

## 3.4 Vegetation and Wildlife

Vegetation and wildlife habitat and species at the proposed Energy Facility site and along the alignments of the natural gas, water pipeline, and electric transmission line could potentially be affected by the proposed Facility. For the purpose of analysis, vegetation and wildlife habitat was identified within the survey area of the Energy Facility site and ¼ mile on either side of the proposed project's linear features. Potential effects from construction or operation of the proposed Energy Facility are expected to stay within or close to the proposed Energy Facility site and within the established construction easements of the proposed related or supporting facilities.

The information presented in this section is based on the studies and analysis conducted for the SCA as amended by Amendments No. 1 and No. 2, filed with EFSC on July 25, 2003, and October 15, 2003, respectively.

### 3.4.1 Affected Environment

The analysis area is located within the Klamath Ecological Province (East Cascades Ecoregion), on the eastern side of the Cascade Mountains (see Figure 3.4-1). This region is characterized by large basins surrounded by ancient lake terraces and basaltic fault block mountains. Elevations range from around 4,000 to 8,400 feet. The soil in the area is derived from basaltic parent material and generally has loamy surface horizons overlaying loamy to clayey subsurface horizons (Anderson et al., 1998; Franklin and Dyrness, 1988). The climate is characterized by warm, dry summers and cool, moist winters. The average annual precipitation in Klamath County is 14 inches, of which only 27 percent occurs during the growing season.

#### 3.4.1.1 Vegetation Communities and Habitats

**Methodology.** Reconnaissance-level surveys for the proposed Energy Facility site and associated natural gas and water supply pipelines were conducted on October 10 and 11, 2001. Detailed habitat assessment and field surveys for biological resources were conducted by three biologists at the Energy Facility site, and along the proposed natural gas, water supply, and electric transmission line alignments from May 6 to May 10, 2002. Additional rare plant and breeding bird surveys were conducted from June 17 to 20, 2002, and on July 9 and 10, 2002. Prior to conducting the 2002 biological surveys, the centerlines of the proposed related or supporting facilities were flagged in the field by surveyors. Gross level habitat surveys were conducted for areas within 0.25-mile of the Energy Facility and the natural gas pipeline, water supply pipeline, and electric transmission line. Aerial photography, topographic maps, visual estimation, and field verification at specific locations were used to categorize habitat types.

**Habitat Classifications.** Habitat classifications within the analysis area were based on plant community types developed by Kagan and Caicco (1992). General habitat descriptions also incorporate ecological data from *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil, 2001) and *Natural Vegetation of Oregon and Washington* (Franklin and Dyrness, 1988). Five major vegetative communities occur at the Facility site and along the electric transmission line corridor (Figure 3.4-1). These vegetation communities provide

primary habitat for wildlife in the area. They include agricultural lands, ruderal areas, western juniper woodland, ponderosa pine forest, and sagebrush-steppe habitat. Developed areas and aquatic habitats are also found within the project area. Descriptions of each habitat type are provided below. Each habitat type is further categorized in relation to the Oregon Department of Fish and Wildlife (ODFW) habitat classification system. The total acreage and ODFW category for each habitat type are summarized in Table 3.4-1. ODFW habitat categories are shown in Figure 3.4-2.

**Western Juniper Woodland.** Western juniper woodland is the driest forest community in the Pacific Northwest and is generally found in the transition zone between ponderosa pine forest and shrub-steppe habitats. This type occurs widely throughout eastern Oregon on shallow, often rocky soil, at elevations ranging between 1,500 and 6,500 feet. This habitat type is widespread throughout the analysis area on low hills and terraces at elevations between 4,000 and 5,000 feet. It is found on well-drained stony to very stony loams derived from weathered tuff and basalt, as well as on loamy soil derived from lacustrine and alluvial deposits (NRCS, 1985).

This habitat type is characterized by the almost sole dominance of western juniper (*Juniperus occidentalis*) in the canopy layer. Throughout much of this habitat type the trees are generally widely spaced, creating a savanna-like setting with shrub cover between 10 to 40 percent in the understory. In some areas, western juniper creates a woodland or forested habitat with only a few scattered shrubs in the understory. Low sagebrush (*Artemisia arbuscula*) is the dominant shrub in most areas with big sagebrush (*Artemisia tridentata*), desert gooseberry (*Ribes velutinum*), and rabbitbrush (*Chrysothamnus nauseosus*, *C. viscidiflorus*) also found within the shrub layer. Native bunchgrasses such as Sandberg's bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Thurber's needlegrass (*Achnatherum thurberianum*) and squirrel tail (*Elymus elymoides*) make up approximately 5 to 25 percent of the ground cover in most areas. Common native forbs include larkspur (*Delphinium nuttallianum*), lupine (*Lupinus lepidus*), phlox (*Phlox diffusa*), lomatium (*Lomatium* spp.), and alpine waterleaf (*Hydrophyllum capitatum*). Where intensive livestock grazing has occurred in this habitat type, the understory vegetation is relatively sparse and made up of non-native species. Shrubs and native perennial bunchgrasses are either absent or very sparse in these areas. See Table 3.4-2 for a list of the types of plant species.

**Ponderosa Pine Forest.** Ponderosa pine habitats are widely distributed throughout eastern Oregon and are often found adjacent to sagebrush-steppe and western juniper habitat types. Ponderosa pine forests generally occur on dry sites characterized by coarse-textured, well-drained soil at elevations between 1,000 and 6,000 feet. Within the analysis area, ponderosa pine forest was observed on low hills and basins along the southern sections of the proposed electric transmission line alignment at elevations between 4,300 and 4,600 feet. This habitat type generally occurs on well-drained, loamy soil derived from weathered sandstone, basalt, and lacustrine sediments (NRCS, 1985).

Ponderosa pine (*Pinus ponderosa*) is the dominant species in the canopy layer of this forested habitat. Western juniper, curl-leaf mountain mahogany (*Cercocarpus ledifolius*), and Klamath plum (*Prunus subcordata*) are present in the lower canopy layer. The soil is covered by a moderate accumulation of duff, with Sandberg's bluegrass and Idaho fescue the most

common species in the herbaceous layer, accounting for 10 to 50 percent of the cover. Table 3.4-2 includes a full list of present species. This habitat is considered to have moderately high commercial value (USDA, 1979) and some of these areas have been selectively logged in the past.

**Sagebrush-Steppe.** Sagebrush-steppe is extensively distributed throughout southeastern Oregon on stony shallow soil at elevations ranging from 3,500 to 7,000 feet. Within the analysis area this habitat type generally occurs between 4,000 and 5,000 feet, adjacent to western juniper habitats on well-drained loams and stony loams derived from weathered tuff and basalt (NRCS, 1985).

This habitat is characterized by shrubs. Low sagebrush is the most common species, accounting for 15 to 30 percent of the cover. Big sagebrush and rabbitbrush are also common in some areas. Sandberg's bluegrass is the most common species in the herbaceous layer, accounting for 10 to 20 percent of the cover. Other grasses such as Idaho fescue, Thurber's needlegrass, cheatgrass, and intermediate wheatgrass (*Elytrigia intermedia*) were also present but generally made up less than 5 percent of the cover. Common forbs included blue-eyed Mary, stoneseed (*Lithospermum ruderale*), phlox, buckwheat (*Eriogonum umbellatum*), and fleabane (*Erigeron* spp.). Refer to Table 3.4-2 for a full listing of vegetative species.

**Ruderal Areas.** Ruderal areas were observed along the margins of agricultural and developed areas at elevations between 4,100 and 4,200 feet. This habitat type occurs on loamy soil derived from weathered diatomite, basalt, and tuff as well as sandy loams formed from alluvial and lacustrine sediments. The vegetation in these areas is generally sparse and characterized by dominance of non-native species such as cheatgrass, tansy mustard, and clasping pepperweed (*Lepidium perfoliatum*). Native species are either absent or provide only minimal cover.

**Agricultural Lands.** The majority of the lowland areas within the analysis area have been converted to agricultural use. These areas occur on the loamy soil, formed in alluvial and lacustrine deposits on low terraces throughout the analysis area. Agricultural lands include cultivated crops, irrigated pasture, unimproved pasture, and fallow fields.

Cultivated crops areas are intensely managed for agricultural production. Common crops within the analysis area include alfalfa, wheat, barley, and oats. Irrigated pastures are areas that have been disked and planted with forage crops such as intermediate wheatgrass, tall fescue (*Festuca arundinacea*), and Kentucky bluegrass (*Poa pratensis*). Pasture land within the analysis area is used for cattle, sheep, and horses. In the higher elevations and more remote basins, pasture areas are not irrigated. The unimproved pasture areas appear to have been disked at some point and planted with forage grasses such as intermediate wheatgrass, tall fescue, and Kentucky bluegrass. Rabbitbrush and low sage are often present along the margins of unimproved pastures. These habitats are currently used for sheep and cattle grazing. Fallow fields are areas that were recently used for dryland farming of wheat and barley, but are no longer in production. These areas are characterized by a sparse cover (10 to 15 percent) of intermediate wheatgrass and ruderal species such as tansy mustard, clasping pepperweed, blue-eyed Mary, and yellowspine thistle (*Cirsium ochrocentrum*). Most of these lands are currently leased for seasonal cattle grazing.

**Aquatic Habitats.** Aquatic habitats within the analysis area include the Lost River, freshwater marsh, seasonal wetlands, sedge wet meadows, wet meadows, stock ponds, and agricultural canals.

The Lost River watershed is a closed, interior basin covering approximately 3,000 square miles of the Klamath River watershed in southern Oregon and Northern California. The headwaters originate east of the Clear Lake Reservoir in Modoc County, California, and flow approximately 75 miles to the Tulelake Sump. Seasonal flows in the Lost River are controlled by releases from the Clear Lake Dam. The Lost River was the only fish-bearing perennial habitat observed in proximity to the analysis area.

Several intermittent creeks were observed in the analysis area during field surveys. These creeks were dry at the time of the, but had defined bed and bank features. Most of the drainages either lacked vegetation or contained only sparse upland vegetation within the channel. Several irrigation canals have been excavated to facilitate surface drainage and water transport for agricultural crops and pasture lands in the basin areas. These channels appear to be routinely maintained and were largely devoid of vegetation.

Freshwater marsh habitat was characterized by a mosaic of perennial, emergent monocots and areas of open water. Species such as cattail (*Typha latifolia*) and bulrush (*Scirpus* sp.) are found in the deeper areas where sedges (*Juncus* sp.) and rushes (*Carex* sp.) are found in the seasonally-flooded areas around the perimeter of the marsh. These wetlands occur on the somewhat poorly-drained soil formed in alluvial lacustrine sediments. A hardpan is present between 20 and 40 inches and the water table is typically shallow, ranging from 1 to 3.5 feet below the ground surface (NRCS, 1985).

Sedge wet meadow habitat is characterized by seasonal inundation, with surface water present during the winter and early spring, but absent by the end of the growing season. This habitat type occurs on soil derived from weathered diatomite, tuff, and basalt (NRCS, 1985). The vegetation is characterized by a dense cover of low-growing monocots such as sedges and rushes. A few forb species such as dock (*Rumex crispus*), mouse-tail (*Myosurus minimus*) and Bach's downingia (*Downingia bacigalupii*) were observed along the outer margins during field surveys, but accounted for only a minimal amount of the total vegetative cover. Aquatic buttercup (*Ranunculus aquatilis*) was present where there was open water.

Wet meadow habitats occurred on poorly-drained clay soil that formed in sediments from weathered tuff and basalt (NRCS, 1985). This habitat is characterized by the presence of surface water during the winter and early spring, and the absence of water during the summer months. Characteristic vegetation includes species such as tufted hairgrass (*Deschampsia cespitosa*), Baltic rush (*Juncus balticus*), and sedges (*Carex* spp.). Some areas have been disked and planted with pasture grasses such as tall fescue, timothy (*Phleum pratense*), and meadow foxtail (*Alopecurus pratensis*).

Stock ponds were observed in areas where berms had been constructed within natural drainages to retain water for livestock. The hydrology in these areas was variable, with some ponds containing several inches of water and other areas dry at the time of the survey. Vegetation in these areas included sedges, rushes, aquatic buttercup, and dock.

**Developed Areas.** Developed areas include residential, agricultural, and industrial sites within the analysis area such as farm homes, dairies, the PG&E GTN compressor station, and Captain Jack Substation. The natural vegetation has been extensively disturbed in these areas.

**Oregon Department of Fish and Wildlife Habitat Categories.** The ODFW habitat classification system, as described in OAR 635-415-0025, ranks habitats according to six categories based on their relative distribution, importance to fish and wildlife, and mitigation potential. Each ODFW habitat category is associated with specific mitigation goals and standards. Habitats identified within 0.25 mile of the analysis area and associated pipelines and electric transmission lines were assigned to one of the six habitat categories (Figure 3.4-2).

**Definitions.** To assign each habitat in the analysis area to an ODFW habitat category, determinations must be made for each habitat regarding whether it is “essential,” “limited,” or “important.”

- *Essential habitat* is defined as “any habitat or set of habitat conditions which if diminished in quality or quantity, would result in depletion of fish or wildlife species.”
- *Limited habitat* is defined as “an amount insufficient or barely sufficient to sustain wildlife populations over time.”
- *Important habitat* is defined as “any habitat recognized as a contributor to sustaining fish and wildlife populations on a physiographic province basis over time.”
- *Species* is all members of an individual taxon.
- *Population* is an interacting group of individuals of the same species occupying a defined geographic area.

The following ODFW habitat categorizations were developed by applying the ODFW definitions after consultation with ODFW staff (McEwen, 2002). A complete description of ODFW habitat classifications is found in Table 3.4-3.

**ODFW Habitat Category 1.** The proposed Energy Facility would not impact any Category 1 habitats. Category 1 is considered irreplaceable, essential habitat for fish and wildlife species. No plant communities or landforms identified in the analysis area were considered to be Category 1 habitats.

**ODFW Habitat Category 2.** Category 2 is considered essential and limited habitat for fish and wildlife species. The Lost River provides essential habitat for the Federal and state-listed Endangered shortnose sucker (*Chasmistes brevirostris*) and Lost River sucker (*Deltistes luxatus*). Certain wetland areas including freshwater marsh and sedge wet meadows, provide important habitat for a variety of species. Natural wetland habitats are relatively rare in the Klamath Ecological Province, making them important.

Areas classified by Klamath County as high-density winter mule deer range are designated as Category 2 habitat and are limited in Klamath County. Most of these areas provide important foraging habitat for mule deer and pronghorn antelope. A variety of birds (including migratory species and raptors) and small mammals also forage in this habitat type. Approximately 46 acres of impacts may occur in high-density deer range. However, of

the County-mapped high-density deer winter range that would be permanently disturbed by the Facility, a portion (approximately 13.9 acres) actually consists of fallow agricultural fields which provide minimal habitat and forage value for wintering deer. These areas do not provide biological value consistent with their Category 2 designation.<sup>13</sup> Nonetheless, the project proponent has evaluated and mitigated for them as Category 2 lands.

High-density winter mule deer range is covered by Klamath County's Significant Resource Overlay (SRO), which is discussed in Section 3.10, Land Use Plans and Policies.

**ODFW Habitat Category 3.** Category 3 is considered essential or important, but of limited habitat value for wildlife. The Category 3 habitats identified in the analysis area include juniper-sagebrush, sagebrush-steppe, and ponderosa pine habitats. The vegetation in these areas is characterized by relatively intact natural plant communities. Contiguous areas dominated by native vegetation generally provide better habitat for native fish and wildlife species than areas that have been altered by human activity or have become dominated by nonnative plant species (Johnson and O'Neal, 2001).

