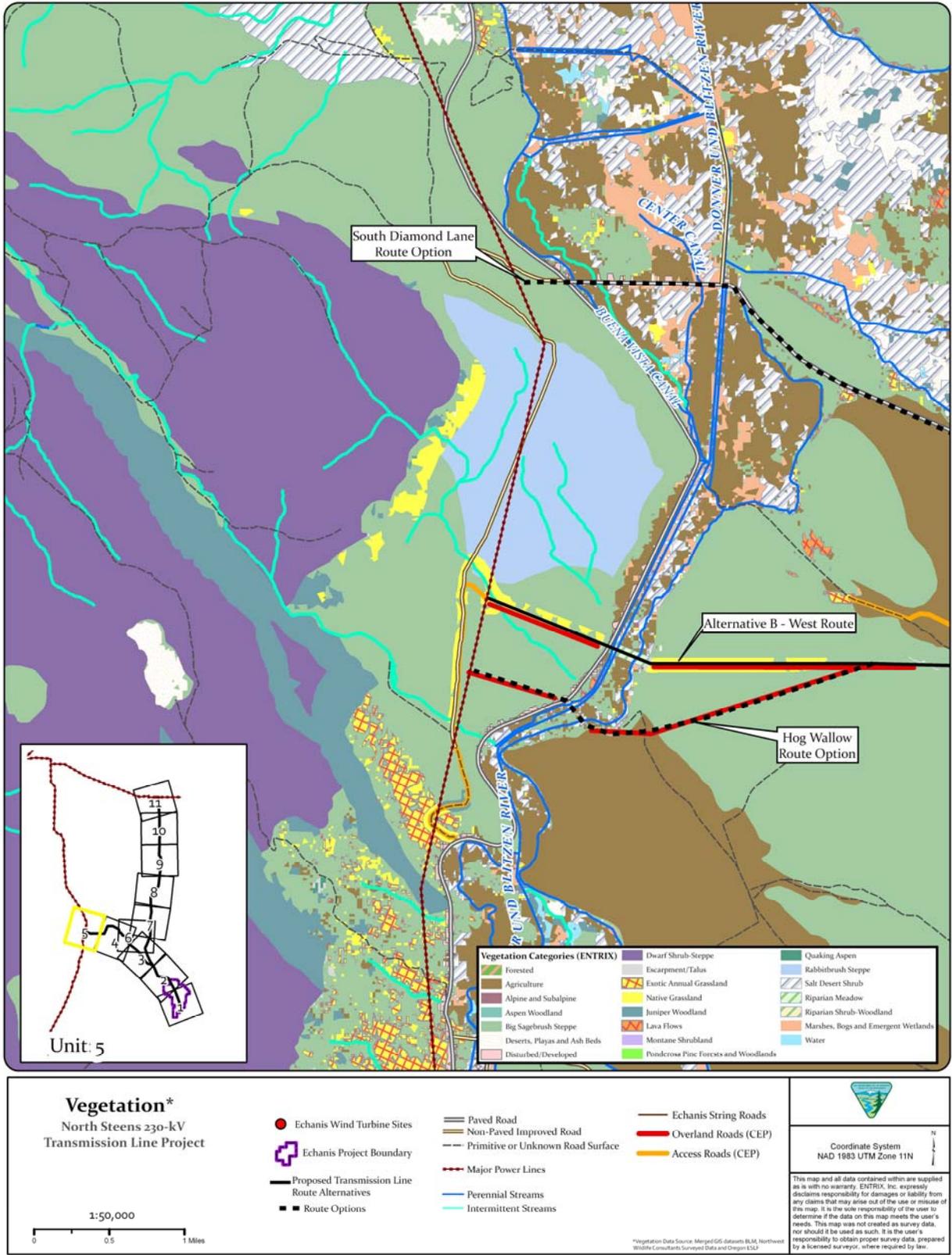


Figure 3.3-1e Vegetation Along the Transmission Line ROWS, Unit 5 of 11.

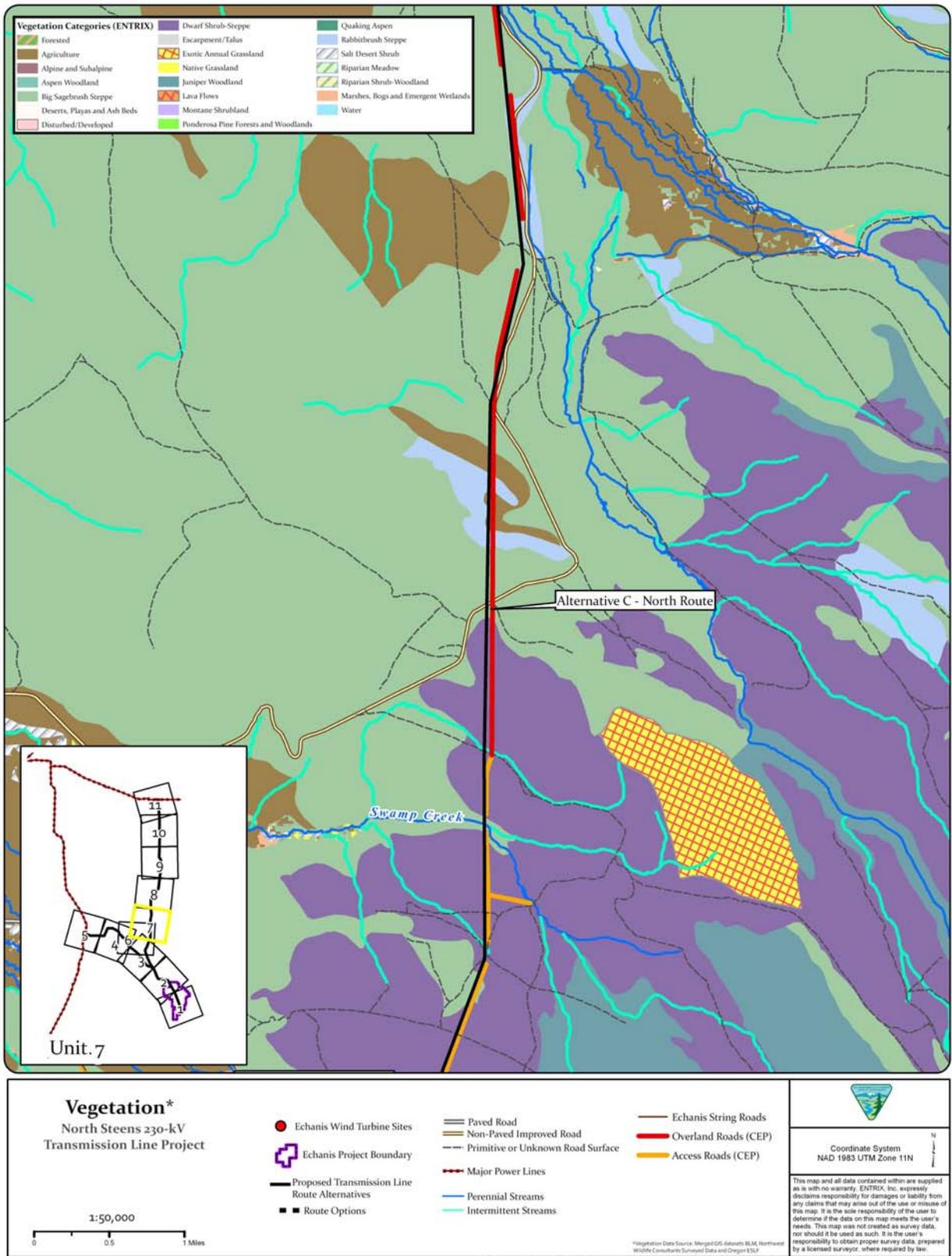


Figure 3.3-1g Vegetation Along the Transmission Line ROWS, Unit 7 of 11.

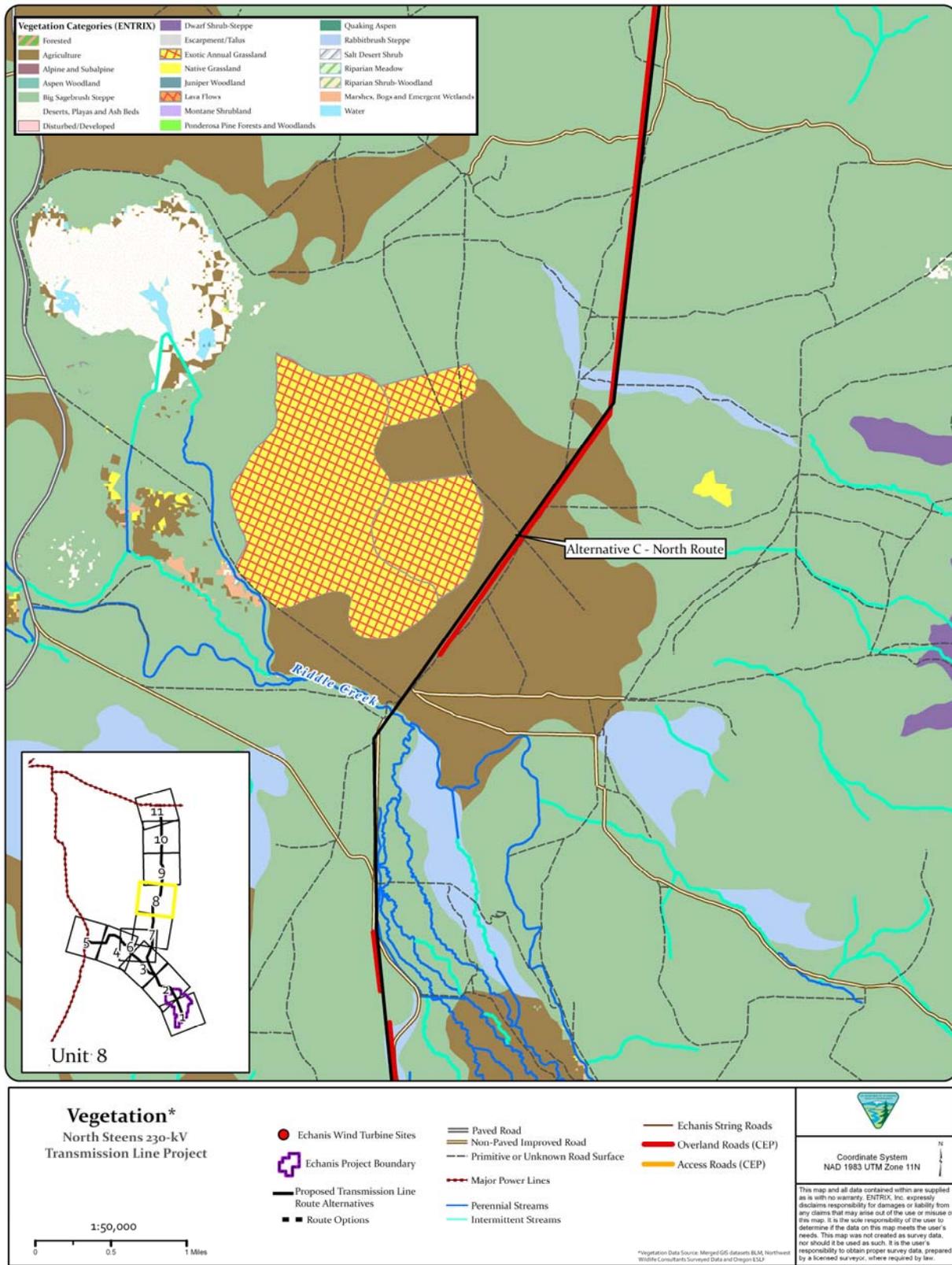


Figure 3.3-1h Vegetation Along the Transmission Line ROWS, Unit 8 of 11.