Certain wetland habitats such as wet meadows and intermittent creeks provide important seasonal habitat for a variety of wildlife species and are considered to be Category 3 habitats.

Medium-density winter mule deer range is classified as Category 3 habitat. This habitat is similar to the Category 2 habitat, but may not contain the quality or quantity of foraging habitat or cover to warrant a higher category status. A variety of birds (including migratory species and raptors) and mammals forage in this habitat type. Medium-density winter mule deer range is covered by Klamath County's SRO, which is discussed in Section 3.10, Land Use Plans and Policies. Approximately 29.9 acres of impacts may occur in areas classified as Category 3 habitats.

**ODFW Habitat Category 4.** Category 4 includes those habitats that are important, but not essential or limited. The western juniper woodland with a sparse understory consisting primarily of sparse non-native annual grasses and forbs is of relatively low value for wildlife and considered Category 4 habitat. This area is adjacent to the high-density winter mule deer range and may be used as a migration corridor, but provides minimal forage value. This type of habitat may provide mule deer bedding and hiding cover.

Agricultural canals are classified as Category 4 habitats. These areas provide minimal habitat value for fish and aquatic species, but are considered part of the Lost River watershed and therefore important to the overall water quality of the region.

Cultivated crops, irrigated pasture, unimproved pasture, fallow fields, and ruderal areas are classified as Category 4 habitat. These areas have been altered by human activity and generally support few or no native plant species, but provide habitat for a variety of wildlife species. These areas also provide foraging habitat for mule deer and pronghorn antelope. A variety of birds including migratory species and raptors forage in agricultural fields and

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<sup>13</sup> The County mapped high-density deer winter range at a very gross scale and created winter range boundaries based on property lines rather than habitat delineations. Accordingly, some lesser-value land is included on the maps. In the present case, if the 57.6 acres referred to in the text were to be rated based on biological criteria rather than inclusion on the County maps, they would be rated Category 4.

pastures. Approximately 32.8 acres of impacts may occur in areas classified as Category 4 habitats.

**ODFW Habitat Category 5.** No Category 5 habitat was identified within the analysis area. Category 5 has high potential to become either essential or important habitat for fish and wildlife. No plant communities or landforms identified in the analysis area were considered to be Category 5 habitats.

**ODFW Habitat Category 6.** Category 6 habitat has low potential to become essential or important for fish and wildlife. Developed areas such as residential areas, dairy farms, and electrical substations and natural gas pumping stations are considered to provide low-value habitat for wildlife species. No landforms identified in the analysis area were considered to be Category 6 habitats.

### 3.4.1.2 Plant and Animal Species

**Plant and Animal Species in the Project Area.** The area around the Energy Facility supports a variety of plant and animal life. A survey of areas in the vicinity of the Energy Facility was conducted in May 2002 to identify and document animal and plant species occurring within the Energy Facility site and adjacent features. Additional surveys were conducted in June and July 2002. Table 3.4-4 provides a listing of animal species observed during the survey; Table 3.4-2 provides a listing of plant species, including those identified as noxious weeds by the Oregon Department of Agriculture (ODA). Some of the species identified as occurring or having the potential to occur in the area are listed by state or Federal regulations as having special protection status. These are described below under the heading “Special-Status Species.” Species that are listed as state or Federal threatened and endangered species are also described below.

**Noxious Weeds.** The following noxious weeds have been observed in the Facility area and have the potential to spread as a result of increased disturbance, inhibit natural regeneration of desirable species, and reduce the success of revegetation efforts:

- Bull thistle (*Cirsium vulgare*)—Widespread, but not abundant in the project area
- Field bindweed (*Convolvulus arvensis*)—Common in fallow agricultural fields, but limited distribution in the project area
- Medusa-head (*Taeniatherum caput-medusae*)—Limited to the area around Captain Jack Substation; species is present, but not abundant
- Quack grass (*Elytrigia repens*)—Limited distribution in the project area in pastures and along roadsides
- Scotch thistle (*Onopordum acanthium*)—Locally common in disturbed areas, limited where dense native vegetation is present
- Musk thistle (*Carduus nutans*)—Locally common in disturbed areas, limited where dense native vegetation is present

Other non-native, weedy species common in the Facility area included:

- Yellow spine thistle (*Cirsium ochrocentrum*)—Common in fallow agricultural fields

- Cheatgrass (*Bromus tectorum*)—Locally common in highly disturbed areas, but limited where dense native vegetation is present
- Tansy mustard (*Descurainia sophia*)—Common in fallow agricultural fields and highly disturbed areas
- Field pepperweed (*Lepidium campestre*)—Common in fallow agricultural fields
- Tumble mustard (*Sisymbrium altissimum*)—Common in fallow agricultural fields
- Tubercled crowfoot (*Ranunculus testiculatus*)—Common in some highly disturbed areas
- Common mullein (*Verbascum thapsus*)—Locally abundant in areas of recent development

**Special-Status Species.** Special-status species are those identified by Federal or state resource agencies as requiring special protective management measures due to potential threats to their continued survival. In the Energy Facility area, both Federal and state special-status species occur. Federal and state designations for special-status species are discussed briefly below. Table 3.4-5 shows Federal and state special-status species identified by Federal and state agencies as having the potential to be present in the Facility area. Species identified by the Oregon Natural Heritage Program (ONHP) and the Nature Conservancy Natural Heritage Network are also shown in Table 3.4-5. In addition, Table 3.4-5 notes whether those species, or suitable habitat for those species, were observed during the survey conducted in June and July of 2002.

The state of Oregon designates a number of categories of special-status species. Agencies with jurisdiction over these species are ODFW and the ONHP. Categories of special-status species include:

- ODFW
  - C - Candidate for state listing as Threatened or Endangered
  - V - Vulnerable, species for which listing as threatened or endangered is not believed to be imminent, and can be avoided through protective measures and monitoring.
  - U - Undetermined status, more information is needed to determine the conservation status of the species
  - P - Peripheral or naturally rare species, species on the edge of their natural range in Oregon, or have naturally low populations within the state
- ONHP
  - 1—Taxa are threatened, endangered throughout their range
  - 2—Taxa which are threatened or endangered in Oregon, but more secure elsewhere
  - 3—Review list, taxa for which more information is needed to determine the conservation status
  - 4—Species which are of conservation concern, but are not currently threatened or endangered

- BLM
  - BS—Bureau Sensitive in Oregon and Washington—species that could easily become endangered or extinct in Oregon and Washington, and are eligible for Federal or state listing or candidate status
  - BSO—Bureau Sensitive in Oregon—same as above but specific to Oregon
  - BSW—Bureau Sensitive in Washington—same as above but specific to Washington
  - BA—Bureau Assessment in Oregon and Washington—species that are not presently eligible for official Federal or state status but are of concern in Oregon and Washington
  - BAO—Bureau Assessment in Oregon—same as above but specific to Oregon
  - BAW—Bureau Assessment in Washington—same as above but specific to Washington
  - BT—Bureau Tracking in both Oregon and Washington—an early warning for species that may become of concern in the future in Oregon and Washington
  - BTO—Bureau Tracking in Oregon—same as above but specific to Oregon
  - BTW—Bureau Tracking in Washington—same as above but specific to Washington

Special-status species observed in the analysis area included the pygmy rabbit (*Brachylagus idahoensis*), American white pelican (*Pelecanus erythrorhynchos*), and the greater sandhill crane (*Grus canadensis*). In addition to these species, there were unconfirmed sightings of the sagebrush lizard (*Sceloporus graciosus*) and tricolored blackbird (*Agelaius tricolor*) during the surveys. Evidence of little brown bats (*Myotis* sp.) was also observed in several old structures south of the water supply pipeline alignment. No special status plant species were found, and no sites are known to occur on adjacent BLM land. As documented in Table 3.4-4, suitable habitat for a number of other species was observed during the visit, although the species themselves were not seen. Species descriptions for these additional species are found in Appendix C.

**Pygmy Rabbit.** Pygmy rabbit habitat consists of areas dominated by sagebrush with deep, friable, sandy soil (Verts and Carraway, 1998). Several areas with open sagebrush cover within the analysis area were identified as potential habitat for pygmy rabbits. These habitat areas were surveyed extensively and pygmy rabbits were observed at three locations along the proposed electric transmission line alignment. The first sighting was documented just west of the proposed electric transmission line approximately 2.5 miles north of the Captain Jack Substation, the second observation was just north of Captain Jack Substation, and the third observation was in the northern portion of the electric transmission line approximately 1 mile southwest of the Energy Facility site (Figure 3.4-3).

**Northern Sagebrush Lizard.** The northern sagebrush lizard inhabits high elevation sites throughout most of southern and central Oregon, but is seldom found above 6,000 feet (Nussbaum et al., 1983 and Brown et al., 1995). Northern sagebrush lizards are often found in open areas, such as sagebrush-steppe with plentiful light and shady hiding places among

shrubs, rocks, or roots. They are often associated with volcanic rocks, which absorb heat and allow for efficient thermoregulation. Suitable habitat was present throughout much of the analysis area and a single northern sagebrush lizard was potentially identified on the northern portion of the proposed Energy Facility site (Figure 3.4-3).

**American White Pelican.** During breeding season, American white pelicans are found at inland lakes and marshes. A predator-free island is required for nesting. During nonbreeding seasons, they may occur on almost any body of water, including oceans (Marshall, 1992, Paullin et al., 1988). Five white pelicans were observed at high altitude, circling over the proposed Energy Facility site. A single white pelican carcass was found approximately 1,250 feet east of the electric transmission line about 2 miles southwest of the Energy Facility site (Figure 3.4-3). Several white pelicans were also observed in the Lost River, several miles west of the analysis area.

**Tricolored Blackbird.** Tricolored blackbirds are found in freshwater marshes with emergent vegetation (cattails and bulrushes) or in thickets of wouldows or other shrubs such as Himalayan blackberry, growing in and around wetland areas. Tricolored blackbirds are often found breeding in the company of red-winged blackbirds (*Agelaius phoeniceus*) (Orians, 1961). Tricolored blackbirds were potentially identified in a flock of red-winged blackbirds in a freshwater marsh approximately 1,200 feet southeast of the Babson well site (Figure 3.4-3).

**Greater Sandhill Crane.** Sandhill cranes would nest in marshes and wet meadows or in drier grasslands and pastures, including irrigated hay meadows (Littlefield and Paullin, 1990.). A single sandhill crane was observed foraging adjacent to a freshwater marsh approximately 1,200 feet southeast of the water supply well system site (Figure 3.4-3).

**Little Brown Bat.** *Myotis* species are closely associated with water and are generally found in moist forests and riparian woodlands. This bat may also use structures such as abandoned buildings, barns, and houses for roosts (Fenton and Barclay, 1980). Evidence of little brown bats was observed in several abandoned buildings approximately 300 feet south of the proposed water supply pipeline (Figure 3.4-3).

**Federally and State Protected Threatened and Endangered Species.** The Endangered Species Act (ESA) is the primary Federal law protecting animal and plant species believed to be in danger of extinction. The ESA establishes a process for designating species for protection and for ensuring that Federal actions do not jeopardize the continued existence of species “listed” under the ESA. The Act includes prohibitions against “taking” individuals of a listed species, and authorizes the Federal government to deny funding and permit approvals for projects or actions that would result in such a taking. The ESA designates species under one of several categories of protection: endangered, threatened, proposed for listing, candidate for listing, and species of concern. Endangered and threatened species are fully protected by the provisions of the Act; species proposed for listing are generally afforded the same level of protection as listed species; and candidate species and species of concern are under study for listing, but are not afforded the level of protection ESA provides listed species.

These species are listed or being considered for listing as threatened or endangered, pursuant to the Federal ESA. The only sensitive species observed in the field or known to

occur at or near the proposed Energy Facility site or along the pipeline and electric transmission line easements is the bald eagle. No special-status plant species were found during surveys conducted in 2001 and 2002. See Table 3.4-6 for a list of threatened, endangered, and candidate species known or suspected to occur in the analysis area. See Figure 3.4-4 for a map of rare, threatened, and endangered species locations.

**Bald Eagle.** The bald eagle is known to occur in the analysis area and suitable nesting habitat was identified within the ponderosa pine (*Pinus ponderosa*) habitat for a 1.3-mile section of the electric transmission line approximately 2 miles north of the Captain Jack Substation. No nests were observed during surveys conducted in 2001 and 2002. Nest locations are found in tall trees and rocky cliffs, and may be located as far as 10 miles from foraging areas (Csuti et al., 1997). Approximately 80 percent of the nest locations in the Klamath River Basin are in ponderosa pine habitat (Anthony et al., 1982). With the exception of the area described earlier, none of the areas potentially impacted by the Energy Facility provides suitable nesting habitat for bald eagles. Suitable foraging habitat (small mammals, and carrion in the form of pronghorn antelope, wintering and resident deer, and cattle) occurs on the Energy Facility site and near associated linear facilities.

During the mid-June surveys for nesting birds and raptors, two adult and two juvenile bald eagles were observed at McFall Reservoir, approximately 0.75 mile east of the electric transmission line. On June 11, 2002, Steve Hayner (biologist for the Bureau of Land Management) reported a nest site at McFall Reservoir to Frank B. Isaacs, Senior Faculty Research Assistant at Oregon State University. Mr. Isaacs is a recognized bald eagle expert in this region. At this time two mostly feathered chicks, two adults, and four juvenile bald eagles were observed (Isaacs, 2002). Adult and juvenile bald eagles were also observed flying and foraging over the water supply well area, the water supply pipeline, the electric transmission line, and the Energy Facility site. On July 9, 2002, six juvenile and one adult bald eagle were observed at McFall Reservoir.

### 3.4.1.3 Wetlands

Information on wetlands was obtained from review of U.S. Geological Survey (USGS) 7.5-minute quadrangles, aerial photographs, National Wetland Inventory (NWI) maps, and soil maps for Klamath County, Oregon. No regional or local wetland maps have been prepared for the Energy Facility (Cary, 2001). Field investigations and wetland delineations were conducted between May 6 and May 10, 2002.

Waters of the state are defined as natural waterways, including tidal and nontidal bays, intermittent creeks, constantly flowing streams, lakes, wetlands, and other bodies of water in the state, navigable and nonnavigable. Wetlands are defined as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

Wetlands and wetland habitat identified in the study area included the Lost River, freshwater marsh, seasonal wetlands and creeks, and agricultural canals. A summary of wetland areas identified is provided in Table 3.4-7. Waters-of-the-state and wetland locations are shown in Figure 3.4-5. A wetland delineation report was filed with the U.S.

Army Corps of Engineers (Eugene, Oregon) and the Oregon Division of State Lands (Bend, Oregon) on August 22, 2003.

**The Lost River.** The Lost River is described under “Aquatic Habitats” in Section 3.4.1.1. The proposed natural gas and water supply pipelines would be located approximately 900 feet and 1,500 feet south of the Lost River, respectively. The proposed Energy Facility site is more than 1.3 miles south of the Lost River.

**Freshwater Marsh.** The freshwater marsh habitat is described in Section 3.4.1.1. East Langell Valley Road creates the eastern boundary of the wetland feature. This habitat type was observed approximately 900 feet south of the water supply well system site at the east end of the proposed water supply pipeline.

**Seasonal Wetland.** The only seasonal wetland area observed in the immediate vicinity of the Energy Facility was Dry Lake. This feature is located approximately 200 feet west of the middle of the proposed electric transmission line route. The wetland was observed in a slight topographic depression where surface water is present for extended periods early in the growing season, but is likely absent by the end of the season in most years. The vegetation was characterized by a dense cover of rushes (*Eleocharis* sp.) and sedges (*Juncus* sp.). Surrounding vegetation consisted of western juniper (*Juniperus occidentalis*), low sagebrush (*Artemisia arbuscula*) Sandberg’s bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), and bluebunch wheatgrass (*Pseudoroegneria spicata*).

**Seasonal Creeks.** Seasonal creeks are typically characterized by relatively narrow, but well-defined channels in which surface water is present for extended periods of time early in the growing season, but is absent by the end season in most years (Cowardin et al., 1979). Five seasonal creeks were observed in the areas where Energy Facility features are located.

**Seasonal Creek #1.** Seasonal creek #1 is an unnamed drainage along the electric transmission line route just south of where the northern portion of the electric transmission route turns south. The channel was incised between 12 and 18 inches with an average width of 5 feet bank-to-bank. No water was present at the time of the survey. The substrate was characterized by dense cobbles underlain by sandy soil. Sandberg’s bluegrass (*Poa secunda*) was scattered throughout the channel. No suitable fish habitat was observed in this area.

**Seasonal Creek #2 (Wright Creek).** Wright Creek is a seasonal drainage located in the approximate middle of the electric transmission line easement. The creek channel was approximately 20 feet wide, with water depth ranging between 0 and 6 inches. The substrate was characterized by sandy soil with scattered cobbles. The channel was densely vegetated with rushes, sedges, and moss. Other plant species observed included dock (*Rumex crispus*) and mouse-tail (*Myosurus minimus*). No suitable fish habitat was observed in this area.

**Seasonal Creek #3.** Seasonal creek #3 is an unnamed drainage along the west side of a section of the southern portion of the electric transmission line. The drainage was characterized by an incised channel approximately 12 to 18 inches deep and 4 feet wide, with defined bed and bank features. The sandy soil of the channel was covered by a dense layer of pine needle thatch and sparse upland vegetation such as cheatgrass (*Bromus tectorum*), yarrow (*Achillea millefolium*), and sagebrush (*Artemisia arbuscula*). No water was observed in the channel at the time of the survey. A small stock pond (approximately 15 by

25 feet) was observed 2 miles north of Captain Jack Substation. Approximately 6 to 12 inches of water was present in the basin at the time of the survey. No vegetation was observed within the ponded area. No suitable fish habitat was present.

**Seasonal Creek #4.** Seasonal creek #4 was observed along the natural gas pipeline on the west side of a dairy, approximately 3,150 feet northwest of the PG&E GTN compressor station. This feature crosses under Harpold Road through a 36-inch-diameter, corrugated metal culvert. On the south side of the road, the creek channel is weakly expressed and lacks a well-defined bed and bank. No water was observed in this section of the creek and the channel is devoid of vegetation. With the exception of western juniper observed adjacent to the creek, the surrounding landscape is generally devoid of vegetation. On the north side of the road, the creek is channelized and diverted to the east along the south end of an alfalfa field for approximately 1,200 feet, at which point the channel turns north and continues for an additional 1,500 feet where it empties into the Lost River. The realigned portion of the creek channel is approximately 8 feet wide and apparently used for agricultural runoff. A few areas of intermittent ponding were observed in the channel resulting from irrigation of the adjacent alfalfa fields. No vegetation was observed in the channel at the time of the survey. The proposed natural gas pipeline would cross under a portion of the realigned channel that flows north into the Lost River, approximately 1,600 feet west of West Langell Valley Road. No evidence of recent flow was observed at the time of the survey.

**Seasonal Creek #5.** Seasonal creek #5 was observed on the west side of the PG&E GTN Bonanza compressor station, approximately 200 feet west of the proposed natural gas pipeline. No water was observed at the time of the survey, and with the exception of a few scattered clumps of intermediate wheatgrass (*Elytrigia intermedia*), the channel was devoid of vegetation. The channel passes under Harpold Road through a 10-foot-by-6 foot cement box culvert, where it continues roughly northwest through a horse pasture for approximately 500 feet, after which the channel is realigned and diverted due west into the Lost River. No evidence of recent flow was observed at the time of the survey.

**Agricultural Canals.** Six agricultural drainages were observed in the vicinity of the Energy Facility. These areas have been excavated to facilitate surface drainage and water transport for agricultural crops and pasturelands in the basin areas. These channels appear to be routinely maintained.

**Agricultural Canal #1.** Agricultural canal #1 was observed along the southeastern boundary of the proposed Energy Facility site. This earthen canal was approximately 14 feet wide and 2 to 3 feet deep. Approximately 4 inches of ponded water were present at the time of the survey. Vegetation within the channel included canary grass (*Phalaris* sp.) and spikerush (*Eleocharis* sp.). Soil in this area includes Calimums and Laki-Henly loams. This soil ranges from well-drained to somewhat poorly drained. No suitable fish habitat was observed in this area. Adjacent land use is wheat grass pasture.

**Agricultural Canal #2.** Agricultural canal #2 is a small, earthen irrigation canal located approximately 25 feet north of the proposed water supply pipeline at the easternmost extent of the alignment, adjacent to the Babson Well. The channel ranges between 3 and 4 feet wide and is between 1 and 2 feet deep. No vegetation was observed in the channel. Soil in this area is mapped as Calimus loams and Stukel-Capona loams, both of which are well-drained.

Grazing in both improved and unimproved pasture is the predominant land use in the adjacent areas.

**Agricultural Canal #3.** Agricultural canal #3 was observed along the proposed water supply pipeline approximately 450 feet west of East Langell Valley Road. This feature is an earthen irrigation canal approximately 15 feet wide with 2 to 3 feet of water flowing through the channel at the time of the survey. No vegetation was observed in the channel at the time of the survey. Soil in this area is mapped as Stukel-Capona loams, and is well-drained. Grazing in both improved and unimproved pasture is the predominant land use in the adjacent areas.

**Agricultural Canal #4.** Agricultural canal #4 is located approximately 2,000 feet west of Teare Lane and 50 feet south of the proposed water supply pipeline. This shallow, earthen canal is approximately 12 feet wide and 2 to 3 feet deep. Approximately 2 to 3 inches of ponded water were observed in the channel at the time of the survey. Grasses such as Kentucky bluegrass (*Poa pretense*), beardgrass (*Polypogon* sp.), and sedges were observed in the channel. Soil in this area is mapped as Laki Loam, and is moderately well-drained. Adjacent land uses in this area include pasture, hay crops, and western juniper-low sagebrush rangeland.

**Agricultural Canal #5.** Agricultural canal #5 is located approximately 100 feet south of the proposed water supply pipeline parallel to canal #4. This earthen channel was approximately 10 feet wide and 4 feet deep. No water was present at the time of the survey and the channel was devoid of vegetation. Soil in this area is mapped as Laki Loam, and is moderately well drained. Adjacent land uses in this area include pasture, hay crops, and western juniper-low sagebrush rangeland.

**Agricultural Canal #6.** Agricultural canal #6 is located approximately 30 feet south of Harpold Road, on the east side of the dairy and on the north side of an irrigated alfalfa field along the natural gas pipeline. This shallow, earthen canal was approximately 15 feet wide and 2 feet deep. Some grasses, sedges, and rushes were observed in the channel. Ponded water to a depth of 6 inches was observed at the west end of the canal, and was likely the result of irrigation runoff from the adjacent field. Soil in this area is mapped as Henley loams, and is somewhat poorly-drained.

### 3.4.2 Environmental Consequences and Mitigation Measures

Temporary (construction-related) and permanent impacts to habitats are quantified in Table 3.4-1. Temporary impacts from the proposed Energy Facility would result from construction of features of the Energy Facility and temporary construction parking and laydown areas. Permanent impacts over the 30-year operating life of the Energy Facility would occur at the Energy Facility site, the water supply well system, and at transmission tower locations and along the access roads for the electric transmission line. A summary of potential impacts and proposed mitigation measures for special-status species is presented in Table 3.4-8. There would be no impacts to any special-status species. As described below, the Energy Facility would have no significant unavoidable adverse impacts on vegetation and wildlife.

Impact 3.4.1. Construction and operation of the proposed Energy Facility could cause a temporary or permanent loss of vegetation and wildlife habitat.

Assessment of Impact. The Energy Facility would be located in a fallow agricultural field that has minimal habitat value. However, a portion of the field is mapped by Klamath County as high-density mule deer winter range and accordingly is classified conservatively as Category 2. There are 13.9 acres of Category 2 land. However, the soil is poor quality and non-native species such as intermediate wheatgrass have been planted in some areas as forage. The Energy Facility would also impact 4.2 acres of Category 3 land and 32.5 acres of Category 4 land (including the stormwater infiltration basin). The Category 3 areas consist entirely of fallow fields. Category 4 areas are characterized by ruderal and non-native species such as intermediate wheatgrass, tansy mustard, and clasping pepperweed. The high-density mule deer winter range (ODFW Category 2 habitat) and the medium-density mule deer winter range (ODFW Category 3 habitat) are within Klamath County's Big Game Winter Range SRO, which is discussed in Section 3.10.

Wastewater would be land applied to a 31-acre site that is fallow agricultural land (Category 2). The wastewater would be used during the growing season to irrigate pasture for cattle grazing, but the area would also be accessible to wildlife. This acreage is not included in the overall project impacts because it consists of existing fallow fields and would be irrigated only during the growing season providing forage for deer and antelope and cover for game birds. Approximately 5.7 acres would be temporarily impacted by an access road and pipeline to the irrigated fields. Permanent impacts would be 0.5 acre of Category 2 habitat.

A 4.7-acre stormwater infiltration basin would be constructed adjacent to the Energy Facility. This basin lies entirely in Category 4 designated habitat and is included in the overall impacts related to the Energy Facility.

The electric transmission line would be approximately 7.2 miles in length and would originate from the Energy Facility site to the Captain Jack Substation. The majority of the electric transmission line easement would be in Category 2 and 3 juniper-sagebrush habitat. Category 3 and 4 habitat types within the electric transmission line easement include ponderosa pine, sagebrush-steppe, fallow fields, and unimproved pasture. A total of 38 lattice-type transmission towers would be used along the alignment. Each tower would rest on four concrete footings. The total tower area would cover approximately 3,600 square feet. Construction of towers would require clearing of the vegetation within the easement at each tower location. The cleared areas would be revegetated with grasses and shrubs once construction has been completed. The open lattice structure of the towers would allow for wildlife use of the area under the towers.

For safe and reliable operation, vegetation above 10 feet within the 154-foot easement would be cleared. Wooded habitat types within the easement include Category 2 high-density deer range, Category 3 juniper-sagebrush, and Category 3 ponderosa pine forest. Removal of juniper trees is expected to provide an overall benefit to the habitat by improving understory growth of grasses and shrubs (Sitter, 2002). Permanent clearing in nonwooded habitats would be limited to the construction or improvement of access roads to the proposed tower locations.

Approximately 4.9 miles of existing and 6.6 miles of new access roads would be used for construction and operation of the electric transmission line. In some areas, existing roads may require improvements such as limited widening or surfacing with gravel. The existing roads would be mostly on privately owned land and the project proponent has access agreements to use the existing roads. Construction of new roads would occur entirely within the 154-foot easement where possible to minimize additional clearing. The project proponent would place locked gates at the entry and exit points of the new roads to control harassment and displacement of wildlife species.

A 4.1-mile natural gas pipeline would extend from the PG&E GTN compressor station to the Energy Facility site. The construction easement for the gas pipeline would be 80 feet wide. Construction of the natural gas pipeline would result in temporary impacts to approximately 43.8 acres, including approximately 13.1 acres of Category 2 high-density winter deer range (fallow field and juniper-sagebrush), 27.1 acres of Category 4 habitat, and 3.6 acres of Category 6 habitat. Other impacted general habitat types include 23.9 acres of agricultural crops, 9.0 acres of juniper-sagebrush, 0.8 acre of pasture, 3.5 acres of fallow fields, 3.0 acres of ruderal habitat, and 3.6 acres of developed land. There would be no permanent disturbance for the natural gas pipeline. Topography and vegetation would be returned to preconstruction conditions following construction.

A 2.8-mile water supply pipeline would extend from the water supply well system to the Energy Facility site. The construction easement for the water supply pipeline would be 60 feet wide. Construction of the water supply pipeline would result in temporary impacts to approximately 19.4 acres, including 6.6 acres of Category 2 habitat (juniper-sagebrush and fallow fields), approximately 1.8 acres of Category 3 habitat, and 11.0 acres of Category 4 habitat. Approximately 10.2 acres of juniper-sagebrush habitat along the easement has an understory of native shrubs, grasses, and forbs. Other habitats that would be temporarily impacted include approximately 6.3 acres of irrigated pasture, 1.4 acres of agricultural crops, 2.9 acres of fallow field, 0.8 acres of fallow field, and 0.7 acre of ruderal habitat. Of the 11.9 acres of juniper-sagebrush, 5 acres has been heavily grazed and the understory vegetation is sparse and contains non-native annual species such as cheatgrass and tansy mustard.

During operations, the Energy Facility would use water for steam generation, demineralized water production, potable water and sanitary systems, and service water. During construction, water would be used for dust suppression, compaction, vehicle and equipment cleanup, testing and commissioning of the Energy Facility systems, and miscellaneous construction-related uses. The water supply well system would consist of an existing well and two additional water supply wells. The water supply well system would permanently impact 0.3 acre of Category 4, irrigated pasture land on the east side of East Langell Valley Road. The pasture has been heavily grazed.

Recommended Mitigation Measures. To the extent practicable, the Energy Facility site, the natural gas pipeline, water supply pipeline, and electric transmission line would be located in disturbed areas or in areas with minimal habitat value. In addition, the following measures would be used to reduce, avoid, and mitigate for impacts to natural habitats, wildlife, and native plant species:

- Workers would be given environmental training to inform them of wildlife and habitat issues. This training would include information about sensitive wildlife, plants, and habitat areas as well as the required precautions to avoid and minimize impacts. Such measures shall include maintaining reasonable driving speeds to avoid harassing or accidentally striking wildlife. Construction personnel would be instructed to be particularly cautious and to drive at slower speeds from 1 hour before sunset to 1 hour after sunrise when some wildlife species are the most active. Speed limits would be posted on signs throughout the construction zone. Sensitive habitat areas would be identified in the field with appropriate signs and flagging.
- Where feasible, construction would be limited in natural areas during the breeding period of deer and antelope (April through September), as well as the nesting period of raptors (May through September).
- Maps would be prepared to show sensitive areas that are off-limits during the construction phase.
- Signs would be posted around the perimeters of any sensitive habitat areas to be avoided.
- To the extent practicable, the final design of the transmission tower locations within the ponderosa pine habitat would minimize habitat impacts by avoiding densely wooded areas.
- Construction of new roads for the electric transmission line would remain within the cleared easement where possible to minimize additional clearing.
- Following construction, topography and vegetation would be returned to preconstruction condition or better in areas of temporary disturbance. In areas where natural vegetation is removed, native perennial bunchgrasses, sagebrush, bitterbrush, and curly-leaf mountain mahogany would be planted according to a revegetation plan. A proposed mitigation plan is included in Appendix A to the Biological Assessment (which is Appendix A to this EIS).
- Certified “weed free” seed mixes and mulches would be used for restoration and revegetation.
- Revegetation seed mixes and habitat enhancement locations would be developed in consultation with ODFW and BLM.
- Wildlife watering troughs would be used to encourage use of mitigation areas by wildlife.
- Preventive measures would be employed to reduce the introduction of noxious weeds by construction vehicles (e.g., washing vehicles before bringing them to the site and other best management practices).
- Grading and clearing of vegetation would be limited to the minimum extent necessary for practical and safe working areas.