SECTION 3
AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

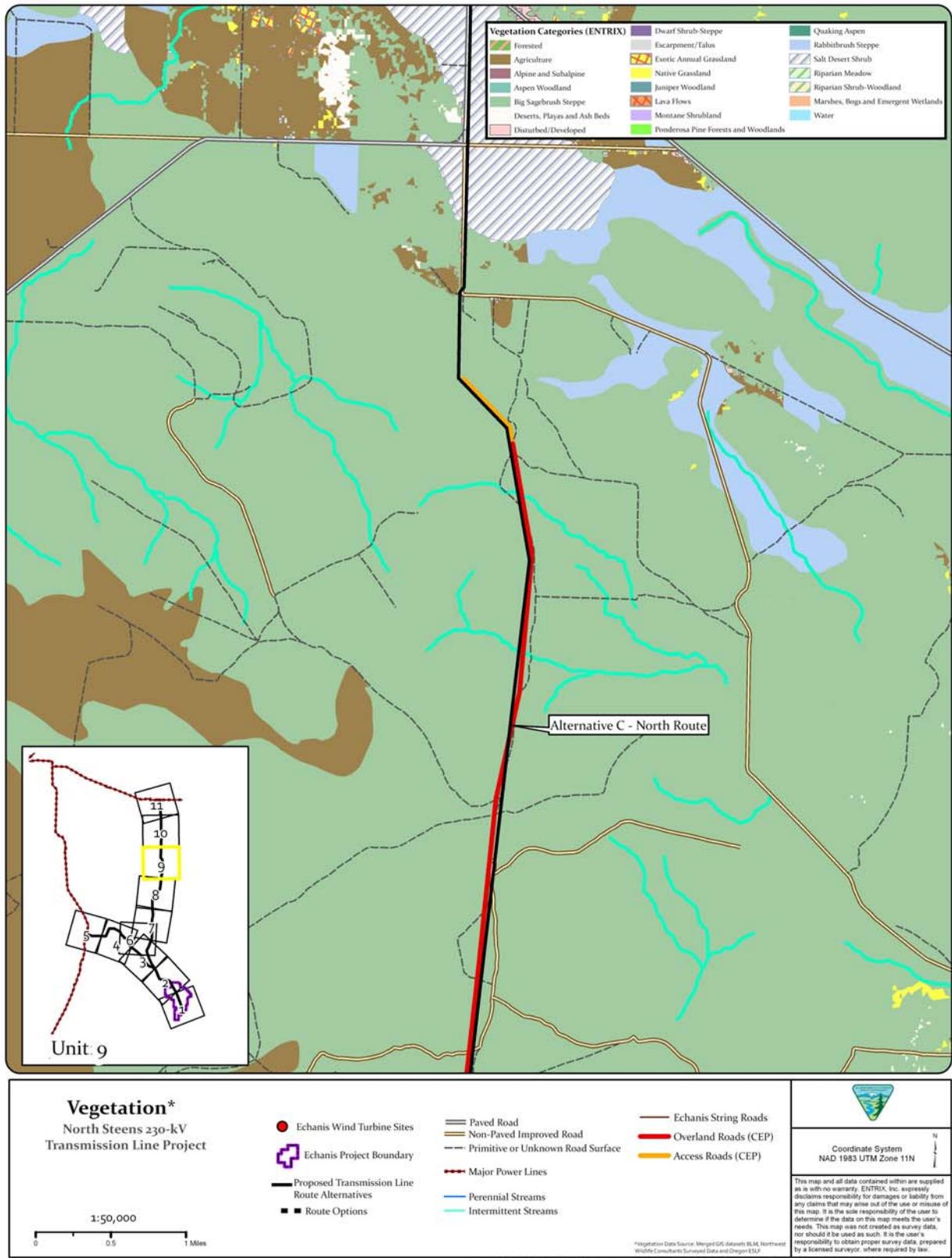


Figure 3.3-1i Vegetation Along the Transmission Line ROWS, Unit 9 of 11.

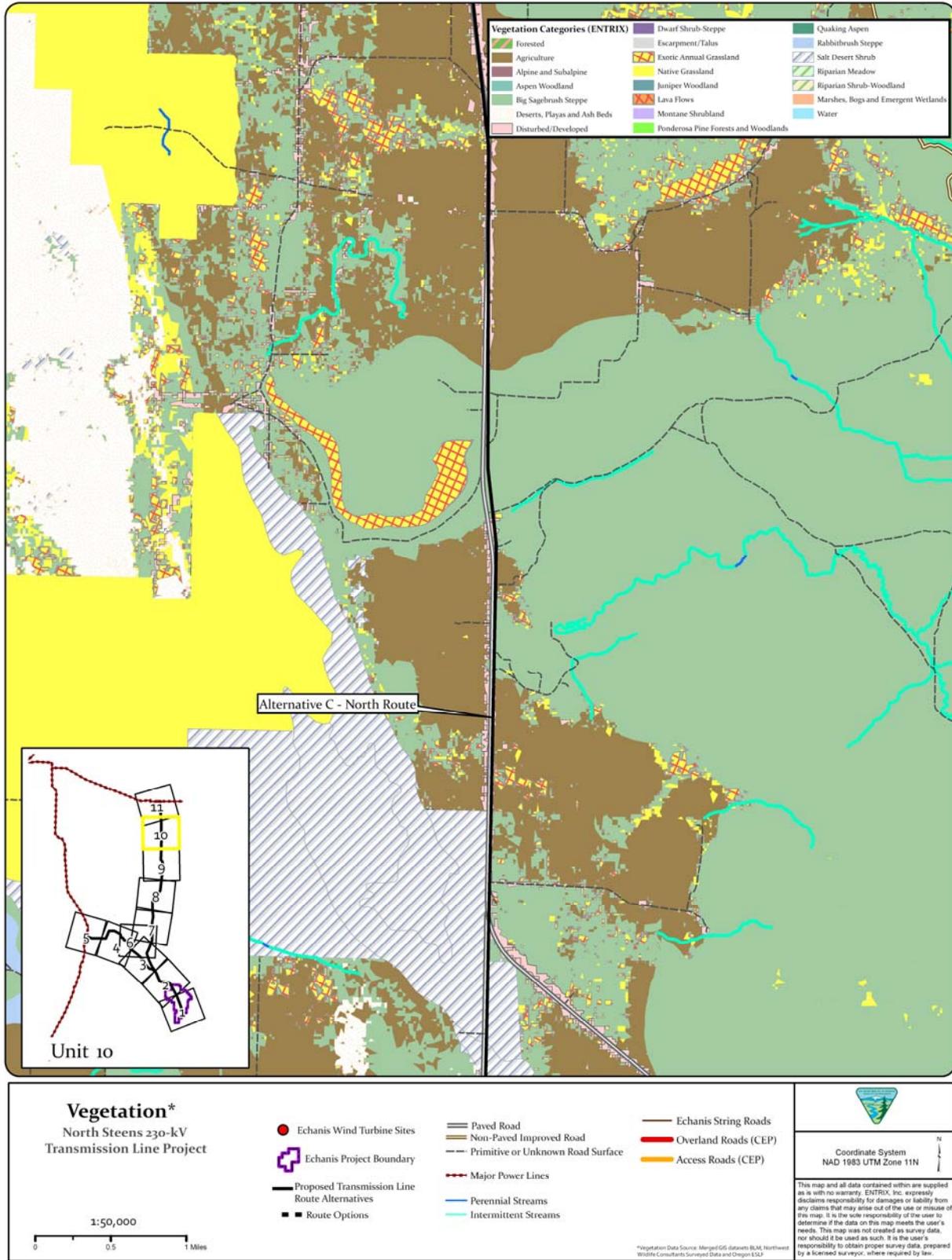


Figure 3.3-1j Vegetation Along the Transmission Line ROWS, Unit 10 of 11.

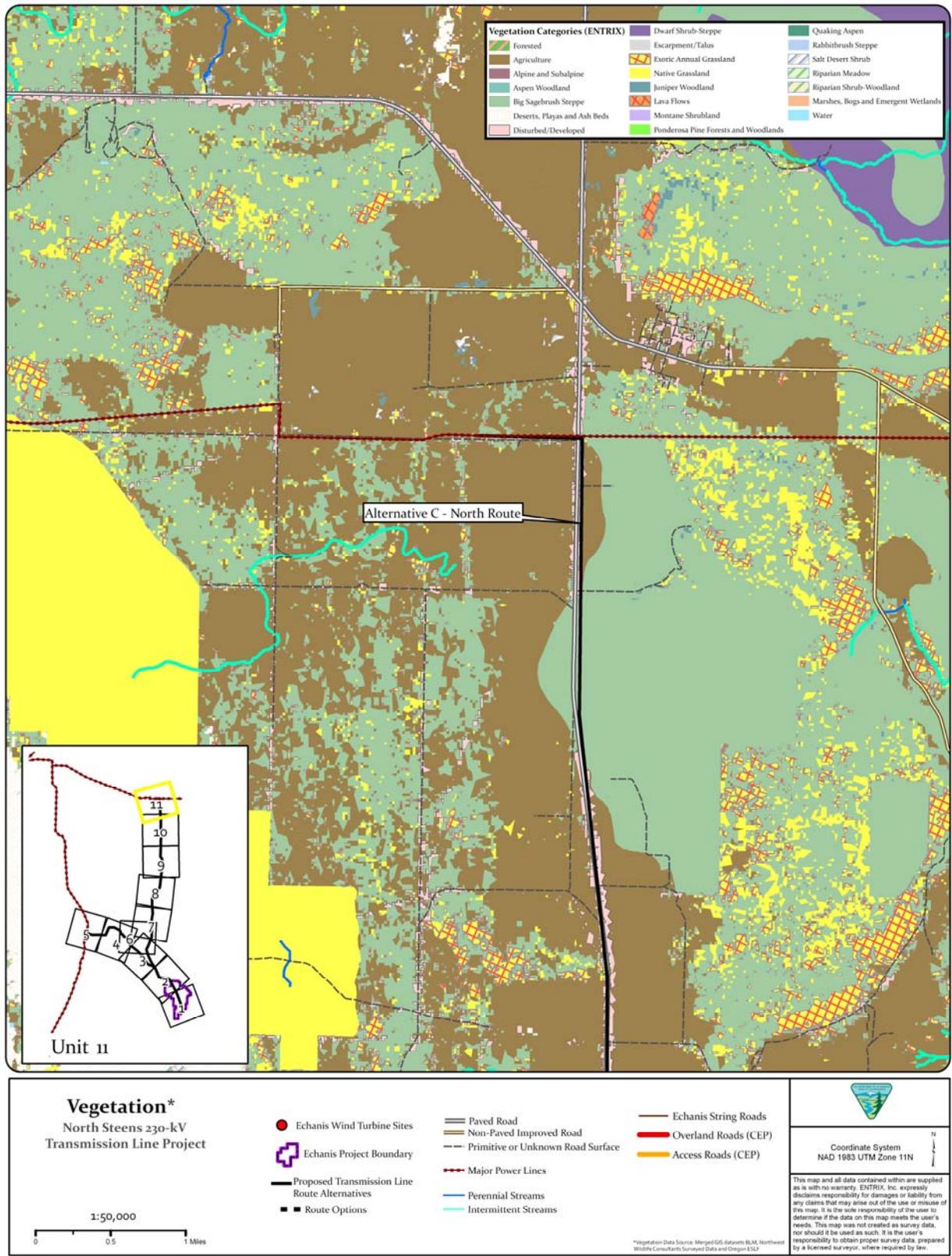


Figure 3.3-1k Vegetation Along the Transmission Line ROWS, Unit 11 of 11.

Upland Vegetation

NATIVE GRASSLAND

Grassland communities are the most extensive habitat type within the Project area, where they occur in a variety of landscape settings. These include relatively steep canyon slopes with talus/escarpment, gently sloped draws, and upland flats, where they often grade into adjacent shrub-steppe and dwarf shrub-steppe habitats. Native grassland occurs along Alternative B. In addition to the mapped grassland, substantial amounts of native grassland occur as small patches finely intermixed within areas dominated by extensive shrub-steppe and juniper woodlands along Alternative B. Due to mapping scale constraints, these occurrences could not be mapped at the scale of these efforts (NWC 2010a).