- Fences that are temporarily removed for construction purposes would be replaced with antelope-friendly fence (design to be approved by ODFW and U.S. Fish and Wildlife Service).

Figure 3.4-6 shows the proposed mitigation area for vegetation and wildlife. In addition, the proposed project would restore 91 acres of fallow agricultural land to high-quality deer habitat and another 145 acres of habitat would be improved (see Section 3.10 for additional information).

Impact 3.4.2. Construction and operation of the proposed Energy Facility would cause noise and lighting that could disturb wildlife; however, biological surveys of the Energy Facility site found no evidence of wildlife species that would be uniquely sensitive to noise.

Assessment of Impact. The proposed Energy Facility site would be located in a rural and relatively quiet area with ambient background noise at approximately 20 to 30 dBA. Peaks exceed 70 dBA near farm equipment.

Biological surveys of the Energy Facility site found no evidence of wildlife species that would be uniquely sensitive to noise. Because the Energy Facility site would be located in a low area (relative to surrounding topography), noise impacts to nearby habitat areas would be limited in geographic area and would likely be minor. Based on the available research and the estimated noise level increase during operations, it is unlikely that operation of the Energy Facility would result in adverse effects on the wildlife-inhabiting areas near the Energy Facility site.

No specific regulation has been identified for the Energy Facility site that applies to noise levels in wildlife areas. Noise regulations typically apply to noise-sensitive property defined in human terms such as residences, schools, churches, and hospitals. It is possible that a new noise source could cause reduced wildlife use of surrounding habitat, thereby reducing the value of that habitat. In assessing this possibility, potential impacts to wildlife generally are evaluated on a physiological and behavioral level.

Noise during construction would be temporary and may cause some wildlife species to reduce their use of nearby habitats (behavioral) during the construction period (an indirect disturbance). Some species, such as nesting birds and deer, may modify their behavior during the day when construction noise is present by modifying foraging and nesting locations slightly. The extent of these indirect disturbances would depend on the particular tolerances of species.

Animals are more likely to habituate to operational noise than to construction noise. It is expected that the species currently inhabiting the area around the Energy Facility site would become habituated to the consistent and slight increase in the ambient noise level that would occur during operations. The closest habitat area for wildlife, including the wildlife mitigation area, would be approximately 2,500 feet from the Energy Facility. A noise level of 40 dBA is predicted at this distance. This level is well below the reported levels (80 to 100 dB sound pressure level [SPL]) known to be detrimental to wildlife. Approximately half of the wildlife mitigation area would be within the 40 dBA contour and the remaining half would be below 40 dBA. Operation of the Energy Facility would not impact the wildlife mitigation area.

Operation of the Energy Facility would result in an increase in ambient light. The disturbance effects would be localized to the immediate area of the Energy Facility and wildlife is expected to habituate to these changes. Low-impact directional lighting would be used to focus the light directly toward the Energy Facility, thus reducing ambient light into adjacent areas.

Recommended Mitigation Measures. Workers would be given environmental training to inform them of wildlife and habitat issues. This training would include information about sensitive wildlife, plants, and habitat areas as well as the required precautions to avoid and minimize impacts. Such measures shall include maintaining reasonable driving speeds to avoid harassing or accidentally striking wildlife. Construction personnel would be instructed to be particularly cautious and to drive at slower speeds from 1 hour before sunset to 1 hour after sunrise when some wildlife species are the most active. Speed limits would be posted on signs throughout the construction zone. Sensitive habitat areas would be identified in the field with appropriate signs and flagging.

Where feasible, construction would be limited in natural areas during the breeding period of deer and antelope (April through September), as well as the nesting period of raptors (May through September).

The topographic position of the proposed Energy Facility would minimize indirect effects of noise and ambient light on adjacent habitats.

#### Impact 3.4.3. Bald Eagles and other birds could be injured or killed by collisions with power lines.

Assessment of Impact. The Energy Facility may impact the bald eagle as a result of collisions with the electric transmission lines. To reduce the potential of avian collisions, the project proponent would provide mitigation by installing bird flight diverters (BFDs) on the top static wires along the entire electric transmission line. BFDs on overhead groundwires have reduced collisions in the range of 57 percent to 89 percent (Avian Power Line Interaction Committee, 1994).

Critical factors in determining the potential for a strike include the height of the towers and lines compared with the normal flight behavior of the bird, wing-loading and its effects on maneuverability, visibility, and the number of times a bird crosses the electric transmission line during daily flight. Collisions by raptors and songbirds are considered to be low due to the maneuverability and flight behavior of these birds (APLIC, 1994). Most areas with high rates of collisions are located close or parallel to areas used by waterfowl (high-wing-load birds) with adverse sight conditions (e.g., fog and low clouds). Collisions typically occur when birds are moving between foraging areas and resting areas during bad weather conditions.

The electric transmission line would not pose risk of electrocution to raptors. The towers would be designed and constructed with adequate separation between phase conductors and conductors to ground so that it would be physically impossible for a bird's wings to bridge any space that would result in the conduction of current. With these design features, there should be no risk of electrocution from the electric transmission line.

Electric transmission lines may allow for population increases of some raptors in areas where natural nesting substrate is limiting (APLIC, 1996). Unlike nests on cliffs with southern exposures, tower nests on beams and cross-braces offer shading for the birds (Anderson, 1975; Nelson and Nelson, 1976; Steenhof et al., 1993). In addition, the height of the nests and their openness (compared to a heat-absorbing cliff) provide air circulation for cooling. Tower-nesting raptors may also benefit by increased protection from ground predators and range fires (Steenhof et al., 1993).

A biological assessment has been developed for potential impacts to bald eagles and is included in Appendix B.

Recommended Mitigation Measures. No mitigation measures beyond those described in the impacts section above are needed.

Impact 3.4.4. Construction and operation of the proposed Energy Facility would disturb less than 0.5 acre of wetlands.

Assessment of Impact. Construction of the electric transmission line access road would require placement of culverts and minor amounts of fill material in three intermittent creeks affected by the proposed project. No other fill or removal would occur in any of the wetland features identified within the Energy Facility area. None of the drainages identified within the Energy Facility area are fish-bearing streams or designated as a Scenic Waterway. No other wetland features would be impacted.

**Seasonal Creek #1.** This drainage would be crossed in two locations by a 14- to 16-foot-wide access road for construction and maintenance of the electric transmission line. The roadbed would be 14 to 16 feet wide. A culvert would be placed under the roadway to allow for uninterrupted flow of the drainage.

**Seasonal Creek #2 (Wright Creek).** This drainage would be crossed by the 14- to 16-foot-wide electric transmission line access road. A culvert would be installed to ensure the uninterrupted flow of water through the channel.

**Seasonal Creek #3.** This channel would be crossed by the 14- to 16-foot-wide electric transmission line access road. A culvert would be placed within the channel to facilitate uninterrupted water flow.

Recommended Mitigation Measures. Impacts to wetland features, including agricultural canals, would be avoided using conventional boring techniques to install the water supply and natural gas pipelines. Erosion control measures would be used where necessary to prevent impacts to wetland areas in close proximity to work areas. Existing grades and drainages would be preserved.

Fill material placed in the seasonal creek to facilitate vehicle access along the electric transmission line would be the minimum amount necessary to allow crossing of the channel. Culverts would be placed under the roadway to facilitate and maintain existing drainage.

Impact 3.4.4. For the process wastewater management alternative by beneficial use of the water for irrigated pasture, constituents in the process wastewater would not be expected to be toxic to wildlife.

Assessment of Impact. A Screening-Level Ecological Risk Assessment (ERA) following EPA and ODEQ guidance was conducted to determine the potential risk to plants, soil invertebrates, and wildlife from the wastewater application. Soil screening-level values for plants, invertebrates, birds, and mammals were available from ODEQ (2001) for many of the inorganic wastewater constituents. For birds, cobalt, iron, silver, thallium, and tin were lacking ODEQ screening values, but studies from which benchmarks could be developed for these metals were available. Similarly, iron, silver, tin, cyanide, and phenol benchmarks were developed for mammals from other sources. Unlike the ODEQ screening values, which are presented as mg constituent per kg soil, these benchmarks are presented as a dose (mg constituent/kg body weight/day) to the receptor. For comparison of these benchmarks, doses based on the maximum soil concentration, literature-derived wildlife parameters (i.e., diet, body weight, food ingestion rate, and soil ingestion rate), and literature-derived bioaccumulation factors for wildlife food items (i.e., plants and arthropods) were calculated for one bird (western meadowlark) and one mammal (deer mouse) for which exposure is likely to be high.

This assessment is included in Appendix C to the biological assessment (which is Appendix C to this EIS). The process wastewater constituents evaluated, except aluminum, barium, boron, chromium III, copper, fluoride, iron, manganese, molybdenum, and nickel, passed the screening evaluation and would be considered to present no risk to ecological receptors.

After further evaluation, background concentrations were found to be the primary driver for screening failures of aluminum, barium, chromium III, copper, fluoride, iron, manganese, and nickel, with negligible incremental contributions of these constituents to the risk estimation. Considering the bioavailability of boron to plants (less than 5 percent of total boron) substantially reduced the risk estimation for boron. Although both incremental and total (incremental + background) boron concentrations continued to exceed screening levels for sensitive plant species, incremental and total exposures were below toxicity thresholds for invertebrates and for boron-tolerant plant species when adjusted for boron bioavailability. Estimated maximum concentrations of molybdenum exceeded the soil benchmark for plants; however, risk to terrestrial plants from molybdenum exposure is considered low because of the low exceedance of the screening value and the highly conservative assumptions applied to the risk estimation. Thus, none of the constituents evaluated are considered to present significant risk to ecological receptors.

Recommended Mitigation Measures. No mitigation measures are recommended because, given the current information, there would not be a significant risk to ecological receptors.

### **3.4.3 Cumulative Impacts**

In the Klamath Ecological Province, past and present agricultural development has had a substantial impact on the amount of native plant communities in areas like the Energy Facility site. These areas have been overgrazed and soil productivity is low. Biodiversity has been reduced by the loss and fragmentation of native habitats. Of the 108.7 acres

permanently impacted, approximately 49 acres have been previously impacted by farming practices and the remaining acreage has been grazed by livestock periodically in the past.

The proposed project would not add to the cumulative degradation of the area's habitat, but would rather improve it. The project proposes to restore 91 acres of fallow field to high-quality deer habitat and to improve habitat values on another 145 acres of Facility-owned property. In addition, 31 acres would be irrigated with project wastewater. This irrigated area would produce forage crops for cattle, deer, and antelope.

Construction of the electric transmission line would require the filling and placement of culverts in three small intermittent drainages. This construction and filling would impact less than 0.5 acre of wetlands. This impact would contribute to cumulative impacts to wetlands in the vicinity of the project.

The construction of the transmission towers and electrical lines may result in potential cumulative impacts on eagles, other raptors, and songbirds. To minimize the potential cumulative impacts, mitigation measures as identified in Section 3.4.2 would be implemented.

**TABLE 3.4-1**  
Acreage of Permanent and Temporary Impacts by Habitat

Feature	Total	Habitat Category ODFW 2	Habitat Category ODFW 3	Habitat Category ODFW 4	Habitat Category ODFW 5	Habitat Category ODFW 6	Juniper-Sage	Sage-Steppe	Pine	Ag Field	Pasture	Unimproved Pasture	Fallow	Ruderal	Developed
<b>Permanent Disturbance During the 30-Year Operating Life of the Energy Facility</b>															
Energy Facility Site	50.6	13.9	4.2	32.5									50.6		
Water supply well system	0.3			0.3							0.3				
Water supply pipeline	0.0														
Natural gas pipeline	0.0														
Electric transmission line	57.3	31.6	25.7				31.6	10.4	12.4			2.1	0.8		
Access road to pasture	0.5	0.5											0.5		
<b>Total</b>	<b>108.7</b>	<b>46.0</b>	<b>29.9</b>	<b>32.8</b>	<b>0.0</b>	<b>0.0</b>	<b>31.6</b>	<b>10.4</b>	<b>12.4</b>	<b>0.0</b>	<b>0.3</b>	<b>2.1</b>	<b>51.9</b>	<b>0.0</b>	<b>0.0</b>
<b>Temporary and Permanent Disturbance</b>															
Energy Facility (includes infiltration basin)	50.6	13.9	4.2	32.5									50.6		
Construction parking/laydown	71.0	19.7	6.4	44.9									71.0		
Subtotal—Energy Facility Site	121.6	33.6	10.6	77.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121.6	0.0	0.0
Water supply well system	1.3			1.3							1.3				
Water supply pipeline	19.4	6.6	1.8	11.0			10.2			1.4	6.3		0.8	0.7	
Natural gas pipeline	43.8	13.1		27.1		3.6	9.0			23.9	0.8		3.5	3.0	3.6
Electric transmission line	64.9	36.3	28.6				35.2	12.2	14.0			2.4	1.1		
Access road to pasture	0.5	0.5											0.5		
Irrigation pipeline to pasture	5.2	4.8		0.4									5.2		
<b>Total</b>	<b>256.7</b>	<b>94.9</b>	<b>41.0</b>	<b>117.2</b>	<b>0.0</b>	<b>3.6</b>	<b>54.4</b>	<b>12.2</b>	<b>14.0</b>	<b>25.3</b>	<b>8.4</b>	<b>2.4</b>	<b>132.7</b>	<b>3.7</b>	<b>3.6</b>



**TABLE 3.4-2**  
Plant Species Observed During Botanical Surveys of the Analysis Area  
(Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<b>Apiaceae</b>			
<i>Lomatium nudicaule</i>	Pestle lomatium	Native	Perennial
<i>Lomatium triternatum</i>	Lewis' lomatium	Native	Perennial
<i>Lomatium utriculatum</i>	Common lomatium	Native	Perennial
<i>Perideridia oregana</i>	Oregon yampah	Native	Perennial
<b>Asclepiadaceae</b>			
<i>Asclepias speciosa</i>	Showy milkweed	Native	Perennial
<b>Asteraceae</b>			
<i>Achillea millefolium</i>	Yarrow	Native	Perennial
<i>Agoseris glauca</i>	Pale agoseris	Native	Perennial
<i>Antennaria rosea</i>	Rosy pussytoes	Native	Perennial
<i>Anthemis arvensis</i>	Corn chamomile	Non-native	Annual
<i>Artemisia arbuscula</i>	Low sagebrush	Native	Shrub
<i>Artemisia tridentata</i>	Big sagebrush	Native	Shrub
<i>Balsamorhiza sagittata</i>	Arrow-leaved balsam-root	Native	Perennial
<i>Bidens cernua</i> var. <i>cernua</i>	Nodding bur-marigold	Native	Perennial
<i>Blepharipappus scaber</i>	Blepharipappus	Native	Annual
<i>Carduus nutans</i> *	Musk thistle	Non-native	Perennial
<i>Chrysothamnus nauseosus</i>	Grey rabbitbrush	Native	Shrub
<i>Chrysothamnus viscidiflorus</i>	Green rabbitbrush	Native	Shrub
<i>Cirsium ochrocentrum</i> *	Yellow-spine thistle	Non-native	Perennial
<i>Cirsium vulgare</i> *	Bull thistle	Non-native	Bien.
<i>Crepis acuminata</i>	Tapertip hawksbeard	Native	Perennial
<i>Crepis modocensis</i>	Low hawksbeard	Native	Perennial
<i>Crocidium multicaule</i>	Spring gold	Native	Annual
<i>Erigeron bloomeri</i>	Scabland fleabane	Native	Perennial
<i>Erigeron filifolius</i> var. <i>filifolius</i>	Thread-leaved fleabane	Native	Perennial
<i>Eriophyllum lanatum</i>	Woolly sunflower	Native	Perennial
<i>Microseris laciniata</i>	cutleaf silverpuffs	Native	Perennial
<i>Microseris nutans</i>	Nodding microseris	Native	Perennial
<i>Onopordum acanthium</i> ssp. <i>acanthium</i> *	Scotch thistle	Non-native	Bien.
<i>Psilocarphus brevissimus</i>	Dwarf woolly-heads	Native	Annual
<i>Senecio canus</i>	Grey groundsel	Native	Perennial
<i>Senecio integerrimus</i> var. <i>exaltatus</i>	Western groundsel	Native	Perennial