Native perennial grasslands are characterized by a relatively consistent, high percent cover of bluebunch wheatgrass, Sandberg's bluegrass, usually with some amount of needlegrass (*Achnatherum* sp.), prairie Junegrass (*Koeleria cristata*) and California brome (*Bromus carinatus*) (NWC 2010a, Johnson and O'Neil, 2001). The forb layer is diverse but lupines (*Lupinus* spp.), sandwort (*Arenaria* spp.), hawksbeards (*Crepis* spp.), yarrow (*Achillea millefolium*) and several lomatiums (*Lomatium* spp.) are consistent elements. In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1).

EXOTIC ANNUAL GRASSLAND

Exotic annual grasslands within the Project area have developed as the result of past agricultural disturbance and/or intensive domestic livestock use, often compounded by the effects of wildfire. This category includes lands mapped as "Exotics" in the Oregon GAP data. These grasslands are vegetated primarily by exotic grasses and forbs such as cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), prickly lettuce (*Lactuca serriola*), pepperweeds (*Lepidium* spp.), tall tumble mustard (*Sisymbrium altissimum*), and a variety of other non-native, invasive species (NWC 2010a). Exotic annual grassland occurs on all transmission line alternatives, but not at the Echanis site (Figure 3.3-1).

BIG SAGEBRUSH STEPPE

Big sagebrush vegetation is extensive in the Project area and can include both mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) communities (NWC 2010a, Kagan, et al. 1999). Mountain big sagebrush dominates at montane and subalpine elevations where it occurs in nearly all slope positions, especially on sites with deeper soils and southerly aspects. Wyoming big sagebrush communities occur more commonly at lower elevations and on shallower, drier soils. All big sagebrush communities often intergrade into adjacent aspen and juniper woodlands. Structurally, these habitats are dominated by 2 to 6 foot (0.75 to 2 meters) tall, widely-spaced sagebrush, scattered green rabbitbrush (*Ericameria viscidiflora*) and a well-developed, diverse understory of perennial bunchgrasses and forbs. Among the most common forbs and grasses are needlegrasses (*Achnatherum* spp.), bluebunch wheatgrass (*Pseudoroegneria spicata*), lupines (*Lupinus* spp.), paintbrushes (*Castilleja* spp.), lomatiums (*Lomatium* spp.), common yarrow (*Achillea millefolium*), hawksbeards (*Crepis* spp.), common yampah (*Perideridia gairdneri* ssp. *borealis*). In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1), and occupies the largest acreage on all alternatives.

DWARF SHRUB-STEPPE

Dwarf shrub-steppe generally occurs on shallow basalt soil and rocky conditions at scattered locations in eastern Oregon. Generally, this vegetation type is a component of a big sagebrush-sagebrush steppe mosaic (Kagan, et al. 1999). Dominant shrub species in this community are generally less than 20 inches high and include low sagebrush (*Artemisia arbuscula*), rigid sagebrush (*Artemisia rigida*), and silver sagebrush

(*Artemisia cana*). Big sagebrush and bitterbrush are occasional in this community. Short grasses provide most of the herbaceous cover, particularly Sandberg's bluegrass (*Poa secunda*), cheatgrass, bottlebrush squirreltail (*Sitanion hystrix*), bluebunch wheatgrass, Idaho fescue (*Festuca idahoensis*) and onespoke oatgrass (*Danthonia unispicata*), although both annual and perennial forbs such as cous (*Lomatium cous*), serrate balsamroot (*Balsamorhiza serrata*), and Oregon bitterroot (*Lewisia rediviva*) also are common (Kagan, et al. 1999; Johnson and O'Neil, 2001). In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1).

RABBITBRUSH STEPPE

Rabbitbrush steppe is an early seral stage of sagebrush communities and occupies disturbed areas such as burns, as well as naturally disturbed areas such as washes, sand dunes, and talus slopes (Tirmenstein 1999a, 1999b). Dominant shrub species are various rabbitbrushes, including common rabbitbrush (*Ericameria nauseosa*) and green rabbitbrush. Typical grass species include Sandberg's bluegrass, cheatgrass, bottlebrush squirreltail, bluebunch wheatgrass, and Idaho fescue (BLM 2003). In the Project area, this vegetation type occurs only on Alternative C (Figure 3.3-1).

SALT DESERT SHRUB

Salt desert shrub communities are found primarily in playas formed by ephemeral lakes, although smaller patches are scattered throughout southeastern Oregon (Kagan, et al 1999). Dominant species vary according to the salinity and the extent of seasonal flooding. Black greasewood (*Sarcobatus vermiculatus*) and winterfat (*Krascheninnikovia lanata*) dominate the most saline areas. In areas with better drainage, dominant species include shadscale (*Atriplex confertifolia*), hopsage (*Grayia spinosa*), budsage (*Artemisia spinescens*), Mormon tea (*Ephedra viridis*), common rabbitbrush, saltbush (*Atriplex nuttallii*) and red sage (*Kochia americana*). In the Project area, this vegetation type occurs on all transmission line alternatives, but not at the Echanis site (Figure 3.3-1).

JUNIPER WOODLAND

Juniper woodlands are also a major habitat element of the Project area. They are most prevalent on upland flats, slopes with at least some west to south aspect, and at lower elevations; all factors contributing to relatively arid conditions (NWC 2010a, Kagan, et al. 1999). Juniper woodlands often grade ecotonally into more xeric sagebrush steppe and more mesic riparian and aspen habitats. They are comprised largely of sparse western juniper (*Juniperus occidentalis*) cover of varying age. The understory is frequently dominated by big sagebrush but with cover of native perennial bunchgrasses (including bluebunch wheatgrass, Sandberg's bluegrass, needlegrasses and California brome) and a diverse forb layer (pussytoes [*Arenaria* spp.], common yarrow, paintbrushes, and lupines as some of the most common). Cheatgrass and bottlebrush squirreltail are both typical and dominant in the herbaceous understory on overgrazed or disturbed sites (Kagan, et al. 1999). In some locations, curl-leaf mountain mahogany (*Cercocarpus ledifolius*) is common in a narrow strip along upper slope breaks. Most of the juniper woodlands along Alternative B are younger stands that have encroached upon native grasslands and shrub-steppe as a result of fire suppression (NWC 2010a) and grazing practices (Kerr and Salvo 2007), and this is likely to be the case for the Alternative C as well. In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis Wind Farm (Figure 3.3-1).

QUAKING ASPEN

Quaking aspen communities form a subalpine belt on Steens Mountain in southern Oregon (Johnson and O'Neil, 2001). Aspen typically forms one to many clusters of trees, with larger trees toward the center of each cluster. While this vegetation community is relatively uncommon in most of Oregon, it dominates sheltered and mesic sites on Steens Mountain between 6,500 and 7,500 feet (Mansfield 2005). Quaking aspen (*Populus tremuloides*) is the characteristic tree in this habitat. On Steens Mountain, quaking aspen communities do not

include the various conifer species that are associated with this community elsewhere. Snowberry (*Symphoricarpos* sp.) is the most common dominant shrub, and Scouler's willow (*Salix scouleriana*) and serviceberry may be abundant. On mountain slopes, antelope bitterbrush, mountain big sagebrush, low sagebrush and curl-leaf mahogany often occur adjacent to, or within these woodland habitats. In some stands without shrubs, common grasses include pinegrass (*Calamagrostis rubescens*), Idaho fescue, California brome and blue wildrye (*Elymus glaucous*). Characteristic tall forbs include horsemint (*Agastache* spp.), aster (*Aster* spp.), senecio (*Senecio* spp.) and coneflower (*Rudbeckia* spp.). Low forbs may include meadowrue (*Thalictrum* spp.), bedstraw (*Galium* spp.), sweet cicely (*Osmorhiza* sp.) and valerian (*Valeriana* spp.). In the Project area, this vegetation type occurs at the Echanis site, but not on any of the transmission line route alternatives (Figure 3.3-1).

ALPINE AND SUBALPINE

The subalpine zone on Steens Mountain is atypical of mountains in the western United States because it does not support forests of subalpine conifers. This may be due to isolation, the biology of seed-dispersing birds, or the effects of pre-historical burning by Native Americans (Mansfield 1995, 2000). Vegetation in the subalpine and alpine zones of Steens Mountain consists of subalpine/alpine meadows or tundra, dominated by sedges, grasses, and forbs, as well as the quaking aspen forest described above. In the Project area, this vegetation type occurs only on the Alternative B – South Diamond Lane Route Option (Figure 3.3-1).

Riparian and Wetland Communities

RIPARIAN MEADOW

Riparian meadow occurs as small patches within deep soils kept saturated by perennially flowing water, whether streams or springs. Vegetation is characterized by a dense graminoid layer of meadow grasses, sedges (*Carex* spp.) and rushes (*Juncus* spp.) along with lesser cover from a variety of forbs (NWC 2010a, Kagan, et al. 1999). In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1).

RIPARIAN SHRUB-WOODLAND

Riparian shrub-woodlands cover is relatively limited along the Project alternatives, occurring only as narrow corridors along the bottoms of the various drainages. This vegetation type occurs as finely interspersed patches of vegetation variably dominated by riparian forest and riparian shrub species (NWC 2010a). Woodland portions have an overstory consisting mostly of black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), aspen and taller willows (*Salix* spp.). Dominant shrub species include shrub willows, mountain alder (*Alnus incana*), elderberry (*Sambucus nigra*) and snowbrush ceanothus (*Ceanothus velutinus* var. *velutinus*). Graminoid and forb cover is variable and diverse with a variety of wetland sedges, rushes and forbs represented. Although it occurs only at limited locations, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1).

MARSHES, BOGS AND EMERGENT WETLANDS

Desert wetlands in Oregon form in basins with flat terrain that do not drain externally. Water from tributary streams and springs in valley floors forms shallow lakes that can range up to thousands of acres in extent. These lakes also may vary from nearly always dry to permanently flooded (USGS 2000). Wetlands in the project area are discussed in more detail in Section 3.4. In the Project area, this vegetation type occurs only on Alternative B – South Diamond Lane Route Option and on Alternative C (Figure 3.3-1).

LAKE/POND

Scattered small ponds are present in the Project vicinity. In the ponds surveyed along Alternative B, vegetation varies from shallow-water aquatics such as watermilfoil (*Myriophyllum* spp.) and pondweed (*Potamogeton* spp.) in open water, to wetland sedges, common spikerush (*Eleocharis palustris*), creeping buttercup (*Ranunculus flammula*) and creeping bentgrass (*Agrostis stolonifera*) in saturated soils along the pond margins (NWC 2010a). In the Project area, this habitat type occurs along Alternative B (including route options), but not along Alternative C or at the Echanis site (Figure 3.3-1).

Barren

ESCARPMENT/TALUS

Escarpsments and talus have been mapped together in this analysis because these features tend to be closely associated and have similar wildlife use values. Because the proposed transmission line alternatives cross a number of canyons of varying sizes, relatively small escarpment/talus patches are found at several places along the length of the alternatives. Escarpments are comprised of rock outcroppings, usually with associated bands of poorly vegetated talus beneath. Escarpment/talus habitats can harbor small, perched high-quality grassy patches dominated by bluebunch wheatgrass and Sandberg's bluegrass and with occasional shrubs such as wax currant and big sagebrush (NWC 2010a). Plant diversity and cover is generally quite low on escarpments and talus, but several rare plant taxa are associated with these rocky habitats. In the Project area, this vegetation type occurs on all transmission line alternatives and at the Echanis site (Figure 3.3-1).

DESERTS, PLAYAS AND ASH BEDS

These cover types were mapped together and represent areas generally barren of vegetation. Playas are barren, alkali flats formed by ephemeral lakes. Playas are generally surrounded by salt desert shrub or big sagebrush steppe (Kagan, et al 1999). Barren ash beds and sand dunes are also found in Harney Basin (Mansfield 2000). In the Project area, this cover type occurs only on the Alternative B – South Diamond Lane Option and on Alternative C (Figure 3.3-1).