**TABLE 3.4-2**

Plant Species Observed During Botanical Surveys of the Analysis Area

(Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<i>Senecio integerrimus</i> var. <i>major</i>	Lambstongue groundsel	Native	Perennial
<i>Stenotus stenophyllus</i>	Narrow -leaf goldenweed	Native	Annual
<i>Taraxacum officinale</i>	Dandelion	Non-native	Perennial
<i>Tragopogon dubius</i>	Goat's beard	Non-native	Perennial
<i>Wyethia angustifolia</i>	Narrow-leaf mule ears	Native	Perennial
<b>Boraginaceae</b>			
<i>Amsinckia</i> sp.	Fiddleneck	---	---
<i>Cryptantha ambigua</i>	Basin cryptantha	Native	Annual
<i>Cryptantha</i> sp.	Cryptantha	---	---
<i>Hackelia cusickii</i>	Cusicks stickseed	Native	Perennial
<i>Lithospermum ruderale</i>	Stoneseed	Native	Perennial
<i>Plagiobothrys stipitatus</i>	Popcorn flower	Native	Annual
<b>Brassicaceae</b>			
<i>Alyssum alyssoides</i>	Small alyssum	Non-native	Annual
<i>Arabis Xdivaricarpa</i>	Rockcross	Non-native	Perennial
<i>Descurainia sophia</i>	Tansy mustard	Non-native	Annual
<i>Idahoia scapigera</i>	Flat-pod	Native	Annual
<i>Lepidium campestre</i>	Field pepperweed	Non-native	Annual
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Non-native	Annual
<i>Phoenicaulis cheiranthoides</i>	Daggerpod	Native	Perennial
<i>Sisymbrium altissimum</i>	Tumble mustard	Non-native	Annual
<b>Campanulaceae</b>			
<i>Downingia</i> sp.	Downingia	---	---
<b>Caprifoliaceae</b>			
<i>Sambucus mexicana</i>	Blue elderberry	Native	Shrub
<b>Caryophyllaceae</b>			
<i>Arenaria aculeata</i>	Needleleaf sandwort	Native	Perennial
<i>Arenaria congesta</i> var. <i>congesta</i>	Ballhead sandwort	Native	Perennial
<i>Silene</i> sp.	Campion	---	---
<b>Chenopodiaceae</b>			
<i>Chenopodium album</i>	Lambs quarters	Non-native	Annual
<i>Salsola tragus</i>	Russian thistle	Non-native	Annual
<b>Convolvulaceae</b>			
<i>Convolvulus arvensis</i> *	Field bindweed	Non-native	Annual

**TABLE 3.4-2**  
Plant Species Observed During Botanical Surveys of the Analysis Area  
(Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<b>Cupressaceae</b>			
<i>Juniperus occidentalis</i>	Western juniper	Native	Tree
<b>Cyperaceae</b>			
<i>Carex filifolia</i>	Thread-leaf sedge	Native	Perennial
<i>Carex</i> sp.	Sedge	---	---
<i>Eleocharis macrostachya</i>	Creeping spikerush	Native	Perennial
<i>Scirpus acutus</i>	Tule	Native	Perennial
<b>Dryopteridaceae</b>			
<i>Cystopteris fragilis</i>	Fragile fern	Native	Fern
<b>Euphorbiaceae</b>			
<i>Euphorbia esula</i> *	Leafy spurge	Non-native	Perennial
<b>Fabaceae</b>			
<i>Astragalus curvicaupus</i> var. <i>curvicaupus</i>	Curvepod milkvetch	Native	Perennial
<i>Astragalus filipes</i>	Basalt milkvetch	Native	Perennial
<i>Astragalus purshii</i>	Pursh's milkvetch	Native	Perennial
<i>Lupinus lepidus</i> var. <i>sellulus</i>	Prairie lupine	Native	Perennial
<i>Lupinus leucophyllus</i>	Velvet lupine	Native	Perennial
<i>Medicago sativa</i>	Alfalfa	Non-native	Perennial
<i>Melilotus indica</i>	Sour clover	Non-native	Annual
<i>Vicia americana</i>	American vetch	Non-native	Annual
<b>Gentianaceae</b>			
<i>Swertia albicaulis</i>	Whitestem gentian	Native	Perennial
<b>Geraniaceae</b>			
<i>Erodium cicutarium</i>	Storksbill	Non-native	Annual
<b>Grossulariaceae</b>			
<i>Ribes velutinum</i>	Desert gooseberry	Native	Shrub
<b>Hydrophyllaceae</b>			
<i>Hydrophyllum capitatum</i>	Alpine waterleaf	Native	Perennial
<i>Nemophila pedunculata</i>	Meadow nemophila	Native	Annual
<i>Phacelia hastata</i>	Silverleaf phacelia	Native	Perennial
<i>Phacelia heterophylla</i> ssp. <i>virgata</i>	Varileaf phacelia	Native	Perennial
<i>Phacelia linearis</i>	Threadleaf phacelia	Native	Annual
<b>Juncaceae</b>			
<i>Juncus balticus</i>	Baltic rush	Native	Perennial

**TABLE 3.4-2**  
 Plant Species Observed During Botanical Surveys of the Analysis Area  
 (Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<b>Lamiaceae</b>			
<i>Agastache urticifolia</i>	Nettle-leaved horsemint	Native	Perennial
<i>Marrubium vulgare</i>	Horehound	Non-native	Perennial
<b>Lemnaceae</b>			
<i>Lemna minor</i>	Duckweed	Native	Perennial
<b>Liliaceae</b>			
<i>Calochortus macrocarpus</i>	Sagebrush mariposa lily	Native	Perennial
<i>Fritillaria atropurpurea</i>	Spotted fritillary	Native	Perennial
<i>Smilacina racemosa</i>	Western Solomon's seal	Native	Perennial
<i>Zigadenus venenosus</i> var. <i>venosus</i>	Death camas	Native	Perennial
<b>Linaceae</b>			
<i>Hesperolinon micranthum</i>	Threadstem flax	Native	Annual
<i>Linum lewisii</i>	Western blue flax	Native	Perennial
<b>Loasaceae</b>			
<i>Mentzelia veatchiana</i>	Veatchs blazingstar	Native	Annual
<b>Malvaceae</b>			
<i>Malva neglecta</i>	Common mallow	Non-native	Perennial
<i>Sidalcea oregana</i>	Oregon checker mallow	Native	Perennial
<b>Onagraceae</b>			
<i>Camissonia tanacetifolia</i>	Tansy-leaved evening primrose	Native	Perennial
<i>Clarkia rhomboidea</i>	Forest clarkia	Native	Annual
<b>Pinaceae</b>			
<i>Pinus ponderosa</i>	Ponderosa pine	Native	Tree
<b>Poaceae</b>			
<i>Achnatherum thurberianum</i>	Thurber's needlegrass	Native	Perennial
<i>Alopecurus pratensis</i>	Meadow foxtail	Non-native	Perennial
<i>Agropyron desertorum</i>	Desert crested wheatgrass	Non-native	Perennial
<i>Agrostis exarata</i>	Spike bentgrass	Native	Perennial
<i>Beckmannia syzigachne</i>	Slough grass	Native	Annual
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome	Non-native	Annual
<i>Bromus tectorum</i>	Cheat grass	Non-native	Annual
<i>Deschampsia danthonioides</i>	Annual hairgrass	Native	Annual
<i>Elymus elymoides</i>	Squirreltail	Native	Perennial
<i>Elytrigia elongata</i>	Tall wheatgrass	Non-native	Perennial

**TABLE 3.4-2**  
Plant Species Observed During Botanical Surveys of the Analysis Area  
(Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<i>Elytrigia intermedia</i>	Intermediate wheatgrass	Non-native	Perennial
<i>Elytrigia repens</i> *	Quack grass	Non-native	Perennial
<i>Festuca arundinacea</i>	Tall fescue	Non-native	Perennial
<i>Festuca idahoensis</i>	Idaho fescue	Native	Perennial
<i>Hordeum murinum</i> spp. <i>leporinum</i>	Farmers foxtail	Non-native	Annual
<i>Leymus triticoides</i>	Creeping wildrye	Native	Perennial
<i>Poa pratensis</i>	Kentucky bluegrass	Non-native	Perennial
<i>Poa secunda</i>	Bluegrass	Native	Perennial
<i>Polypogon monspeliensis</i>	Annual beardgrass	Non-native	Annual
<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Native	Perennial
<i>Secale cereale</i>	Cereal rye	Non-native	Annual
<i>Taeniatherum caput-medusae</i> *	Medusa head	Non-native	Annual
<b>Polemoniaceae</b>			
<i>Collomia grandiflora</i>	Mountain collomia	Native	Annual
<i>Ipomopsis aggregata</i>	Scarlet gilia	Native	Perennial
<i>Navarretia leucocephala</i>	White-headed navarretia	Native	Annual
<i>Phlox diffusa</i>	Spreading phlox	Native	Perennial
<b>Polygonaceae</b>			
<i>Eriogonum sphaerocephalum</i> var. <i>halimioides</i>	Rock buckwheat	Native	Perennial
<i>Eriogonum umbellatum</i>	Sulfur-flower buckwheat	Native	Perennial
<i>Rumex crispus</i>	Curly dock	Non-native	Perennial
<b>Portulacacaeae</b>			
<i>Claytonia perfoliata</i>	Miner's lettuce	Native	Annual
<b>Potamogetonaceae</b>			
<i>Potamogeton</i> sp.	Pondweed	---	---
<b>Primulaceae</b>			
<i>Dodecatheon conjugens</i>	Shooting star	Native	Perennial
<i>Dodecatheon pulchellum</i>	Dark-throat shooting star		Perennial
<b>Ranunculaceae</b>			
<i>Adonis aestivalis</i>	Summer pheasant's eye	Non-native	Annual
<i>Delphinium nuttallianum</i>	Dwarf larkspur	Native	Perennial
<i>Myosurus minimus</i>	Mouse-tail	Native	Annual
<i>Ranunculus aquatilis</i>	Aquatic buttercup	Native	Perennial
<i>Ranunculus glaberrimus</i>	Sagebrush buttercup	Native	Perennial

**TABLE 3.4-2**  
 Plant Species Observed During Botanical Surveys of the Analysis Area  
 (Taxonomy follows Hickman 1993. An \* indicates species is an Oregon Department of Agriculture List B noxious weed.)

Scientific Name	Common Name	Native/ Non-native	Habit
<i>Ranunculus testiculatus</i>	Tuberclad crowfoot	Non-native	Annual
<b>Rosaceae</b>			
<i>Amelanchier alnifolia</i>	Service-berry	Native	Shrub
<i>Cercocarpus ledifolius</i>	Mountain mahogany	Native	Perennial
<i>Geum triflorum</i>	Old man's beard	Native	Perennial
<i>Prunus subcordata</i>	Klamath Plum	Native	Perennial
<i>Purshia tridentata</i>	Antelope bitterbrush	Native	Shrub
<i>Rosa woodsii</i>	Interior rose	Native	Shrub
<b>Rubiaceae</b>			
<i>Galium aparine</i>	Common bedstraw	Native	Annual
<i>Galium</i> sp.	Bedstraw	---	---
<b>Salicaceae</b>			
<i>Populus tremuloides</i>	Quaking aspen	Native	Tree
<b>Saxifragaceae</b>			
<i>Lithophragma parviflorum</i>	Woodland star	Native	Perennial
<b>Scrophulariaceae</b>			
<i>Castilleja linariifolia</i>	Desert paintbrush	Native	Perennial
<i>Collinsia parviflora</i>	Blue-eyed Mary	Native	Annual
<i>Penstemon laetus</i>	Mountain blue penstemon	Native	Perennial
<i>Penstemon rydbergii</i> var. <i>oreocharis</i>	Meadow beardtongue	Native	Perennial
<i>Penstemon speciosus</i>	Showy penstemon	Native	Perennial
<i>Verbascum thapsus</i>	Common mullein	Non-native	Perennial
<i>Veronica anagallis-aquatica</i>	Water speedwell	Non-native	Perennial
<i>Veronica peregrina</i> var. <i>xalapensis</i>	Purslane speedwell	Native	Annual
<b>Solanaceae</b>			
<i>Nicotiana attenuata</i>	Coyote tobacco	Native	Annual
<b>Typhaceae</b>			
<i>Typha latifolia</i>	Broad-leaved cattail	Native	Perennial
<b>Valerianaceae</b>			
<i>Plectritis brachystemon</i>	Short-spurred plectritis	Native	Annual
<b>Violaceae</b>			
<i>Viola bakeri</i>	Baker's violet	Native	Perennial

**TABLE 3.4-3**  
Oregon Department of Fish and Wildlife Mitigation Policy Habitat Classification

<b>Habitat Category</b>	<b>Definition</b>	<b>Mitigation Goal</b>
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage	No loss of either habitat quantity or quality
2	Essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage	If impacts are unavoidable, no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited on a physiographic province or site-specific basis, depending on the individual species or population	No net loss of either habitat quantity or quality
4	Important habitat for fish and wildlife species	No net loss in either existing habitat quantity or quality
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	If impacts are unavoidable, to provide a net benefit in habitat quantity or quality
6	Habitat that has low potential to become essential or important for fish and wildlife	Minimize impacts

Source: OAR 635-415-0025

**TABLE 3.4-4**  
 Wildlife Species Observed During Field Surveys Within the Analysis Area

Common Name	Scientific Name	Observed Habitat*
<b>Birds</b>		
Pied-billed grebe	<i>Podilymbus podiceps</i>	WO
American white pelican	<i>Pelecanus erythrorhynchos</i>	T, P
Great blue heron	<i>Ardea herodias</i>	WO
Sandhill crane	<i>Grus canadensis</i>	WO
Green-winged teal	<i>Anas crecca</i>	WO
Mallard	<i>Anas platyrhynchos</i>	WO, T
Northern shoveler	<i>Anas clypeata</i>	WO
American wigeon	<i>Anas americana</i>	WO
Bufflehead	<i>Bucephala albeola</i>	WO
Common merganser	<i>Mergus merganser</i>	WO
Turkey vulture	<i>Cathartes aura</i>	P, GP, WO, T
Bald eagle	<i>Haliaeetus leucocephalus</i>	WO, P, T, GP
Northern harrier	<i>Circus cyaneus</i>	WO, GP, P
Sharp-shinned hawk	<i>Accipiter striatus</i>	T
Cooper's hawk	<i>Accipiter cooperii</i>	T
Red-tailed hawk	<i>Buteo jamaicensis</i>	T, WO, GP, P
Swainson's hawk	<i>Buteo swainsoni</i>	WO, T, GP, P
Rough-legged hawk	<i>Buteo lagopus</i>	WO, GP, P
California quail	<i>Callipepla californica</i>	WO, P
American coot	<i>Fulica americana</i>	WO
Killdeer	<i>Charadrius vociferus</i>	T, WO, GP, P
Wouldet	<i>Catoptrophorus semipalmatus</i>	WO
Common snipe	<i>Gallinago gallinago</i>	WO
Gull	<i>Larus</i> sp.	WO, P, GP
Forster's tern	<i>Sterna forsteri</i>	WO
Rock dove	<i>Columba livia</i>	WO, GP
Mourning dove	<i>Zenaida macroura</i>	T, GP
Great horned owl	<i>Bubo virginianus</i>	T
Common nighthawk	<i>Chordeiles minor</i>	T
Anna's hummingbird	<i>Calypte anna</i>	T, WO
Calliope hummingbird	<i>Stellula calliope</i>	T
Red-breasted sapsucker	<i>Sphyrapicus ruber</i>	T
Downy woodpecker	<i>Picoides pubescens</i>	T
Northern flicker	<i>Colaptes auratus</i>	T, WO, GP, P
Say's phoebe	<i>Sayornis saya</i>	T
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	T, WO
Western kingbird	<i>Tyrannus verticalis</i>	WO, GP, P, T
Cliff swallow	<i>Hirundo pyrrhonota</i>	WO, GP
Steller's jay	<i>Cyanocitta stelleri</i>	WO, T, P
Western scrub jay	<i>Aphelocoma coerulescens</i>	P, T, WO
Black-billed magpie	<i>Pica pica</i>	T, WO, GP, P
American crow	<i>Corvus brachyrhynchos</i>	GP
Common raven	<i>Corvus corax</i>	WO
Black-capped chickadee	<i>Parus atricapillus</i>	T
Mountain chickadee	<i>Parus gambeli</i>	P
White-breasted nuthatch	<i>Sitta carolinensis</i>	T
Rock wren	<i>Salpinctes obsoletus</i>	T
Ruby-crowned kinglet	<i>Regulus calendula</i>	T
Western bluebird	<i>Sialia mexicana</i>	WO, P
Mountain bluebird	<i>Sialia currucoides</i>	T

**TABLE 3.4-4**  
Wildlife Species Observed During Field Surveys Within the Analysis Area

Common Name	Scientific Name	Observed Habitat*
American robin	<i>Turdus migratorius</i>	WO, T
Northern mockingbird	<i>Mimus polyglottos</i>	WO, P
Loggerhead shrike	<i>Lanius ludovicianus</i>	GP
European starling	<i>Sturnus vulgaris</i>	WO, P
Warbling vireo	<i>Vireo gilvus</i>	WO, P
Yellow-rumped warbler	<i>Dendroica coronata</i>	WO
Western tanager	<i>Piranga ludoviciana</i>	WO, T
Spotted towhee	<i>Pipilo maculatus</i>	T
Lark sparrow	<i>Chondestes grammacus</i>	T, WO, P
Song sparrow	<i>Melospiza melodia</i>	WO
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	T, WO, P
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	WO
Dark-eyed junco	<i>Junco hyemalis</i>	P
Red-winged blackbird	<i>Agelaius phoeniceus</i>	WO
Tricolored blackbird	<i>Agelaius tricolor</i>	WO
Western meadowlark	<i>Sturnella neglecta</i>	WO, T, GP
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	WO
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	WO
Brown-headed cowbird	<i>Molothrus ater</i>	WO
Northern oriole	<i>Icterus galbula</i>	WO
House finch	<i>Carpodacus mexicanus</i>	GP, P, WO, T
Evening grosbeak	<i>Coccothraustes vespertinus</i>	WO, T
<b>Mammals</b>		
Pygmy rabbit	<i>Brachylagus idahoensis</i>	T
Nuttall's cottontail	<i>Sylvilagus nuttallii</i>	T, P, WO, GP
Black-tailed hare	<i>Lepus californicus</i>	WO, P
Least chipmunk	<i>Tamias minimus</i>	T, P
Townsend's ground squirrel	<i>Spermophilus townsendii</i>	T, P, WO, GP
California ground squirrel	<i>Spermophilus beecheyi</i>	T, P, WO, GP
Golden-mantled ground squirrel	<i>Spermophilus lateralis</i>	T
Yellow-bellied marmot	<i>Marmota flaviventris</i>	WO, P, T
Northern pocket gopher	<i>Thomomys talpoides</i>	P
Ord's kangaroo rat	<i>Dipodomys ordii</i>	P
Dusky-footed woodrat	<i>Neotoma fuscipes</i>	P
Bushy-tailed woodrat	<i>Neotoma cinerea</i>	T
Coyote	<i>Canis latrans</i>	T, WO, GP, P
Mule deer	<i>Odocoileus hemionus</i>	WO, T, GP, P
Pronghorn	<i>Antilocapra americana</i>	T, P
<b>Amphibians and Reptiles</b>		
Western fence lizard	<i>Sceloporus occidentalis</i>	P, WO, GP, T
Sagebrush lizard	<i>Sceloporus graciosus</i>	P, WO, GP, T
Racer	<i>Coluber constrictor</i>	T
Garter snake	<i>Thamnophis elegans</i>	T
Bullfrog	<i>Rana catesbeiana</i>	W

\* Linear types in which species were observed during surveys.

GP = natural gas pipeline route

P = Energy Facility site

T = electric transmission line route

WO = water supply pipeline route overland

**TABLE 3.4-5**  
 Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
<b>Fish</b>						
Interior redband trout <i>Oncorhynchus mykiss</i> sp. <i>O. newberri</i>	SoC	BT	V	2	Lake dwelling fish, but would move into tributary rivers and streams to spawn	Lost River watershed, no suitable habitat within the survey area.
Klamath large scale sucker <i>Chasmistes brevirostris</i>	SoC	BT	--	2	Inhabits riverine systems, known to inhabit both lentic and lotic environments	Lost River watershed, no suitable habitat within the survey area
Pacific lamprey <i>Lampetra tridentata</i>	SoC	BT	SV	2	Anadromous, parasitic species with the period of parasitism occurring in the ocean. Live in fresh water habitats where they are burrowing filter feeders.	Lost River watershed, no suitable habitat within the survey area
<b>Reptiles</b>						
Northern sagebrush lizard <i>Sceloporus graciosus graciosus</i>	SoC	BT	V	4	Sagebrush-steppe, juniper woodland, and conifer forest habitats in areas with open ground and rocks for basking	Potential sighting of an individual species on northern portion of proposed Energy Facility site
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SoC	BS	C	1	Quiet waters such as lakes, ponds, marshes, and slow moving creeks	Pond turtles reported in the vicinity of the Lost River; however, none observed within analysis area
<b>Birds</b>						
Bald Eagle <i>Haliaeetus leucocephalus</i>	FT				Nests in large, old-growth trees or dominant live trees with open branches. Most nests are within one mile of water. Roosts communally in winter	Foraging throughout the project area
American white pelican <i>Pelecanus erythrorhynchos</i>	--	BA	V	2	Inland lakes and wetlands	Suitable habitat in vicinity; observed flying over proposed Facility site; carcass observed east of proposed electric transmission line
Black tern <i>Chlidonias niger</i>	SoC	BT	--	4	Emergent vegetation along marshes, rivers, and ponds	Not observed; Suitable habitat present

**TABLE 3.4-5**  
Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
Greater sandhill crane <i>Grus canadensis tabida</i>	--	BT	V	4	Marshes, wet meadows, grasslands, irrigated pastures	Suitable habitat present, one foraging bird observed east of water pipeline near freshwater marsh
Lewis' woodpecker <i>Melanerpes lewis</i>	SoC	BS	V	4	Oak woodlands, ponderosa pine woodlands, cottonwood riparian forests	Not observed; Suitable habitat along the electric transmission line alignment
Mountain quail <i>Oreortyx pictus</i>	SoC	BT	U	4	Open forests and woodlands with dense shrubby undergrowth, chaparral, riparian woodlands	Not observed; Suitable habitat present
Northern goshawk <i>Accipiter gentilis</i>	SoC	BS	C	2	Conifer forests with dense canopies, possibly in more open ponderosa pine woodlands and quaking aspen groves	Not observed; Marginal habitat present along electric transmission line alignment
Olive-sided flycatcher <i>Contopus cooperi</i>	SoC	BT	V	4	Mixed conifer forests, usually with open, uneven canopy layers	Not observed; Limited habitat along the electric transmission line alignment
Tricolored blackbird <i>Agelaius tricolor</i>	SoC	BA	P	2	Dense emergent vegetation or in wouldow or other shrubs in and around wetland areas	Potential sightings of individuals approximately 1,200 feet southwest of the Babson well site
Western sage grouse <i>Centrocercus urophasianus</i>	SoC	BT	V	1	Sagebrush-steppe	Not observed; suitable habitat present
White-headed woodpecker <i>Picoides albolarvatus</i>	SoC	--	C	4	Ponderosa pine and mixed conifer forests	Not observed; Suitable habitat along the electric transmission line alignment
Wouldow flycatcher <i>Empidonax traillii adastus</i>	SoC	BT	--	4	Brush thickets along stream and marshes, shrubs along the margins of forests and grasslands in areas close to water	No suitable habitat present
Yellow rail <i>Coturnicops noveboracensis</i>	SoC	BS	C	2	Freshwater wetlands, with emergent vegetation, usually in areas surrounded by wouldows	Not observed; Limited habitat present south of water supply alignment

**TABLE 3.4-5**  
 Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
<b>Mammals</b>						
Fringed myotis <i>Myotis thysanodes</i>	SoC	BT	V	2	Sagebrush-grass steppe, oak and pinyon juniper woodlands	Not observed; Suitable habitat present
Long-eared myotis <i>Myotis evotis</i>	SoC	BT	U	4	Coniferous forests, does occur in semiarid shrublands, sage, chaparral, agricultural areas	Not observed; Suitable habitat present
Long-legged myotis <i>Myotis volans</i>	SoC	BT	U	4	Primarily in coniferous forests, also seasonally in desert habitats	None observed; Suitable habitat present
Pallid bat <i>Antrozous pallidus</i>	--	BT	V	3	Arid and semiarid, lowland habitats such as desert scrub, grasslands, and oak woodlands	Not observed; Suitable habitat present
Pronghorn antelope <i>Antilocapra americana</i>	--	--		--	Grasslands, sagebrush flats, and shad-scale covered valleys of the central and southeastern part of Oregon. Low sagebrush is an important habitat component.	Observed in analysis area; and along electric transmission line alignment, and on the Energy Facility site
Pygmy rabbit <i>Brachylagus idahoensis</i>	SoC	--	V	2	Sagebrush-steppe in areas with deep friable soil	Observed in analysis area; three sightings along the electric transmission line alignment
Silver-haired bat <i>Lasionycteris noctivagans</i>	SoC	BT	U	4	Mixed conifer/hardwood forests, in winter and during seasonal migrations in low elevation, more xeric habitats	Not observed; Suitable habitat present
Small-footed myotis <i>Myotis ciliolabrum</i>	SoC	BT	U	4	Deserts, chaparral, riparian zones, and western coniferous forest; most common above pinyon-juniper forest	Not observed; Suitable habitat present
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SoC	--	C	2	Sagebrush-grass steppe, agricultural areas, near caves and structures for roosting	Not observed; potential foraging areas is present
Yuma myotis <i>Myotis yumanensis</i>	SoC	BT	--	4	Variety of habitats including arid scrublands and deserts, forests	Suitable habitat present; likeliest species to be night roosting near Babson Well

**TABLE 3.4-5**  
Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
<b>Invertebrates</b>						
<i>Apatania tavala</i> Cascades apatanian caddisfly	SoC	--	--	4		
California floater (mussel) <i>Anodonta</i> <i>californiensis</i>	SoC	BT	--	3	Shallow areas of lakes, reservoirs and streams with sandy or muddy substrates	No suitable habitat present
Cockrell's striated disc (snail) <i>Discus shimeki</i> <i>cockerelli</i>	SoC	BT	--	--	Montane environments at elevations between 7,000 and 12,000 feet under rocks and dead wood in a variety of habitat types	No suitable habitat present
<i>Homoplectra schuhi</i> Schuh's homoplectran caddisfly	SoC	--	--	3		
Lake of the Woods pebblesnail and Lost River pebblesnail <i>Fluminicola sp.</i>	--	SMA	--	1	Spring fed tributaries in the Klamath watershed, gravelly or cobble substrates	No suitable habitat present
Lost River springsnail <i>Pyrgulopsis sp.</i>	--	--	--	1	Cold flowing waters with high dissolved oxygen and gravelly or cobbly substrates	No suitable habitat present
Peaclam <i>Pisidium</i> <i>ultramontanum</i>	SoC	BS	--	--	Lakes, rivers and streams lacking dense vegetation with high dissolved oxygen, and sparse macrophytic vegetation, sand/gravel substrates.	No suitable habitat present
<b>Plants</b>						
American pillwort <i>Pilularia americana</i>	--	--	--	2	Vernal pools and along the margins of lakes, ponds and reservoirs at elevations below 5,500 feet	Not observed; Some habitat present, known to occur along margins of reservoirs east of analysis area.
Baker's globe mallow <i>Iliama bakerii</i>	--	--	--	1	Chaparral, sagebrush and juniper woodland habitats at elevations between 3,000 and 8,500 feet	Not Observed, Suitable habitat present

**TABLE 3.4-5**  
 Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
Bellinger's meadowfoam <i>Limnanthes floccosa</i> ssp. <i>Bellingeriana</i>	--	--	C	1	Vernal pools, moist meadows and seeps in open pine-oak woodlands at elevations between 900 and 4,000 feet	Not observed; Limited habitat present
Blue-leaved penstemon <i>Penstemon glaucinus</i>	--	--	--	1	High elevation lodgepole and white fir forests	No suitable habitat; All known populations occur on 6400 acres of Federal lands managed by the Fremont NF, Winema NF and the BLM.
Columbia yellowcress <i>Rorippa columbiae</i>	--	--	C	1	Along streams, lakes, wet meadows and other seasonally saturated areas at elevations between 4,000 and 6,000 feet	Not observed; Suitable habitat present
Creeping woody rock cress <i>Arabis suffrutescens</i> var <i>horizontalis</i>	SoC	--	C	1	Sagebrush scrub, Yellow pine forest and red fir forest at elevations less than 5,000 feet	Not observed; Suitable habitat present
Disappearing monkeyflower <i>Mimulus evanescens</i>	SoC	--	C	1	Great basin scrub, lower montane conifer forest, pinyon juniper woodland; gravelly, rocky; vernal moist areas at elevations between 4,000 and 6,000 feet	Not observed; Suitable habitat present
Flaccid sedge <i>Craex leptalea</i>	--	--	--	3	Bogs, fens, marshes, swamps, seeps and wet meadows at elevations less than 2,500 feet	Not observed; Limited habitat present; above known elevation range of species
Fringed campion <i>Silene nuda</i> ssp. <i>Insectivora</i>	--	--	--	4	Meadows in ponderosa / lodgepole pine forest openings at elevations between 4,000 and 6,000 feet	Meadows in ponderosa / lodgepole pine forest openings
Greene's Mariposa lily <i>Calachortus greenei</i>	SoC	--	C	1	Oak woodland, pinyon juniper woodland, coniferous forest, meadows and seeps, volcanic soil, at elevations between 3,000 and 6,500	Not observed; Suitable habitat present
Green-flowered wild ginger <i>Asarum wagneri</i>	--	--	C	1	Mixed conifer and lodgepole pine forests at elevations ranging from 4,500 to 8,500 feet	Not observed; Limited habitat present