LAVA FLOWS

The laval flows cover type represents surface flows that are mostly unvegetated (Kagan, et al 1999). Sparse vegetation on these flows in eastern Oregon may include big sagebrush and cheatgrass. In the Project area, this cover type occurs only on Alternative B – South Diamond Lane Option (Figure 3.3-1).

Agriculture

Agricultural lands have been modified for crops or pastures and include cultivated cropland, orchards, vineyards, nurseries, improved and unimproved pastures, and associated scattered dwellings (Johnson and O'Neil, 2001). Improved pastures are used to produce herbaceous plants for grass seed and hay and are one of the most common agricultural uses in Oregon, both with and without irrigation. Common vegetation in improved pastures includes alfalfa, fescue and bluegrass. Unimproved pastures include rangelands and exotic grasses, often with little or no active management such as irrigation or fertilization. Grasses commonly planted in eastern Oregon pastures include crested wheatgrass (*Agropyron cristatum*), tall fescue (*Festuca arundinacea*), perennial bromes (*Bromus* spp.) and wheatgrasses (*Elytrigia* spp.). Intensively grazed rangelands may also include exotic plant species such as Kentucky bluegrass (*Poa pratensis*) or tall oatgrass (*Arrhenatherum elatius*) (Johnson and O'Neil, 2001). In the Project area, this vegetation type occurs on all transmission line alternatives, but not at the Echanis site (Figure 3.3-1).

Disturbed and Developed Lands

Alteration associated with developed lands ranges from rural to suburban to urban. Native vegetation is replaced by impermeable surfaces, buildings and other structures, and horticultural plantings. Rural development has less artificial surfaces than vegetative cover and may include areas of native vegetation. Suburban development is intermediate in the extent of man-made structures and surfaces, but has primarily horticultural vegetation, while urban development has limited vegetation that is usually entirely horticultural. In the Project area, this cover type occurs on all transmission line alternatives, but not at the Echanis site (Figure 3.3-1).

3.3.2.2 Special-status Plant Species

Several special-status plant species could potentially occur in the Project area (Table 3.3-1). To date, Project surveys for special-status plant species have been conducted only on Alternative B and at the Echanis site. No federal or state-listed plant species were observed on the Echanis site. Two ORNHIC List 3 species were reported in surveys along Alternative B. There were two small populations of wheat sedge (*Carex atherodes*) and a smaller population of western whiteflower beardtongue (*Penstemon pratensis*) in wetlands where the proposed transmission line would cross the Malheur National Wildlife Refuge (MNWR) near its western terminus. Both of these populations would be avoided, and no effects on these populations would be expected.

Table 3.3-1 Special status Plant Species Potentially Occurring in the Project Area

| Common Name | Scientific Name | Status ¹ |
|---------------------------|---|---------------------|
| Crenulate grape fern | <i>Botrychium crenulatum</i> | SC |
| Dwarf evening-primrose | <i>Camissonia pygmaea</i> | SC |
| Slender wild cabbage | <i>Caulanthus major var. nevadensis</i> | SC |
| Cusick's buckwheat | <i>Eriogonum cusickii</i> | SC |
| Prostrate buckwheat | <i>Eriogonum prociduum</i> | SC |
| Disappearing monkeyflower | <i>Mimulus evanescens</i> | SC |
| Playa phacelia | <i>Phacelia inundata</i> | SC, S |
| Williams combleaf | <i>Polycstenium williamsiae</i> | SC |
| Columbia yellow cress | <i>Rorippa columbiae</i> | S |

¹ SC - Federal Species of Concern; S - BLM Oregon Sensitive Species

Crenulate grape fern

Crenulate grape fern is a federal species of concern. This species occurs in scattered locations in Idaho, western Montana, western Wyoming, eastern Washington, eastern Oregon, Utah, Nevada, and eastern and southern California (FNA 1993). This perennial fern is found in marshes and spring areas; at elevations from 3,935 to 8,200 feet. Although this species has been reported in Harney County (USDA 2010), it has not been reported along any of the transmission line alternatives or at the Echanis site to date.

Dwarf evening-primrose

Dwarf evening-primrose is a federal species of concern. This species occurs primarily in the John Day Mountains of central Oregon, but its range extends to the base of Steens Mountain and into south-central Washington (Cronquist, et al. 1997). Dwarf evening-primrose is found in sagebrush-steppe vegetation, in unstable soil or gravel in steep talus, or in dry, gravelly washes, sandy banks and roadcuts, at elevations from 500 to 4,825 feet. This annual evening-primrose flowers from May to June (Cronquist, et al. 1997). This

species is found in eastern Oregon in Gilliam, Grant, Harney, and Wheeler counties (WNHP 1999), but has not been reported along any of the transmission line alternatives or at the Echanis site to date.

Slender wild cabbage

Slender wild cabbage is a federal species of concern. This species occurs from Alpine County and the southern Modoc Plateau in California to northern and western Nevada and southeastern Oregon (Hickman 1993). This wild cabbage is found in several plant communities, including sagebrush, pinyon-juniper, ponderosa pine, fir, and aspen. Often found on rocky slopes, slender wild cabbage occurs at elevations from 4,900 to 10,420 feet (Holmgren, et al., 2005). On Steens Mountain, this species is found in talus slopes on the lower east side of the mountain (Mansfield 2000). Slender wild cabbage can be either perennial or biennial, and flowers from May to July (Holmgren, et al., 2005). The Project alternatives may be north of the range for this species, and it has not been reported along any of the transmission line alternatives or at the Echanis site to date.

Cusick's buckwheat

Cusick's buckwheat is a federal species of concern. This species is endemic to eastern Oregon in scattered portions of Deschutes, Harney, Klamath, and Lake Counties (Mansfield 2000, FNA 2005). This buckwheat is found in sagebrush and mixed grassland communities and montane coniferous woodlands, on volcanic flats at elevations from 4,265 to 4,925 feet. This perennial species flowers from June to July (FNA 2005). Cusick's buckwheat has been reported from northern Harney County and its range may include Steens Mountain (Mansfield 2000). However, it has not been reported along any of the transmission line alternatives or at the Echanis site to date.

Prostrate buckwheat

Prostrate buckwheat is a federal species of concern. This species includes two subspecies: (*Eriogonum prociduum* var. *prociduum*) and Pueblo Mountains wild buckwheat (*Eriogonum prociduum* var. *mystrium*). The type variety occurs in Nevada, northeastern California, and Lake and Baker Counties, Oregon (FNA 2005). Pueblo Mountains wild buckwheat occurs in Idaho, Nevada, and the Oregon Canyon, Pueblo, Steens, and Trout Creek mountains of Harney County, Oregon. This species is found in sagebrush, mixed grassland and pinyon juniper communities on volcanic, sandy, or gravelly slopes at elevations from 4,595 to 8,860 feet (FNA 2005). Prostrate buckwheat is a perennial species that flowers from May to July. This species has not been reported along any of the transmission line alternatives or at the Echanis site to date.

Disappearing monkeyflower

Disappearing monkeyflower is a federal species of concern. This species occurs in the Modoc Plateau and Great Basin, from California, Nevada; and Oregon. (BLM 2010). This monkeyflower is found in the ecotone between the edge of the sagebrush-juniper shrub zone, and the semi-aquatic sedges near the water, along intermittent streams, or near the edges of small lakes and ponds, at elevations below 5,580 feet (BLM 2010, Mansfield 2000). Disappearing monkeyflower is an annual species. Habitat for this species is present along the Project alternatives, but this species has not been reported on any of the transmission line alternatives or at the Echanis site to date.

Playa phacelia

Playa phacelia is a federal species of concern. This species occurs in southeastern Oregon and northeastern California (Cronquist, et al., 1984; Mansfield 2000.). This phacelia is found on alkali flats and on the margins of fluctuating lakes, sinks, and playas, at elevations from 4,800 – 6,400 feet (Cronquist, et al., 1984). This annual phacelia flowers from June to July. Habitat for this species may be present along the Project alternatives, but its presence has not been reported to date.

Williams combleaf

Williams combleaf is a federal species of concern and is a BLM sensitive species in Oregon. This species occurs from Lassen and Mono Counties in California to Nevada and Oregon (CNPS 2010). This combleaf is found in playas, alkali marshes, and vernal pools perched over siliceous volcanic bedrock at elevations from 4,215 to 8,935 feet (CDFG 2010). Williams combleaf is a perennial species that flowers from March to July (CNPS 2010). Habitat for this species is present along Project alternatives, but its presence has not been reported to date.

Columbia yellow cress

Columbia yellow cress is a BLM sensitive species in Oregon. This species occurs in southern Washington, Oregon, and the Modoc Plateau in northern California (Holmgren, et al., 2005; Mansfield 2000). This cress is found in moist locations along ponds, lakes, streams, and ditches (Holmgren, et al., 2005). This perennial cress flowers in July (Holmgren, et al., 2005). Columbia yellow cress is found on the Malheur Lake shoreline in the vicinity of Alternative C. This species could occur along streams or wet meadows on the transmission line alternatives, but its presence has not been reported to date.

3.3.2.3 Noxious Weeds

Many exotic plant species are found within the Project area, but only a portion of these are considered to be noxious weeds. The Oregon Department of Agriculture's Noxious Weed Control Program maintains a list of Noxious Weeds that are scheduled for control in Oregon (ODA 2009b). Infestations of "A" designated weeds are subject to eradication or intensive control when and where found. Treatment of "B" designated weeds is limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis.

A list of noxious weed species that are of particular concern to the BLM (Burns District Office) is provided in Table 3.3-2. Three of these species have been reported along various transmission line alternatives: Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and perennial pepperweed (*Lepidium latifolium*). An additional "B" designated species, kochia (*Kochia scoparia*), has also been reported to be present along the transmission line alternatives. More occurrences may be found when additional surveys are completed. The noxious weed species most prevalent in the vicinity of the project include: Canada thistle, bull thistle, Scotch thistle (*Onopordum acanthium*) and perennial pepperweed. Some of the roads in the vicinity of the project contain whitetop (*Cardaria draba*), and medusahead rye (*Taeniatherum caput-medusae*) is also present in the vicinity and could spread into areas disturbed by project activities (Meinick per. com. 2010). Medusahead rye is the Burns District's priority weed species (Meinick per. com. 2010). This species poses the greatest risk for spread into any newly disturbed areas (Meinick per com. 2010).

Table 3.3-2 Noxious Weed Species Potentially Occurring in the Project Area

| Common Name ¹ | Scientific Name ¹ | Rating |
|--------------------------------|-----------------------------------|--------|
| Russian knapweed | <i>Acroptilon repens</i> | B |
| Whitetop | <i>Cardaria draba</i> | B |
| Musk thistle | <i>Carduus nutans</i> | B |
| Spotted knapweed | <i>Centaurea biebersteinii</i> | B |
| Diffuse knapweed | <i>Centaurea diffusa</i> | B |
| Yellow starthistle | <i>Centaurea solstitialis</i> | B |
| Rush skeleton weed | <i>Chondrilla juncea</i> | B |
| Canada thistle | <i>Cirsium arvense</i> | B |
| Bull thistle | <i>Cirsium vulgare</i> | B |
| Field bindweed (morning glory) | <i>Convolvulus arvensis</i> | B |
| Leafy spurge | <i>Euphorbia esula</i> | B |
| Halogeton | <i>Halogeton glomeratus</i> | B |
| St John's wort | <i>Hypericum perforatum</i> | B |
| Perennial pepperweed | <i>Lepidium latifolium</i> | B |
| Dalmatian toadflax | <i>Linaria dalmatica</i> | B |
| Purple loosestrife | <i>Lythrum salicaria</i> | B |
| Scotch thistle | <i>Onopordum acanthium</i> | B |
| Mediterranean sage | <i>Salvia aethiops</i> | B |
| Tansy ragwort | <i>Senecio jacobaea</i> | B |
| Medusahead rye | <i>Taeniatherum caput-medusae</i> | B |
| Puncturevine | <i>Tribulus terrestris</i> | B |

¹ A list of synonyms is provided in Appendix B.