**TABLE 3.4-5**  
Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
Green-tinged paintbrush <i>Castilleja chlorotica</i>	--	--	--	1	Dry gravelly slopes, and grassy openings in ponderosa pine or lodgepole pine forests at elevations between 5,000 and 8,200 feet	Not observed; Suitable habitat present
Howell's false caraway <i>Perideridia howellii</i>	--	--	--	4	Ponderosa pine, mixed conifer, meadows, along streams and on moist slopes at elevations between 2,000 and 5,000 feet	Not observed; Suitable habitat present
Lady slipper orchid <i>Cypripedium fasciculatum</i>	SoC	SMC	C	C/1	Open conifer forest at elevations, generally acidic soil, at elevations between 500 and 7,500 feet	Not observed; Limited habitat present
Least phacelia <i>Phacelia minutissima</i>	--	--	C	1	Open, ephemerally moist areas in meadows, sagebrush-steppe, lower montane forests and riparian areas at elevations between 4,000 and 8,000 feet	Not observed; Suitable habitat present
Lemmon's catchfly <i>Silene lemmonii</i>	--	--	--	3	Oak woodlands and conifer forests at elevations between 2,800 and 9,000 feet	Not observed; Suitable habitat present
Long-bearded Mariposa lily <i>Calachortus longebarbatus</i>	--	--	--	1	Meadows or along the edges of ponderosa pine, lodgepole pine forests and in juniper woodlands at elevations between 4,000 and 6,000 feet	Meadows in ponderosa / lodgepole pine forest openings
Mountain lady's slipper <i>Cypripedium montanum</i>	--	SMC	--	4	Mixed conifer forests and woodlands at elevations ranging from 300 to 6,000 feet	Not observed; Suitable habitat present
Mt. Mazama collomia <i>Collomia mazama</i>	--	--	--	1	Alpine meadows and on slopes in association with mixed conifer, true fir and lodgepole pine forests, generally on open or disturbed areas at elevations generally above 5,000 feet	No suitable habitat present

**TABLE 3.4-5**  
 Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
Newberry's gentain <i>Gentiana newberryi</i>	--	--	--	2	Vernally wet to dry, subalpine and alpine meadows, along mountain streams at elevations between 5,000 and 12,000 feet	No suitable habitat present
Playa phacelia <i>Phacelia inundata</i>	SoC	--	--	1	Sagebrush scrub, yellow pine forests, alkali sinks and playas, on alkaline soil 4,500 to 6,000 feet.	Not observed; Limited habitat present
Profuse –flowered mensa mint <i>Pogogyne floribunda</i>	SoC	--	--	1	Vernal pools, seasonal lakes and intermittent drainages at elevations between 3,200 and 5,000 feet	Not observed; limited habitat present
Prostrate buckwheat <i>Erigonum procidum</i>	SoC	--	C	1	Dry, rocky slopes, and flats within juniper-sagebrush and Jeffery pine woodlands at elevations between 4,000 and 8,500 feet	Not observed; Suitable habitat present
Rafinesque's pondweed <i>Potamogeton diversifolius</i>	--	--	--	2	Ponds, streams and reservoirs below 8,000 feet	Not observed; Limited habitat present
Red-root yampah <i>Perideridia erythrorhiza</i>	SoC	--	C	1	Meadows, pastures, and open areas in pine-oak woodlands at elevations less than 5,000 feet	Not observed; Suitable habitat present
Salt heliotrope <i>Heliotropum curvassavicum</i>	--	--	--	3	Many different plant communities at elevations less than 7,000 feet, but is generally associated with saline soil	Not observed; Suitable habitat present
Shockley's ivisia <i>Ivesia shockleyi</i>	--	--	--	2	Open gravelly, rocky areas associated with subalpine fir and pine forests, at elevations between 9,000 and 13,000 feet	No suitable habitat present
Short-podded thelypody <i>Thelypodium brachycarpum</i>	--	--	--	2	Irrigated pasture, sagebrush shrub, pond and stream edges; adjacent to ponderosa pine forests; alkali soil at elevations between 3,000 and 6,500 feet	Not observed; Suitable habitat present

**TABLE 3.4-5**  
 Special-Status Species Potentially Occurring Within the Analysis Area

Species	FWS	BLM	ODFW ODA	ONHP	Habitat Requirements	Potential Occurrence in Analysis Area
Slender bulrush <i>Scirpus heterochaetus</i>	--	--	--	3	Marshes, swamps and around lake edges, in lower montane conifer forests at elevations around 5,000 feet	Not observed; Limited habitat present
Tricolor monkeyflower <i>Mimulus tricolor</i>	--	--	--	2	Moist flats on wet clay soil and in vernal pools within woodlands and grasslands, at elevations less than 5,000 feet	Not observed; Limited habitat present
Warner Mountain bedstraw <i>Gallium serpenticum</i> var. <i>warnerense</i>	--	--	--	2	Meadows and seeps, pinyon / juniper woodland, conifer forest and rocky talus at elevations between 4,500 and 9,000 feet	Not observed; Suitable habitat present

**United States Fish and Wildlife Service (FWS)**  
 SoC Federal Species of Concern

**Bureau of Land Management, Klamath Falls Resource Area Special Status Species (BLM)**

- BA Bureau Tracking Species
- BS Bureau Assessment Species
- BS Bureau Sensitive Species
- SMA Survey and Manage Category A Species
- SMB Survey and Manage Category B Species
- SMC Survey and Manage Category C Species

**Oregon Department of Fish and Wildlife (ODFW) / Oregon Department of Agriculture (ODA)**

- C Candidate for state listing as threatened or endangered
- V Vulnerable species for which listing as threatened or endangered is not believed to be imminent
- U Undetermined status; more information is needed to determine the conservation status of the species
- P Peripheral or naturally rare species, species on the edge of their natural range in Oregon, or have naturally low populations within the state

**Oregon Natural Heritage Program (ONHP)**

- 1 Taxa that are threatened or endangered throughout their range
- 2 Taxa that are threatened or endangered in Oregon, but more secure elsewhere
- 3 Review list, taxa for which more information is needed to determine the conservation status
- 4 Species that are of conservation concern, but are not currently threatened or endangered

**TABLE 3.4-6**  
 Threatened, Endangered, and Candidate Species Known or Suspected to Occur in the Analysis Area

Species	USFWS Status	ODFW Status	Available Habitat in the Analysis Area	Detected in Analysis Area
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	T, AD	T	Yes, foraging habitat	Yes, observed throughout the Energy Facility site and its associated linear facilities.
Shortnose Sucker ( <i>Chasmistes brevirostris</i> )	E	E	No*	No
Lost River Sucker ( <i>Deltistes luxatus</i> )	E	E	No*	No
Gentner's Fritillaria ( <i>Fritillaria gentneri</i> )	E	E	No	No
Peck's Milk-Vetch ( <i>Astragalus peckii</i> )	SoC	T	Yes	No
Applegate's Milk-Vetch ( <i>Astragalus applegatei</i> )	E	E	No	No
Pumice Grape Fern ( <i>Botrychium pumicola</i> )	T	T	No	No
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	C	SC	No	No

AD=candidate for delisting, C=candidate for listing, E=endangered, SC=critical species, SoC=species of concern, T=threatened

ODFW=Oregon Department of Fish and Wildlife

USFWS=U.S. Fish and Wildlife Service

\*Species may occur in the Lost River watershed, which is in the proximity of the analysis area.

**TABLE 3.4-7**  
Wetland Features in the Analysis Area

Wetland	Classification*	Description	Location	Area of Impact
Lost River	R2ABH	Regulated riverine habitat, flow controlled by Clear Lake Dam	Approximately 1.3 miles north of proposed Energy Facility site, and 900 feet east of Babson well site	None
Freshwater Marsh	PEMF/PEMC	Cattails, bulrush, and open water habitat	Approximately 900 feet south of water supply pipeline, on the west side of East Langell Valley Road	None
Seasonal Wetland	PEMF	Shallow, seasonally flooded depression. Vegetation characterized by sedges and rushes.	Approximately 200 feet west of electric transmission line easement, approximately 2 miles south of proposed Energy Facility site	None
Seasonal Creek #1	None	Narrow, cobbly drainage channel. Vegetation characterized by Sandberg's bluegrass.	Just south of where the northern portion of the electric transmission route turns south	0.003 acre
Wright Creek	PEMA	Shallow channel, characterized by sedges, rushes, and moss	Approximately 1.7 miles southwest of the Energy Facility along the electric transmission line route	0.01 acre
Seasonal Creek #3	PABHh (stock pond only)	Narrow shallow drainage and associated stock pond, no wetland plants	Approximately 4 south of the Energy Facility site on the east side of existing natural gas pipeline easement	0.003 acre
Seasonal Creek #4	PEMCx	Realigned seasonal creek, now used for agricultural drainage	Along natural gas pipeline, approximately 0.3 mile from West Langell Valley Road, in alfalfa fields	None
Seasonal Creek #5	PEMC	Dry creek channel, lacking vegetation	Approximately 200 feet west of natural gas pipeline at PG&E GTN compressor station	None
Agricultural Canal #1	NA	Agricultural drainage canal, along edge of pasture	On adjacent property at southeast end of the proposed Energy Facility site	None
Agricultural Canal #2	NA	Lateral irrigation canal within pastureland	Approximately 25 feet north of natural gas pipeline, near Babson well	None
Agricultural Canal #3	R4SBFx	Water conveyance canal	Approximately 450 feet east of East Langell Valley Road along water supply pipeline	None
Agricultural Canal #4	NA	Two to 3 inches of water present, some grasses and sedges within channel	Within irrigated pasture, approximately 0.5 mile east of Teare Lane	None

**TABLE 3.4-7**  
 Wetland Features in the Analysis Area

<b>Wetland</b>	<b>Classification*</b>	<b>Description</b>	<b>Location</b>	<b>Area of Impact</b>
Agricultural Canal #5	R2ABFx	Dry earthen ditch, no vegetation observed	Within irrigated pasture, approximately 0.5 mile east of Teare Lane and 100 feet south of water supply pipeline	None
Agricultural Canal #6	NA	Few inches of ponded water at west end, lacking vegetation	South side of Harpold Road, at north end of alfalfa field, south of natural gas pipeline	None

\* National Wetland Inventory (NWI) Abbreviations (Cowardin et al., 1979)

PABHh—Palustrine, Aquatic Bed, Permanently Flooded, Impounded  
 PEMF—Palustrine Emergent, Semipermanently Flooded  
 PEMC—Palustrine Emergent, Seasonally Flooded  
 PEMCx—Palustrine Emergent, Seasonally Flooded, Excavated  
 R2ABFx—Riverine, Lower Perennial, Aquatic Bed, Semipermanently Flooded, Excavated  
 R2ABH—Riverine, Lower Perennial, Aquatic Bed, Permanently Flooded  
 R4SBFx—Riverine, Streambed, Semipermanently Flooded, Excavated

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
<b>Fish</b>	<b>Potential Impacts</b>			<b>Proposed Mitigation</b>		
	Construction of new access roads along the transmission line corridor would result in less than 0.5 acre of impact to intermittent creeks.			Construction during the dry season is recommended as a mitigation measure to avoid the presence of fish and minimize erosion and sedimentation. Culverts would be installed to ensure the uninterrupted flow of water through the channel.		
Interior redband trout <i>Oncorhynchus mykiss</i> sp. <i>O. newberrii</i>	SoC	V/2	Lake dwelling fish, but would move into tributary rivers and streams to spawn	No suitable habitat present	No impacts	No mitigation
Klamath large scale sucker <i>Chasmistes brevirostris</i>	SoC	--/2	Inhabits riverine systems, known to inhabit both lentic and lotic environments	No suitable habitat present	No impacts	No mitigation
Pacific lamprey <i>Lampetra tridentata</i>	SoC	SV/2	Anadromous, parasitic species with the period of parasitism occurring in the ocean. Live in fresh water habitats where they are burrowing filter feeders.	No suitable habitat present	No impacts	No mitigation
<b>Wildlife</b>	<b>Potential Impacts</b>			<b>Proposed Mitigation</b>		
	Construction and operation of the proposed Energy Facility could cause a temporary or permanent loss of vegetation and wildlife habitat.			To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures would be implemented during construction to the minimum extent of area needed for practical and safe working areas, to identify off-limits area, and revegetate disturbed areas. Workers would receive training regarding wildlife and habitat and safe vehicle speeds.		
	Construction and operation of the proposed Energy Facility would cause noise and lighting that could disturb wildlife.			Where feasible, construction would be limited in natural areas during the breeding period of deer and antelope (April-September), as well as the nesting period of raptors (May –September). Low-impact directional lighting would be used to reduce ambient light into adjacent areas.		
	Bald eagles and other birds could be injured or killed by collisions with power lines.			Flight diverters would be installed on the top shield wires. Facility water sources (a potential draw for waterfowl) would be designed to discourage avian use. Towers would be designed and constructed so that it would be physically impossible for a bird's wings to bridge any space that would result in the conduction of current.		
	Construction and operation of the proposed Energy Facility would disturb wetlands.			Directional boring techniques and a minimum amount of fill would be used to avoid impacts to wetlands. Erosion control measures would be implemented to protect wetlands and existing grades and drainages would be preserved (including culverts under roadways).		