3.3.3 Environmental Consequences and Mitigation

Vegetation and noxious weeds may be affected by construction and operation of the access roads, transmission lines, wind turbines and associated structures. For all Alternatives, the permanent right-of-way (ROW) width would be 150 feet. In certain areas, an additional 10 feet of temporary construction easement would be required on each side of the ROW to allow for equipment operation during installation of poles, conductors and any required guy wires. Additional acreage would be required for new permanent and temporary access roads and for improvements to existing access roads (Table 3.3-3).

The potential effects on vegetation, special status plants, and noxious weeds during the short-term construction phase and the long-term operational phase of the Project are described below. It should be noted that a variety of project design features and best management practices to reduce the effects on vegetation, special status plants, and noxious weeds from both the Echanis project and the transmission line alternatives, would be implemented as part of proposed action. These measures are not repeated in the mitigation sections below, but are summarized in Chapter 2 and are listed in Appendix A.

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Table 3.3-3 Summary of Vegetation Type Acres

| Component | Total ¹ | Agriculture | Alpine and Subalpine | Big Sagebrush Steppe | Deserts, Playas and Ash Beds | Disturbed /Developed | Dwarf Shrub-Steppe | Escarpment /Talus | Exotic Annual Grassland | Juniper Woodland | Lake/Pond | Lava Flows | Marshes, Bogs and Emergent Wetlands | Native Grassland | Quaking Aspen | Rabbitbrush Steppe | Riparian Meadow | Riparian Shrub-Woodland | Salt Desert Shrub |
|--|--------------------|-------------|----------------------|----------------------|------------------------------|----------------------|--------------------|-------------------|-------------------------|------------------|-----------|------------|-------------------------------------|------------------|---------------|--------------------|-----------------|-------------------------|-------------------|
| Echanis Site | 12715.2 | | | 8472.1 | | | 51.7 | 0.9 | | 2079.6 | | | | 74.6 | 2017.3 | | 16.3 | 2.7 | |
| Tower sites (for 69 towers) ² | 2.41 | | | | | | | | | 2.27 | | | | | 0.14 | | | | |
| Improvements to existing access roads and construction of new permanent access roads | 54.04 | 1.71 | | 21.59 | | | | | | 20.03 | | | 0.21 | 2.19 | 4.22 | | | 2.66 | |
| String roads (permanent) | 33.03 | | | 29.72 | | | | | | | | | | | 3.31 | | | | |
| Overland access roads (permanent) | 1.18 | | | 0.79 | | | | | | | | | | | 0.39 | | | | |
| String roads (temporary) | 45.69 | | | 41.12 | | | | | | | | | | | 4.58 | | | | |
| Alt B - West Route | | | | | | | | | | | | | | | | | | | |
| ROW | 525.1 | 8.1 | | 174.6 | | 4.1 | 1.5 | 2.6 | 12.5 | 95.7 | 0.6 | | | 206.3 | | | 17.2 | 1.9 | |
| Improvements to existing access roads and construction of new permanent access roads | 3.13 | | | 1.39 | | 0.04 | | | | 0.25 | | | | 0.94 | | | | | |
| Overland access roads | 25.30 | 2.42 | | 9.37 | | 0.06 | 0.01 | | 0.51 | 5.77 | 0.01 | | | 6.41 | | | 0.61 | 0.13 | |
| Tensioning sites | 4.75 | | | 1.75 | | | | | 0.50 | 0.75 | | | | 1.5 | | | 0.25 | | |
| Temporary storage yards (laydown) | 40.00 | 5.00 | | 15.00 | | | 5.00 | | 5.00 | | | | | 10.00 | | | | | |
| Alt B - Hog Wallow Route Option | | | | | | | | | | | | | | | | | | | |
| ROW | 528.6 | 13.6 | | 202.5 | | 4.6 | 1.5 | 2 | 12.8 | 95.7 | 0.8 | | | 178.8 | | | 12.3 | 1.9 | 2.1 |
| Improvements to existing access roads and construction of new permanent access roads | 3.13 | | | 1.39 | | 0.04 | | | | 0.25 | | | | 0.94 | | | | | |
| Overland access roads | 25.61 | 2.68 | | 10.98 | | 0.06 | 0.01 | | 0.51 | 5.77 | 0.01 | | | 4.83 | | | 0.61 | 0.13 | |
| Tensioning sites | 4.5 | 0.25 | | 2.00 | | | | | 0.25 | 0.75 | | | | 1.00 | | | 0.25 | | |
| Temporary storage yards (laydown) | 40.00 | 5.00 | | 15.00 | | | 5.00 | | 5.00 | | | | | 10.00 | | | | | |
| Alt B - S. Diamond Lane Route Option | | | | | | | | | | | | | | | | | | | |
| ROW | 514.35 | 36.7 | 0.07 | 171.6 | 0.08 | 17.3 | 1.5 | 1.5 | 12.2 | 95.7 | 0.7 | 0.3 | 8.6 | 152.4 | | | 12.4 | 1.9 | 1.4 |
| Improvements to existing access roads and construction of new permanent access roads | 3.13 | | | 1.39 | | 0.04 | | | | 0.25 | | | | 0.94 | | | | | |
| Overland access roads | 21.04 | 1.52 | | 8.39 | | 0.06 | 0.01 | | 0.42 | 5.77 | | | | 4.13 | | | 0.61 | 0.13 | |
| Tensioning sites | 4.50 | 0.50 | | 1.50 | | | | | | 0.75 | | | | 1.25 | | | 0.25 | | 0.25 |
| Temporary storage yards (laydown) | 35.00 | 5.00 | | 15.00 | | | 5.00 | | 5.00 | | | | | 5.00 | | | | | |
| Alt C - North Route | | | | | | | | | | | | | | | | | | | |
| ROW | 835.7 | 66.9 | | 408.1 | 0.4 | 97.7 | 76.4 | 0.5 | 1.4 | 118.2 | | | 0.8 | 17.3 | | 15.7 | 2.9 | 1.2 | 28.2 |
| Improvements to existing access roads and construction of new permanent access roads | 18.39 | | | 5.47 | | | 11.91 | | | 1.01 | | | | | | | | | |
| Overland access roads | 24.30 | 2.25 | | 16.38 | | | 0.89 | | | 2.55 | | | 0.24 | 0.76 | | 0.94 | 0.16 | 0.09 | 0.05 |
| Tensioning sites | 9.00 | 0.50 | | 5.50 | | 0.50 | 1.25 | | | 0.75 | | | | 0.25 | | | | | 0.25 |
| Temporary storage yards (laydown) | 45.00 | 10.00 | | 20.00 | | | 5.00 | | | | | | | 5.00 | | | | | 5.00 |

¹ Additional acres that will be affected, but for which the vegetation types are currently unknown include permanent effects at the Echanis site for a substation, O&M building, and overhead collection line poles (2.00 acres), temporary effects at the Echanis site for overhead collection line poles and an underground collection system (13.10 acres), permanent effects on each transmission line alternative for an interconnect station (0.69 acre), permanent effects on transmission line alternatives for pole placement (Alt B West Route = 1.87 acres, Hog Wallow = 1.89 acres, South Diamond Lane = 1.83 acres, Alt C = 2.98 acres, temporary effects on all Alt B options for distribution line relocation (2.45 acres, and temporary effects on each transmission line alternative for pole placement (Alt B West = 2.39 acres, Hog Wallow = 2.40 acres, South Diamond Lane = 2.34 acres, and Alt C = 3.80 acres)).

² This is an approximation. Currently 46 tower sites have been identified. The acreages associated with the 46 locations have been scaled up for 69 towers.

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3.3.3.1 Alternative A – No Action

Under the No Action Alternative, no new transmission lines, substations, interconnection stations, or related wind energy facilities would be constructed and new or improved access roads would not be needed. Vegetation in the area would continue to be subject to the effects of agricultural practices, particularly cattle grazing. In addition, the introduction of noxious weed species to the region by agriculture, recreation and development would continue. No other environmental effects to vegetation would result from the No Action Alternative.

3.3.3.2 Echanis Project Effects Common to All Action Alternatives

The permanent and temporary effects on vegetation from construction and operation of the Echanis Wind Energy Project would be the same for all action alternatives (i.e. Alternative B, the Alternative B route options, and Alternative C). Because the Echanis Project is a common element to all transmission line alternatives (i.e. a connected non-federal action), the effects from the Echanis Project are described separately from the effects of the transmission line alternatives. The effects associated with each transmission line alternative are described separately below. The combined effects of the Echanis project and each transmission line alternative on vegetation are summarized in Section 3.3.3.5.

Effects on vegetation from the Echanis Project would result from a variety of ground disturbing activities, including construction of the turbine towers, the Echanis substation, the operations and maintenance (O&M) building, the underground power collection system, onsite access roads (i.e. string roads) and the main access road to the Echanis site. The amounts of permanent and temporary ground disturbance (in acres) from these project components are shown in Table 3.3-4. The effects to vegetation types on the Echanis Site and within the ROWs corridors for the transmission line alternatives would be only a portion of the acreages presented in Table 3.3-3.

Table 3.3-4 Disturbance Acres for the Echanis Site

| Components | 40 Towers | 69 Towers |
|---|--------------|--------------|
| Permanent Effects | | |
| Surface disturbance for towers | 1.40 | 2.41 |
| Improvements to existing access roads | 7.44 | 7.44 |
| New access roads | 46.58 | 46.58 |
| New string roads | 17.11 | 17.11 |
| Substation surface disturbance | 1.84 | 1.84 |
| O&M building | 0.03 | 0.03 |
| Surface disturbance for overhead collection line (18 poles) | 0.13 | 0.13 |
| Surface disturbance from overland access to OCL | 1.14 | 1.14 |
| Total | 75.67 | 76.68 |
| Temporary Effects | | |
| Surface disturbance for towers | 13.11 | 22.61 |
| New string roads | 45.6 | 45.6 |
| Surface disturbance for overhead collection line (18 poles) | 0.16 | 0.16 |
| Surface disturbance for underground collection system | 13.10 | 13.10 |
| Total | 72.0 | 81.5 |

PERMANENT EFFECTS

Construction of the Echanis Project would result in the permanent removal of vegetation at Project facilities. The substation site consists of approximately 1.84 acres which would be cleared and covered with gravel and concrete foundations for electrical equipment. The adjacent maintenance building would add another 0.03 acre of impervious surfaces. An overhead collection line would be installed with 18 towers, resulting in 1.27 acres of disturbance for the pole sites and overland access. Turbine tower sites would each sustain a small, permanent loss of vegetation. The total acreage is dependent on the number and location of turbine towers (approximately 40 to 69 poles), but is estimated to be a maximum of 2.41 acres (Table 3.3-4).

Approximately 12.81 miles of new access road construction, approximately 6.14 miles of existing road improvements, and approximately 17.11 miles of new string roads are planned. Road maintenance includes vegetation clearing; however, grasses and small vegetation would be left on the road bed if it does not obstruct access. These actions would result in loss of 54.04 acres of vegetation for the new or improved access roads. While no plant species defined as special-status species for this analysis have been reported from surveys of the turbine strings, such species could occur on access road routes that have not yet been surveyed.

Permanent effects to vegetation from construction of the Echanis Wind Energy Project would occur primarily in big sagebrush steppe and juniper woodland (Table 3.3-3), although effects to smaller areas of other habitat types would also occur. Approximately 52.10 acres of big sagebrush steppe and 22.30 acres of juniper woodland would be affected. Smaller effected areas would include 8.06 acres of quaking aspen woodland, 2.66 acres of riparian shrub-woodland, 0.21 acre of marshes/emergent wetlands, and 3.90 acres of other upland vegetation types. An additional 2.00 acres of permanent effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe or juniper woodland.

In summary, permanent effects for the Echanis Project include:

- Loss of vegetation from construction of Project facilities.
- Loss of vegetation from construction of new access roads, improvement of existing access roads, and construction of string roads.
- Direct or indirect impacts to special-status plant species if any are present in the Project area, including use of herbicides to control noxious weeds.
- Introduction and spread of noxious weeds.

The total acres of permanent impact to vegetation are relatively small compared to the total acres at the Wind Farm site and do not require mitigation.

The Project includes a protection measures for special-status plants to reduce the potential for impacts to such species. Protection measures are described in the Plan of Development (POD) for the transmission line (CEP 2009) and are detailed in Chapter 2.

TEMPORARY EFFECTS

The Echanis Wind Energy Project would involve deployment and operation of 40 to 69 wind turbines on a 12,795 acre site. A temporary effect on soil erosion would occur in areas where vegetation is cleared. The areas proposed for the wind turbines and structures would be cleared of vegetation. Trampled vegetation and surface disturbance would be restored when construction is complete. Temporary disturbance would affect between 72.00 and 81.50 acres. Construction activities could result in the establishment and expansion of populations of noxious weeds. If herbicides are used to control noxious weeds, adjacent native vegetation, particularly any adjacent sensitive plant species or vegetation communities could be adversely affected by overspray.

Temporary effects to vegetation from construction of the Echanis Wind Energy Project would occur primarily in big sagebrush steppe and juniper woodland (Table 3.3-3), although effects to smaller areas of other habitat types would also occur. Approximately 41.12 acres of big sagebrush steppe and 4.58 acres of quaking aspen woodland would be affected. An additional 13.10 acres of temporary effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe.

As described above, potential temporary effects during construction include:

- Loss of vegetation during project construction.
- Trampling of vegetation during project construction.
- Direct or indirect impacts to special-status plant species if any are present in the project area, including use of herbicides to control noxious weeds.
- Introduction and spread of noxious weeds.

Trampled vegetation and surface disturbance would be restored when construction is complete. Revegetation measures for areas with temporary disturbance are described in the POD for the transmission line (CEP 2009), and are detailed in Chapter 2.

Protection measures for special-status plant populations that could sustain permanent impacts from construction and operation of the Echanis Wind Farm are presented in Chapter 2.

The Project includes a noxious weed control strategy to reduce the potential for weeds to invade new areas and to minimize the spread of weeds within the project area. Noxious weed control measures would be used to minimize the spread of noxious weeds during project construction. Noxious weed control measures are described in the POD for the transmission line (CEP 2009). If herbicides are used to control noxious weeds on private (or non-BLM) lands, impacts to adjacent special-status plant populations or sensitive habitats could occur from overspraying. The noxious weed control measures are detailed in Chapter 2.

MITIGATION

Best Management Practices (BMPs) and Project Design Features (PDFs) described in Chapter 2 are designated to reduce impacts to the project site; therefore, no additional mitigation would be required.

3.3.3.3 Alternative B – West Route (Proposed Action)

In addition to the permanent and temporary effects on vegetation resulting from construction and operation of the Echanis Project, the various components of Alternative B would also have permanent and temporary effects on vegetation. The 28.87 miles of transmission line of Alternative B – West Route would require a total of 525.31 acres of ROW.

PERMANENT EFFECTS

Construction of Alternative B would result in the permanent removal of vegetation at Project facilities. During construction of the Interconnection Station (ICS), vegetation would be cleared and replaced with a gravel surface and impervious concrete pads for equipment. The total area for the ICS is 0.69 acre. Transmission pole sites would each sustain a small, permanent loss of vegetation. The transmission line poles would be located approximately 600 to 1,000 feet apart requiring up to 260 poles for Alternative B. The total acreage is dependent on the number and location of poles, but is estimated to be a maximum of 1.87 acres (Table 3.3-5).

Table 3.3-5 Disturbance Acres for Transmission Line Alternatives

| Components | No Action | Alt B | South Diamond Lane | Hog Wallow | Alt C |
|---------------------------------------|-----------|-------|--------------------|------------|-------|
| Number of poles | - | 260 | 254 | 262 | 414 |
| Permanent Effects | | | | | |
| Surface disturbance for poles | - | 1.87 | 1.83 | 1.89 | 2.98 |
| Interconnection station | - | 0.69 | 0.69 | 0.69 | 0.69 |
| Improvements to existing access roads | - | 3.88 | 3.88 | 3.88 | - |
| New access roads | - | 0.37 | 0.37 | 0.37 | 9.76 |
| Overland vehicle access | - | 25.28 | 21.02 | 25.58 | 24.29 |
| Total | - | 32.09 | 27.79 | 32.40 | 37.72 |
| Temporary Effects | | | | | |
| Laydown areas | - | 40 | 35 | 40 | 45 |
| Tensioning sites | - | 4.75 | 4.5 | 4.5 | 9 |
| Distribution line relocation | - | 2.45 | 2.45 | 2.45 | - |
| Total ¹ | - | 47.20 | 41.95 | 46.95 | 54.00 |

¹ Acres in table may not add to totals due to rounding differences

Approximately 0.19 mile of new access road construction and approximately 2.00 miles of existing road improvements are planned. Road maintenance includes vegetation clearing; however, grasses and small vegetation would be left on the road bed if it does not obstruct access. These actions would result in loss of 4.25 acres of vegetation for the new or improved access roads. Overland vehicle access would result in disturbance to up to 25.28 acres. Operation and maintenance activities for Alternative B would include selective clearing of vegetation, primarily juniper trees, only when necessary to provide for surveying, electrical clearance, line reliability, and construction and maintenance operations. The ROW would not be chemically treated to control vegetation unless necessary to comply with requirements of a permitting agency.

Permanent effects to vegetation from construction of Alternative B would occur primarily in big sagebrush steppe and native grassland (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 10.76 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 7.35 acres of native grassland would be affected. Smaller areas of effect include 0.61 acres of riparian meadow, 0.13 acre of riparian shrub-woodland, 0.01 acre of pond, and 3.04 acres of other upland vegetation types. An additional 2.56 acres of permanent effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe, juniper woodland, or native grassland.

In summary, permanent effects for Alternative B include:

- Loss of vegetation from construction of Project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

The total acres of permanent impact to vegetation are relatively small (approximately 6%) compared to the approximately 525 acres in the ROW.

TEMPORARY EFFECTS

The areas proposed for the transmission poles and structures would be cleared of vegetation, however vegetation at tensioning sites, laydown sites and downguys would be trampled, not cleared. Construction of this alternative would also require relocation of a distribution line. Temporary disturbance would affect a combined area of up to 47.14 acres, depending on the number of transmission line poles actually installed. Construction activities could result in the establishment and expansion of populations of noxious weeds. Temporary effects to vegetation from construction of the Alternative B would occur primarily in big sagebrush steppe and native grassland habitat (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 16.75 acres of big sagebrush steppe and 11.5 acres of native grassland would be affected. Smaller areas of potential effect include 0.25 acre of riparian meadow and 0.1 acre of riparian woodland and 16.20 acres of other upland vegetation types. An additional 4.84 acres of temporary effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe or native grassland.

As described above, potential temporary effects during construction include:

- Loss of vegetation during Project construction.
- Trampling of vegetation during Project construction.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

Trampled vegetation and surface disturbance would be restored when construction is complete. Revegetation measures for areas with temporary disturbance are described in the POD for the transmission line (CEP 2009), the revegetation measures are detailed in Chapter 2.

The Project includes a noxious weed control strategy to reduce the potential for weeds to invade new areas and to minimize the spread of weeds within the Project area. Noxious weed control measures would be used to minimize the spread of noxious weeds during Project construction. Noxious weed control measures are described in the POD for the transmission line (CEP 2009). On BLM administered lands, mitigation measures are in place to avoid impacts to special-status plants. Communities, populations and habitats will not be impacted by herbicide use on BLM lands, as CEP has BMPs in place to avoid impacts. However, if herbicides are used to control noxious weeds on private (or non-BLM) lands, impacts to adjacent special-status plant populations or sensitive habitats could occur from overspraying. The noxious weed control measures are detailed in Chapter 2.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-KV

The upgrade of the initial single-circuit transmission line to a full double-circuit 230-kV transmission line would require a second construction phase at a future date when additional capacity is required on the transmission line. The second construction phase would not require any additional ROW, access roads, or new permanent features outside of areas previously affected by installation of the initial line. Most effects from installation of the second circuit would be temporary and similar to those described above. There could be minor differences in acres affected. Temporary effects on vegetation would be associated primarily with the use of temporary laydown areas and pulling/tensioning sites.

MITIGATION

Mitigation for impacts to riparian meadows and riparian shrub woodland trampled or otherwise disturbed during construction are provided in Section 3.4.

Chapter 2 details project BMPs and PDFs that would be implemented during construction to reduce effects to vegetation.

South Diamond Lane Route Option

The 28.26 miles of transmission line of South Diamond Lane Route Option of Alternative B would require a total of 514.1 acres of ROW. This option differs from Alternative B only in the approximately five miles before the tie-in and in the up to 254 poles needed for this option. The South Diamond Lane Route Option follows low flat marshland compared to the other alignment options that are located over rock buttes. Potential impacts to marshland are discussed in Section 3.4. Special-status plant surveys have not been completed for this option.

PERMANENT EFFECTS

Construction of the South Diamond Lane Route Option of Alternative B would result in the permanent removal of vegetation at Project facilities. During construction of the ICS, vegetation would be cleared and replaced with a gravel surface and impervious concrete pads for equipment. The total area for the ICS is 0.69 acre. Transmission pole sites would each sustain a small, permanent loss of vegetation. The total acreage is dependent on the number and location of poles, but is estimated to be a maximum of 1.83 acre (Table 3.3-5). Because special-status plant surveys have not been completed for this option, there is a potential for impacts to special-status plant species.

Approximately 0.18 mile of new access road construction and approximately 2 miles of existing road improvements are planned. Road maintenance includes vegetation clearing; however, grasses and small vegetation would be left on the road bed if it does not obstruct access. Operation and maintenance activities for the South Diamond Lane Route Option would include selective clearing of vegetation, primarily juniper trees, only when necessary to provide for surveying, electrical clearance, line reliability, and construction and maintenance operations. The ROW would not be chemically treated to control vegetation unless necessary to comply with requirements of a permitting agency. These actions would result in loss of 3.13 acres of vegetation for the new or improved access roads. Overland vehicle access would result in disturbance of up to 21.04 acres. Permanent effects to vegetation from construction of the South Diamond Lane Route Option would occur primarily in big sagebrush steppe, juniper woodland, and native grassland (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 9.78 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 5.07 acres of native grassland would be affected. Smaller areas of effect include 0.61 acre of riparian meadow, 0.13 acre of riparian shrub-woodland, and 2.04 acres of other upland vegetation types. An additional 2.52 acres of permanent effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe, juniper woodland, or native grassland.

In summary, permanent effects for the South Diamond Lane Route Option of Alternative B include:

- Loss of vegetation from construction of Project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the Project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

The total acres of permanent impact to vegetation are relatively small (approximately 5%) compared to the approximately 514 acres in the ROW.

The Project includes a protection measures for special-status plants to reduce the potential for impacts to such species. Protection measures are described in the POD for the transmission line (CEP 2009, and detailed in Chapter 2.

TEMPORARY EFFECTS

The areas proposed for the transmission poles and structures would be cleared of vegetation, however vegetation at tensioning sites, laydown sites and downguys would be trampled, not cleared. Construction of this alternative would require relocation of a distribution line. Temporary disturbance would affect up to 41.95 acres, depending on the number of transmission line poles actually installed (Table 3.3-5). Construction activities could result in the establishment and expansion of populations of noxious weeds. Temporary effects to vegetation from construction of the South Diamond Land Route Option would occur primarily in big sagebrush steppe and native grassland (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 16.5 acres of big sagebrush steppe and 6.25 acres of native grassland, and 5.50 acres of agricultural land would be affected. Smaller areas of potential effect include 0.25 acre of riparian meadow and 11.00 acres of other upland vegetation types. An additional 4.79 acres of temporary effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe, native grassland, or agricultural lands.

In summary, temporary effects for the South Diamond Lane Route Option of Alternative B include:

- Loss and trampling of vegetation from construction of Project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the Project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

Revegetation measures for areas with temporary disturbance are described in the Plan of Development for the transmission line (CEP 2009). The revegetation measures are detailed in Chapter 2.

Protection measures for special-status plant populations that could sustain temporary impacts from construction of the South Diamond Lane Route Option of Alternative B are presented in Chapter 2.

Construction activities could result in the establishment and expansion of populations of noxious weeds. However, the project includes a noxious weed control strategy to reduce the potential for weeds to invade new areas and to minimize the spread of weeds within the project area. Noxious weed control measures would be used to minimize the spread of noxious weeds during project construction. Noxious weed control measures are described in the Plan of Development for the transmission line (CEP 2009). On BLM administered lands, mitigation measures are in place to avoid impacts to special-status plants. Communities, populations and habitats will not be impacted by herbicide use on BLM lands as BMPs are in place to avoid impacts. However, if herbicides are used to control noxious weeds on private (or non-BLM) lands, impacts to adjacent special-status plant populations or sensitive habitats could occur from overspraying. The noxious weed control measures are detailed in Chapter 2.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-KV

As described for Alternative B, the upgrade of the initial single-circuit transmission line to a full double-circuit 230-kV transmission line would require a second construction phase at a future date when additional capacity is required on the transmission line. The second construction phase would not require any additional ROW, access roads, or new permanent features outside of areas previously affected by installation of the initial line. Most effects from installation of the second circuit would be temporary and similar to those

described above. There could be minor differences in acres affected. Temporary effects on vegetation would be associated primarily with the use of temporary laydown areas and pulling/tensioning sites.

MITIGATION

Mitigation for impacts to riparian meadows and riparian shrub woodland trampled or otherwise disturbed during construction are provided in Section 3.4.

Chapter 2 details project BMPs and PDFs that would be implemented during construction to reduce effects to vegetation.

Hog Wallow Route Option

The 29.06 miles of transmission line of the Hog Wallow Route Option of Alternative B would require a total of 528.77 acres of ROW. Because the route options differ only in the approximately 5 miles before the tie-in, the effects to vegetation would be similar to those discussed for the South Diamond Lane Route Option. However, the Hog Wallow Route Option is located over rock buttes compared to the South Diamond Lane Route Option that follows low flat marshland. Effects to vegetation would differ in that the Hog Wallow Route Option would require a total of 29.06 miles of ROW from the Echanis substation to the tie-in with the HEC 115-kV line. In addition, up to 262 poles would be needed for this option. The effects and mitigation for general vegetation on the distribution line are similar to those described for the Alternative B – Proposed Action and South Diamond Lane Route Option, differing only in the acres affected. Special-status plant surveys have not been completed for this option.

PERMANENT EFFECTS

Construction of the Hog Wallow Route Option of Alternative B would result in the permanent removal of vegetation at project facilities. During construction of the Interconnection Station (ICS), vegetation would be cleared and replaced with a gravel surface and impervious concrete pads for equipment. The total area for the ICS is 0.69 acre. Transmission pole sites would each sustain a small, permanent loss of vegetation. The total acreage is dependent on the number and location of poles, but is estimated to be a maximum of 1.89 acres (Table 3.3-5). Because special-status plant surveys have not been completed for this option, there is a potential for impacts to special-status plant species.

Approximately 0.18 mile of new access road construction and approximately 3.88 miles of existing road improvements are planned. These actions would result in loss of 3.13 acres of vegetation for the new or improved access roads. Overland vehicle access would result in disturbance of up to 25.61 acres. Road maintenance includes vegetation clearing; however, grasses and small vegetation would be left on the road bed if it does not obstruct access. Operation and maintenance activities for the South Hog Wallow Route Option of Alternative B would include selective clearing of vegetation, primarily juniper trees, only when necessary to provide for surveying, electrical clearance, line reliability, and construction and maintenance operations. The ROW would not be chemically treated to control vegetation unless necessary to comply with requirements of a permitting agency.

Permanent effects to vegetation from construction of Alternative B – Hog Wallow Route Option would occur primarily in big sagebrush steppe, juniper woodland, and native grassland (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 12.37 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 5.77 acres of native grassland would be affected. Smaller areas of effect include 0.61 acre of riparian meadow, 0.13 acre of riparian shrub-woodland, and 3.31 acres of other upland vegetation types. An additional 1.58 acres of permanent effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe, juniper woodland, or native grassland.

In summary, permanent effects for the Hog Wallow Route Option of Alternative B include:

- Loss of vegetation from construction of project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

The total acres of permanent impact to vegetation are relatively small (approximately 6%) compared to the approximately 529 acres in the ROW.

The project includes a protection measures for special-status plants to reduce the potential for impacts to such species. Protection measures are described in the Plan of Development for the transmission line (CEP 2009). The protection measures are detailed in Chapter 2.

TEMPORARY EFFECTS

On the Hog Wallow Route Option of Alternative B, the areas proposed for the transmission poles and structures would be cleared of vegetation, however vegetation at tensioning sites, laydown sites and downguys would be trampled, not cleared. Construction of this alternative would require relocation of a distribution line. Temporary disturbance would affect up to 46.95 acres, depending on the number of transmission line poles actually installed (Table 3.3-5). Construction activities could result in the establishment and expansion of populations of noxious weeds.

Temporary effects to vegetation from construction of the Alternative B – Hog Wallow Route Option would occur primarily in big sagebrush steppe and native grassland (Table 3.3-3), although effects to smaller areas of other habitat types would also occur. Approximately 17.00 acres of big sagebrush steppe, 5.25 acres of exotic annual grassland, and 11.00 acres of native grassland would be affected. Smaller areas of potential effect include 0.25 acre of riparian meadow and 3.31 acres of other upland vegetation types. An additional 4.84 acres of temporary effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe or native grassland.

In summary, temporary effects for the Hog Wallow Route Option of Alternative B include:

- Loss and trampling of vegetation from construction of project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

Revegetation measures for areas with temporary disturbance are described in the Plan of Development for the transmission line (CEP 2009). The revegetation measures are detailed in Chapter 2.

Protection measures for special-status plant populations that could sustain temporary impacts from construction of the Hog Wallow Route Option of Alternative B are presented in Chapter 2.

Construction activities could result in the establishment and expansion of populations of noxious weeds. However, the project includes a noxious weed control strategy to reduce the potential for weeds to invade new areas and to minimize the spread of weeds within the project area. Noxious weed control measures would be used to minimize the spread of noxious weeds during project construction. Noxious weed control measures

are described in the Plan of Development for the transmission line (CEP 2009). On BLM administered lands, mitigation measures are in place to avoid impacts to special-status plants. Communities, populations and habitats would not be impacted by herbicide use on BLM lands, as BLM has BMPs in place to avoid impacts. However, if herbicides are used to control noxious weeds on private (or non-BLM) lands, impacts to adjacent special-status plant populations or sensitive habitats could occur from overspraying. The noxious weed control measures are detailed in Chapter 2.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

As described for Alternative B and the South Diamond Lane Route Option, the upgrade of the initial single-circuit transmission line to a full double-circuit 230-kV transmission line would require a second construction phase at a future date when additional capacity is required on the transmission line. The second construction phase would not require any additional ROW, access roads, or new permanent features outside of areas previously affected by installation of the initial line. Most effects from installation of the second circuit would be temporary and similar to those described above. There could be minor differences in acres affected. Temporary effects on vegetation would be associated primarily with the use of temporary laydown areas and pulling/tensioning sites.

MITIGATION

Mitigation for impacts to riparian meadows and riparian shrub woodland trampled or otherwise disturbed during construction are provided in Section 3.4.

Chapter 2 details project BMPs and PDFs that would be implemented during construction to reduce effects to vegetation.

115-kV Transmission Line Option

PERMANENT AND TEMPORARY EFFECTS

The 115-kV Transmission Line Option would be a reduced capacity design configuration constructed along the same transmission line alignments described above for Alternative B – West Route and the South Diamond Lane and Hog Wallow Route Options. The 115-kV Transmission Line Option would include a single three-phase (i.e. three conductor) 115-kV circuit. The alignment of the transmission line, pole heights and spacing, ROW width, construction methods, interconnection points, and access requirements would be the same as described for Alternative B, and the two route options, described above, except that there would not be the temporary impacts from the phased construction of adding a future circuit.

MITIGATION

No additional mitigation measures for vegetation are proposed beyond the revegetation, special status plant protection, and noxious weed control measures described above for Alternative B.

3.3.3.4 Alternative C – North Route

In addition to the permanent and temporary effects on vegetation resulting from construction and operation of the Echanis Project, the various components of Alternative C would also have permanent and temporary effects on vegetation. The 45.95 miles of transmission line for Alternative C would require a total of 835.84 acres of ROW. Alternative C would incorporate the same procedures for turbine, transmission line and access road construction as described for Alternative B – West Route. The revegetation, protection, and weed control measures utilized would be the same for both alternatives. This route is longer than any of the options for Alternative B and would require up to 414 poles. The effects and mitigation for general vegetation on the distribution line are similar to those described for the Alternative B Proposed Action and South Diamond

Lane Route Option, differing only in the acres affected. Special-status plant surveys have not been completed for this option.

PERMANENT EFFECTS

Construction of Alternative C would result in the permanent removal of vegetation at Project facilities. During construction of the ICS, vegetation would be cleared and replaced with a gravel surface and impervious concrete pads for equipment. The total area for the ICS is 0.69 acre. Transmission pole sites would each sustain a small, permanent loss of vegetation. The total acreage is dependent on the number and location of poles, but is estimated to be a maximum of 2.98 acres (Table 3.3-5). Because special-status plant surveys have not been completed for this option, there is a potential for impacts to special-status plant species.

Approximately 5.03 miles of new access road construction is planned. This action would result in loss of 9.76 acres of vegetation for the new or improved access roads. Overland vehicle access would result in disturbance of up to 24.29 acres. Road maintenance includes vegetation clearing; however, grasses and small vegetation would be left on the road bed if it does not obstruct access. Operation and maintenance activities for Alternative C would include selective clearing of vegetation, primarily juniper trees, only when necessary to provide for surveying, electrical clearance, line reliability, and construction and maintenance operations. The ROW would not be chemically treated to control vegetation unless necessary to comply with requirements of a permitting agency.

Permanent effects to vegetation from construction of Alternative C would occur primarily in big sagebrush steppe, dwarf sagebrush steppe, and juniper woodland (Table 3.3-3), although effects to smaller areas of other vegetation types would also occur. Approximately 21.85 acres of big sagebrush steppe, 12.80 acres of dwarf shrub-steppe, and 3.56 acres of juniper woodland would be affected. Smaller affected areas include 0.24 acre of marsh/emergent wetland, 0.16 acre of riparian meadow, 0.09 acre of riparian shrub-woodland, and 4.00 acres of other upland vegetation types. An additional 3.67 acres of permanent effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe or dwarf shrub-steppe.

In summary, permanent effects for Alternative C include:

- Loss of vegetation from construction of Project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the Project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

The total acres of permanent impact to vegetation is relatively small (approximately 6%) compared to the approximately 836 acres in the ROW.

The project includes a protection measures for special-status plants to reduce the potential for impacts to such species. Protection measures are described in the POD for the transmission line (CEP 2009), and are detailed in Chapter 2.

TEMPORARY EFFECTS

The areas proposed for the transmission poles and structures would be cleared of vegetation, however vegetation at tensioning sites, laydown sites and downguys would be trampled, not cleared. Trampled vegetation and surface disturbance would be restored when construction is complete. The transmission line

poles would be located approximately 600 to 1,000 feet apart requiring approximately 414 poles for Alternative C.

Temporary effects to vegetation from construction of Alternative C would occur primarily in big sagebrush steppe and native grassland (Table 3.3-3), although effects to smaller areas of other habitat types would also occur. Approximately 25.50 acres of big sagebrush steppe, 10.50 acres of agricultural land, 6.25 acres of dwarf sagebrush steppe, 5.25 acres of native grassland, and 5.25 acres of salt desert shrub and 1.25 acres of other upland vegetation types would be affected. An additional 6.25 acres of temporary effects to habitat are undetermined as to vegetation type. These acres are likely to be primarily big sagebrush steppe or juniper woodland.

In summary, temporary effects for Alternative C include:

- Loss and trampling of vegetation from construction of project facilities.
- Loss of vegetation from construction of new access roads and improvement of existing access roads.
- Direct or indirect impacts to special-status plant species if any are present in the project area.
- Introduction and spread of noxious weeds.
- Use of herbicides to control noxious weeds.

Revegetation measures for areas with temporary disturbance are described in the POD for the transmission line (CEP 2009), and are detailed in Chapter 2.

Protection measures for special-status plant populations that could sustain temporary impacts from construction of Alternative C are presented in Chapter 2.

Construction activities could result in the establishment and expansion of populations of noxious weeds. However, the project includes a noxious weed control strategy to reduce the potential for weeds to invade new areas and to minimize the spread of weeds within the project area. Noxious weed control measures would be used to minimize the spread of noxious weeds during project construction. Noxious weed control measures are described in the POD for the transmission line (CEP 2009). On BLM administered lands, mitigation measures are in place to avoid impacts to special-status plants. Communities, populations and habitats will not be impacted by herbicide use on BLM lands as BLM has BMPs in place to avoid impacts. However, if herbicides are used to control noxious weeds on private (or non-BLM) lands, impacts to adjacent special-status plant populations or sensitive habitats could occur from overspraying. The noxious weed control measures are detailed in Chapter 2.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

As described for Alternative C, the upgrade of the initial single-circuit transmission line to a full double-circuit 230-kV transmission line would require a second construction phase at a future date when additional capacity is required on the transmission line. The second construction phase would not require any additional ROW, access roads, or new permanent features outside of areas previously affected by installation of the initial line. Most effects from installation of the second circuit would be temporary and similar to those described above. There could be minor differences in acres affected. Temporary effects on vegetation would be associated primarily with the use of temporary laydown areas and pulling/tensioning sites.

MITIGATION

Mitigation for impacts to riparian meadows and riparian shrub woodland trampled or otherwise disturbed during construction are provided in Section 3.4.

Chapter 2 details project BMPs and PDFs that would be implemented during construction to reduce effects to vegetation.

115-kV Transmission Line Option

PERMANENT AND TEMPORARY EFFECTS

The 115-kV Transmission Line Option would be a reduced capacity design configuration constructed along the same transmission line alignments described above for Alternative C. The 115-kV Transmission Line Option would include a single three-phase (i.e. three conductor) 115-kV circuit. The alignment of the transmission line, pole heights and spacing, ROW width, construction methods, interconnection points, and access requirements would be the same as described above for Alternative C, except that there would not be the temporary impacts from the phased construction of adding a future circuit.

MITIGATION

No additional mitigation measures for vegetation are proposed beyond the revegetation, special status plant protection, and noxious weed control measures described above for the 115-kV Transmission Line Option of Alternative C.

3.3.3.5 Residual Effects after Mitigation

Residual effects related to the proposed action that would last during construction include vegetation degradation. Residual effects that would last at least as long as the life of the project (an expected 40 years) and would include remove of trees and other vegetation.

3.3.3.6 Summary Comparison of Alternatives

A comparison of potential effects of the various alternatives is provided in Table 3.3-6 and a summary of effects on vegetation is presented in Table 3.3-7.

Table 3.3-6 Comparison of Effects - Vegetation

| | Alternative A – No Action | Echanis | Alternative B – West | Alternative B – South Diamond Lane | Alternative B – Hog Wallow | Alternative B – 115-kV Transmission Line Option | Alternative C |
|------------------------|------------------------------|---------|-------------------------|--|-------------------------------|---|------------------|
| Permanent | | | | | | | |
| Upland | - | 86.36 | 27.92 | 23.66 | 28.21 | 28.21 | 42.70 |
| Riparian/Wetland/Water | - | 2.87 | 0.75 | 0.74 | 0.75 | 0.75 | 0.49 |
| Unallocated | - | 2.00 | 2.56 | 2.52 | 1.58 | 1.58 | 3.67 |
| Temporary | | | | | | | |
| Upland | - | 45.70 | 22.92 | 28.21 | 44.50 | 44.50 | 54.00 |
| Riparian/Wetland/Water | - | 0.00 | 0.74 | 0.75 | 0.25 | 0.25 | 0.00 |
| Unallocated | - | 13.10 | 4.84 | 4.79 | 4.84 | 4.84 | 6.37 |

Table 3.3-7 Summary of Effects - Vegetation

| Alternative A No Action | Echanis Wind Energy Project | Alternative B | | | Alternative C North Route |
|--|---|--|---|--|--|
| | | West Route (Proposed Action) | S. Diamond Lane Route Option | Hog Wallow Route Option | |
| <p>Under the No Action Alternative, no new transmission lines, substations, interconnection stations, or related wind energy facilities would be constructed and new or improved access roads would not be needed.</p> <p>Vegetation in the area would continue to be subject to the effects of agricultural practices, particularly cattle grazing.</p> <p>In addition, the introduction of noxious weed species to the region by agriculture, recreation and development would continue.</p> | <p>Approximately 1.84 acres would be cleared and covered with gravel and concrete foundations for the substation site.</p> <p>An overhead collection line would be installed with 18 towers, resulting in 1.27 acres of disturbance for the pole sites and overland access.</p> <p>The total acreage from turbine tower sites is dependent on the number and location of turbine towers (approximately 40 to 69 poles), but is estimated to be a maximum of 2.41 acres.</p> <p>The new or improved access roads would result in loss of 54.04 acres of vegetation.</p> <p>While no plant species defined as special-status species for this analysis have been reported from surveys of the turbine strings, such species could occur on access road routes that have not yet been surveyed.</p> <p>Approximately 52.10 acres of big sagebrush steppe and 22.30 acres of juniper woodland would be affected.</p> <p>Smaller effected areas would include 8.06 acres of quaking aspen woodland, 2.66 acres of riparian shrub-woodland, 0.21 acre of marshes and emergent wetlands, and 3.90 acres of other upland vegetation types.</p> <p>An additional 2.00 acres of permanent effects to habitat are undetermined as to vegetation type.</p> <p>Possible introduction and spread of noxious weeds and use of herbicides to control noxious weeds.</p> <p>Temporary disturbance would affect between 72.00 and 81.50 acres. Trampled vegetation and surface disturbance would be restored when construction is</p> | <p>Approximately 0.69 acres would be cleared and replaced with a gravel surface and concrete pads for the ICS substation site.</p> <p>Transmission pole disturbance estimated to be a maximum of 1.87 acres.</p> <p>The new or improved access roads would result in loss of 4.25 acres of vegetation. Overland vehicle access would result in disturbance to up to 25.28 acres.</p> <p>In the ROW, there would be selective clearing of vegetation, primarily juniper trees when necessary.</p> <p>The ROW would not be chemically treated to control vegetation unless necessary to comply with requirements of a permitting agency.</p> <p>Approximately 10.76 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 7.35 acres of native grassland would be affected.</p> <p>Smaller areas of effect include 0.61 acres of riparian meadow, 0.13 acre of riparian shrub-woodland, 0.01 acre of pond, and 3.04 acres of other upland vegetation types.</p> <p>An additional 2.56 acres of permanent effects to habitat are undetermined as to vegetation type.</p> <p>Direct or indirect impacts to special-status plant species if</p> | <p>Effects not listed below would be the same as in Alternative B-West Route.</p> <p>Transmission pole disturbance estimated to be a maximum of 1.87 acres.</p> <p>The new or improved access roads would result in loss of 3.13 acres of vegetation. Overland vehicle access would result in disturbance of up to 21.04 acres.</p> <p>Approximately 9.78 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 5.07 acres of native grassland would be affected.</p> <p>Smaller areas of effect include 0.61 acre of riparian meadow, 0.13 acre of riparian shrub-woodland, and 2.04 acres of other upland vegetation types. An additional 2.52 acres of permanent effects to habitat are undetermined as to vegetation type.</p> <p>Temporary disturbance would affect up to 41.95 acres. Approximately 16.5 acres of big sagebrush steppe and 6.25 acres of native grassland, and 5.50 acres of agricultural land would be affected.</p> <p>Smaller areas of potential effect include 0.25 acre of riparian meadow and 11.00 acres of other upland vegetation types. An additional</p> | <p>Effects not listed below would be the same as in Alternative B-West Route.</p> <p>Transmission pole disturbance estimated to be a maximum of 1.89 acres.</p> <p>The new or improved access roads would result in loss of 3.13 acres of vegetation. Overland vehicle access would result in disturbance of up to 25.61 acres.</p> <p>Approximately 12.37 acres of big sagebrush steppe, 6.02 acres of juniper woodland and 5.77 acres of native grassland would be affected.</p> <p>Smaller areas of effect include 0.61 acre of riparian meadow, 0.13 acre of riparian shrub-woodland, and 3.31 acres of other upland vegetation types.</p> <p>An additional 1.58 acres of permanent effects to habitat are undetermined as to vegetation type.</p> <p>Temporary disturbance would affect up to 46.95 acres. Approximately 17.00 acres of big sagebrush steppe, 5.25 acres of exotic annual grassland, and 11.00 acres of native grassland would be affected.</p> <p>Smaller areas of potential effect include 0.25 acre of</p> | <p>Effects not listed below would be the same as in Alternative B-West Route.</p> <p>Transmission pole disturbance estimated to be a maximum of 2.98 acres.</p> <p>The new or improved access roads would result in loss of 9.76 acres of vegetation. Overland vehicle access would result in disturbance of up to 24.29 acres.</p> <p>Approximately 21.85 acres of big sagebrush steppe, 12.80 acres of dwarf shrub-steppe, and 3.56 acres of juniper woodland would be affected.</p> <p>Smaller affected areas include 0.24 acre of marsh/emergent wetland, 0.16 acre of riparian meadow, 0.09 acre of riparian shrub-woodland, and 4.00 acres of other upland vegetation types.</p> <p>An additional 3.67 acres of permanent effects to habitat are undetermined as to vegetation type.</p> <p>Temporary disturbance would affect up to 54 acres. Approximately 25.50 acres of big sagebrush steppe, 10.50 acres of agricultural land, 6.25 acres of dwarf sagebrush steppe, 5.25 acres of native grassland, and 5.25 acres of salt desert shrub and 1.25 acres of other upland vegetation types would be affected.</p> <p>An additional 6.25 acres of temporary effects to habitat are undetermined as to vegetation type.</p> |

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

| | | | | | |
|--|---|--|---|---|--|
| | <p>complete.</p> <p>Approximately 41.12 acres of big sagebrush steppe and 4.58 acres of quaking aspen woodland would be affected. An additional 13.10 acres of temporary effects to habitat are undetermined as to vegetation type.</p> | <p>any are present in the project area.</p> <p>Possible introduction and spread of noxious weeds and use of herbicides to control noxious weeds.</p> <p>Temporary disturbance would affect up to 47.20 acres. Approximately 16.75 acres of big sagebrush steppe and 11.5 acres of native grassland would be affected.</p> <p>Smaller areas of potential effect include 0.25 acre of riparian meadow and 0.1 acre of riparian woodland and 16.20 acres of other upland vegetation types. An additional 4.84 acres of temporary effects to habitat are undetermined as to vegetation type.</p> | <p>4.79 acres of temporary effects to habitat are undetermined as to vegetation type.</p> | <p>riparian meadow and 3.31 acres of other upland vegetation types.</p> <p>An additional 4.84 acres of temporary effects to habitat are undetermined as to vegetation type.</p> | |
|--|---|--|---|---|--|

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