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
<b>Reptiles</b>						
Northern sagebrush lizard <i>Sceloporus graciosus graciosus</i>	SoC	V/4	Sagebrush-steppe, juniper woodland, and conifer forest habitats in areas with open ground and rocks for basking	Observed on northern portion of proposed Energy Facility site	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat	Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures would be implemented, such as re-planting sagebrush in areas vegetation removed.
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SoC	C/1	Quiet waters such as lakes, ponds, marshes, and slow moving creeks	Pond turtles observed in the vicinity of the Lost River; however, none observed within analysis area	Possible disturbance by noise and/or lighting	Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
<b>Birds</b>						
American white pelican <i>Pelecanus erythrorhynchos</i>	--	V/2	Inland lakes and wetlands	Suitable habitat in vicinity; observed flying over proposed Facility site; carcass observed east of proposed electric transmission line	Temporary and/or permanent loss of habitat.  Possible disturbance by noise and/or lighting.  Could be injured or killed by collisions with power lines.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Facility water sources (a potential draw for waterfowl) would be designed to discourage avian use. Bird flight diverters would be added to the top ground wires of the transmission line.
Bald eagle <i>Haliaeetus leucocephalus</i>	FT		Nests in large, old-growth trees or dominant live trees with open branches. Most nests are within one mile of water. Roosts communally in winter	Known to occur in the analysis area and suitable nesting habitat was identified within the ponderosa pine ( <i>Pinus ponderosa</i> ) habitat for a 1.3-mile section of the electric transmission line approximately 2 miles north of the Captain Jack Substation. No nests	Temporary and/or permanent loss of habitat.  Possible disturbance by noise and/or lighting  Could be injured or killed by collisions with power lines.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Where feasible, construction would be limited in natural areas during the nesting period of raptors (May –September). Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Bird flight diverters would be added to the top

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
				were observed during surveys conducted in 2002.		ground wires of the transmission line.
Black tern <i>Chlidonias niger</i>	SoC	--/4	Emergent vegetation along marshes, rivers, and ponds	Not observed; Suitable habitat present	No impacts	No mitigation
Greater sandhill crane <i>Grus canadensis tabida</i>	--	V/4	Marshes, wet meadows, grasslands, irrigated pastures	Suitable habitat present, one foraging bird observed east of water pipeline near freshwater marsh	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.  Could be injured or killed by collisions with power lines.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Bird flight diverters would be added to the top ground wires of the transmission line.
Lewis' woodpecker <i>Melanerpes lewis</i>	SoC	V/4	Oak woodlands, ponderosa pine woodlands, cottonwood riparian forests	Not observed; Suitable habitat along the electric transmission line alignment	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.  Could be injured or killed by collisions with power lines.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Risk of collisions by songbirds are considered to be low due to maneuverability and flight behavior. Bird flight diverters would be added to the top ground wires of the transmission line.
Mountain quail <i>Oreortyx pictus</i>	SoC	U/4	Open forests and woodlands with dense shrubby undergrowth, chaparral, riparian woodlands	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Northern goshawk <i>Accipiter gentilis</i>	SoC	C/2	Conifer forests with dense canopies, possibly in more open ponderosa pine woodlands and	Not observed; Marginal habitat present along electric transmission line	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
			quaking aspen groves	alignment	Could be injured or killed by collisions with power lines.	Where feasible, construction would be limited in natural areas during the nesting period of raptors (May –September). Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Risk of collisions by raptors with lines are considered to be low due to maneuverability and flight behavior. Bird flight diverters would be added to the top ground wires of the transmission line.
Olive-sided flycatcher <i>Contopus cooperi</i>	SoC	V/4	Mixed conifer forests, usually with open, uneven canopy layers	Not observed; Limited habitat along the electric transmission line alignment	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.  Could be injured or killed by collisions with power lines.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Risk of collisions by songbirds are considered to be low due to maneuverability and flight behavior. Bird flight diverters would be added to the top ground wires of the transmission line.
Tricolored blackbird <i>Agelaius tricolor</i>	SoC	P/2	Dense emergent vegetation or in willow or other shrubs in and around wetland areas	Observed approximately 1,200 feet southwest of the Babson well site	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.  Could be injured or killed by collisions with power lines.	Low-impact directional lighting would be used to reduce ambient light into adjacent areas.  Risk of collisions by songbirds are considered to be low due to maneuverability and flight behavior. Bird flight diverters would be added to the top ground wires of the transmission line.
Western sage grouse <i>Centrocercus urophasianus</i>	SoC	V/1	Sagebrush-steppe	Not observed; suitable habitat present	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
White-headed	SoC	C/4	Ponderosa pine and	Not observed;	Possible disturbance by	To the extent practicable, the facilities would be

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
woodpecker <i>Picoides albolarvatus</i>			mixed conifer forests	Suitable habitat along the electric transmission line alignment	noise and/or lighting Temporary and/or permanent loss of habitat. Could be injured or killed by collisions with power lines.	located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas. Risk of collisions by songbirds are considered to be low due to maneuverability and flight behavior. Bird flight diverters would be added to the top ground wires of the transmission line.
Willow flycatcher <i>Empidonax traillii adastus</i>	SoC	--/4	Brush thickets along stream and marshes, shrubs along the margins of forests and grasslands in areas close to water	No suitable habitat present	No impacts	No mitigation
Yellow rail <i>Coturnicops noveboracensis</i>	SoC	C/2	Freshwater wetlands, with emergent vegetation, usually in areas surrounded by willows	Not observed; Limited habitat present south of water supply alignment	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
<b>Mammals</b>						
Fringed myotis <i>Myotis thysanodes</i>	SoC	V/2	Sagebrush-grass steppe, oak and pinyon juniper woodlands	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Long-eared myotis <i>Myotis evotis</i>	SoC	U/4	Coniferous forests, does occur in semiarid shrublands, sage, chaparral, agricultural areas	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Long-legged myotis	SoC	U/4	Primarily in coniferous	None observed;	Possible disturbance by	To the extent practicable, the facilities would be

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
<i>Myotis volans</i>			forests, also seasonally in desert habitats	Suitable habitat present	noise and/or lighting Temporary and/or permanent loss of habitat.	located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Mule deer <i>Odocoileus hemionus</i>	--	--	Early and intermediate successional stages of most forest, woodland, and brush habitats. Prefers mosaic of various-aged vegetation.	Mapped by Klamath County as high-density mule deer winter range	Possible disturbance by noise and/or lighting Permanent loss of wintering range	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Where feasible, construction would be limited in natural areas during the breeding period of deer and antelope (April-September). Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Pallid bat <i>Antrozous pallidus</i>	--	V/3	Arid and semiarid, lowland habitats such as desert scrub, grasslands, and oak woodlands	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Pronghorn <i>Antilocapra americana</i>	--	--	Grasslands, sagebrush flats, and shad-scale covered valleys of the central and southeastern part of Oregon. Low sagebrush is an important habitat component.	Observed in analysis area; and along electric transmission line alignment, and on the Energy Facility site	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Where feasible, construction would be limited in natural areas during the breeding period of deer and antelope (April-September). Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Pygmy rabbit <i>Brachylagus idahoensis</i>	SoC	V/2	Sagebrush-steppe in areas with deep friable soil	Observed in analysis area; three sightings along the electric transmission line alignment	Possible disturbance by noise and/or lighting Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented. Low-impact directional lighting would be used to reduce ambient light into adjacent areas.

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Silver-haired bat <i>Lasionycteris noctivagans</i>	SoC	U/4	Mixed conifer/ hardwood forests, in winter and during seasonal migrations in low elevation, more xeric habitats	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Small-footed myotis <i>Myotis ciliolabrum</i>	SoC	U/4	Deserts, chaparral, riparian zones, and western coniferous forest; most common above pinyon-juniper forest	Not observed; Suitable habitat present	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Townsend's big- eared bat <i>Corynorhinus townsendii</i>	SoC	C/2	Sagebrush-grass steppe, agricultural areas, near caves and structures for roosting	Not observed; potential foraging areas present	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of foraging habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
Yuma myotis <i>Myotis yumanensis</i>	SoC	--/4	Variety of habitats including arid scrublands and deserts, forests	Suitable habitat present; likeliest species to be night roosting near Babson Well	Possible disturbance by noise and/or lighting  Temporary and/or permanent loss of habitat.	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.  Low-impact directional lighting would be used to reduce ambient light into adjacent areas.
<b>Invertebrates</b>						
California floater (mussel) <i>Anodonta californiensis</i>	SoC	--/3	Shallow areas of lakes, reservoirs and streams with sandy or muddy substrates	No suitable habitat present	No impacts	No mitigation
Cockerell's striated disc (snail) <i>Discus shimeki cockerelli</i>	SoC	--/--	Montane environments at elevations between 7,000 and 12,000 feet under rocks and dead wood in a variety of habitat types	No suitable habitat present	No impacts	No mitigation

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Lake of the Woods pebblesnail and Lost River pebblesnail <i>Fluminicola sp.</i>	--	--/1	Spring fed tributaries in the Klamath watershed, gravelly or cobble substrates	No suitable habitat present	No impacts	No mitigation
Lost River springsnail <i>Pyrgulopsis sp.</i>	--	--/1	Cold flowing waters with high dissolved oxygen and gravelly or cobbly substrates	No suitable habitat present	No impacts	No mitigation
Peaclam <i>Pisidium ultramontanum</i>	SoC	--/--	Lakes, rivers and streams lacking dense vegetation with high dissolved oxygen, and sparse macrophytic vegetation, sand/gravel substrates.	No suitable habitat present	No impacts	No mitigation
<b>Plants</b>	<b>Potential Impacts</b>		<b>Proposed Mitigation</b>			
	Construction and operation of the proposed Energy Facility would disturb soil, existing vegetation, and a very small area of wetlands.		Mitigation measures would be implemented during construction to the minimum extent of area needed for practical and safe working areas, to identify off-limits area, and revegetate disturbed areas. Workers would receive training regarding wildlife and habitat and safe vehicle speeds. Directional boring techniques and a minimum amount of fill would be used to avoid impacts to wetlands.			
American pillwort <i>Pilularia americana</i>	--	--/2	Vernal pools and along the margins of lakes, ponds and reservoirs at elevations below 5,500 feet	Not observed; Some habitat present, known to occur along margins of reservoirs east of analysis area.	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Baker's globe mallow <i>Illiama bakerii</i>	--	--/1	Chaparral, sagebrush and juniper woodland habitats at elevations between 3,000 and 8,500 feet	Not Observed, Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Bellinger's meadowfoam <i>Limnanthes floccossa ssp. bellingeriana</i>	--	C/1	Vernal pools, moist meadows and seeps in open pine-oak woodlands at elevations between 900 and 4,000 feet	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Blue-leaved penstemon <i>Penstemon glaucinus</i>	--	--/1	High elevation lodgepole and white fir forests	No suitable habitat; All known populations occur on 6400 acres of Federal lands managed by the Fremont NF, Winema NF and the BLM.	No impacts	No mitigation
Columbia yellowcress <i>Rorippa columbiae</i>	--	C/1	Along streams, lakes, wet meadows and other seasonally saturated areas at elevations between 4,000 and 6,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Creeping woody rock cress <i>Arabis suffrutescens var horizontalis</i>	SoC	C/1	Sagebrush scrub, Yellow pine forest and red fir forest at elevations less than 5,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Disappearing monkeyflower <i>Mimulus evanescens</i>	SoC	C/1	Great basin scrub, lower montane conifer forest, pinyon juniper woodland; gravelly, rocky; vernal moist areas at elevations between 4,000 and 6,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Flaccid sedge <i>Craex leptalea</i>	--	--/3	Bogs, fens, marshes, swamps, seeps and wet meadows at elevations less than 2,500 feet	Not observed; Limited habitat present; above known elevation range of species	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Fringed campion <i>Silene nuda ssp. insectivora</i>	--	--/4	Meadows in ponderosa/lodgepole pine forest openings at elevations between 4,000 and 6,000 feet	Meadows in ponderosa/lodgepole pine forest openings	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Greene's Mariposa lily <i>Calachortus greenei</i>	SoC	C/1	Oak woodland, pinyon juniper woodland, coniferous forest, meadows	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
			and seeps, volcanic soil, at elevations between 3,000 and 6,500			including restoration would be implemented.
Green-flowered wild ginger <i>Asarum wagneri</i>	--	C/1	Mixed conifer and lodgepole pine forests at elevations ranging from 4,500 to 8,500 feet	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Green-tinged paintbrush <i>Castilleja chlorotica</i>	--	--/1	Dry gravelly slopes, and grassy openings in ponderosa pine or lodgepole pine forests at elevations between 5,000 and 8,200 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Howell's false caraway <i>Perideridia howellii</i>	--	--/4	Ponderosa pine, mixed conifer, meadows, along streams and on moist slopes at elevations between 2,000 and 5,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Lady slipper orchid <i>Cypripedium fasciculatum</i>	SoC	C/1	Open conifer forest at elevations, generally acidic soil, at elevations between 500 and 7,500 feet	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Least phacelia <i>Phacelia minutissima</i>	--	C/1	Open, ephemeral moist areas in meadows, sagebrush-steppe, lower montane forests and riparian areas at elevations between 4,000 and 8,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Lemmon's catchfly <i>Silene lemmonii</i>	--	--/3	Oak woodlands and conifer forests at elevations between 2,800 and 9,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Long-bearded	--	--/1	Meadows or along the	Meadows in ponderosa /	Possible harm from	To the extent practicable, the facilities would be

**TABLE 3.4-8**  
Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Mariposa lily <i>Calochortus longebarbatus</i>			edges of ponderosa pine, lodgepole pine forests and in juniper woodlands at elevations between 4,000 and 6,000 feet	lodgepole pine forest openings	construction of Facility features	located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Mountain lady's slipper <i>Cypripedium montanum</i>	--	--/4	Mixed conifer forests and woodlands at elevations ranging from 300 to 6,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Mt. Mazama collomia <i>Collomia mazama</i>	--	--/1	Alpine meadows and on slopes in association with mixed conifer, true fir and lodgepole pine forests, generally on open or disturbed areas at elevations generally above 5,000 feet	No suitable habitat present	No impacts	No mitigation
Newberry's gentain <i>Gentiana newberryi</i>	--	--/2	Vernally wet to dry, subalpine and alpine meadows, along mountain streams at elevations between 5,000 and 12,000 feet	No suitable habitat present	No impacts	No mitigation
Playa phacelia <i>Phacelia inundata</i>	SoC	--/1	Sagebrush scrub, yellow pine forests, alkali sinks and playas, on alkaline soil 4,500 to 6,000 feet.	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Profuse -flowered mensa mint <i>Pogogyne floribunda</i>	SoC	--/1	Vernal pools, seasonal lakes and intermittent drainages at elevations between 3,200 and 5,000 feet	Not observed; limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Prostrate buckwheat <i>Erigonum procidum</i>	SoC	C/1	Dry, rocky slopes, and flats within juniper- sagebrush and Jeffery pine woodlands at elevations between 4,000	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Rafinesque's pondweed <i>Potamogeton diversifolius</i>	--	--/2	and 8,500 feet Ponds, streams and reservoirs below 8,000 feet	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Red-root yampah <i>Perideridia erythrorhiza</i>	SoC	C/1	Meadows, pastures, and open areas in pine-oak woodlands at elevations less than 5,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Salt heliotrope <i>Heliotropum curvassavicum</i>	--	--/3	Many different plant communities at elevations less than 7,000 feet, but is generally associated with saline soil	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Shockley's ivisia <i>Ivesia shockleyi</i>	--	--/2	Open gravelly, rocky areas associated with subalpine fir and pine forests, at elevations between 9,000 and 13,000 feet	No suitable habitat present	No impacts	No mitigation
Short-podded thelypody <i>Thelypodium brachycarpum</i>	--	--/2	Irrigated pasture, sagebrush shrub, pond and stream edges; adjacent to ponderosa pine forests; alkali soil at elevations between 3,000 and 6,500 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Slender bulrush <i>Scirpus heterochaetus</i>	--	--/3	Marshes, swamps and around lake edges, in lower montane conifer forests at elevations around 5,000 feet	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.
Tricolor monkeyflower\} <i>Mimulus tricolor</i>	--	--/2	Moist flats on wet clay soil and in vernal pools within woodlands and	Not observed; Limited habitat present	Possible harm from construction of Facility features	To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures

**TABLE 3.4-8**  
 Summary of Potential Impacts and Proposed Mitigation for Special-Status Species Potentially Occurring Within the Analysis Area

Species	USFWS	ODFW/ ONHP	Habitat Requirements	Potential Occurrence in Analysis Area	Potential Impacts	Proposed Mitigation
Warner Mountain bedstraw <i>Gallium serpicum</i> var. <i>warnerense</i>	--	--/2	grasslands, at elevations less than 5,000 feet  Meadows and seeps, pinyon/juniper woodland, conifer forest and rocky talus at elevations between 4,500 and 9,000 feet	Not observed; Suitable habitat present	Possible harm from construction of Facility features	including restoration would be implemented.  To the extent practicable, the facilities would be located in disturbed areas or in areas with minimal habitat value. Mitigation measures including restoration would be implemented.

USFWS = United States Fish and Wildlife Service  
 SoC = Federal Species of Concern

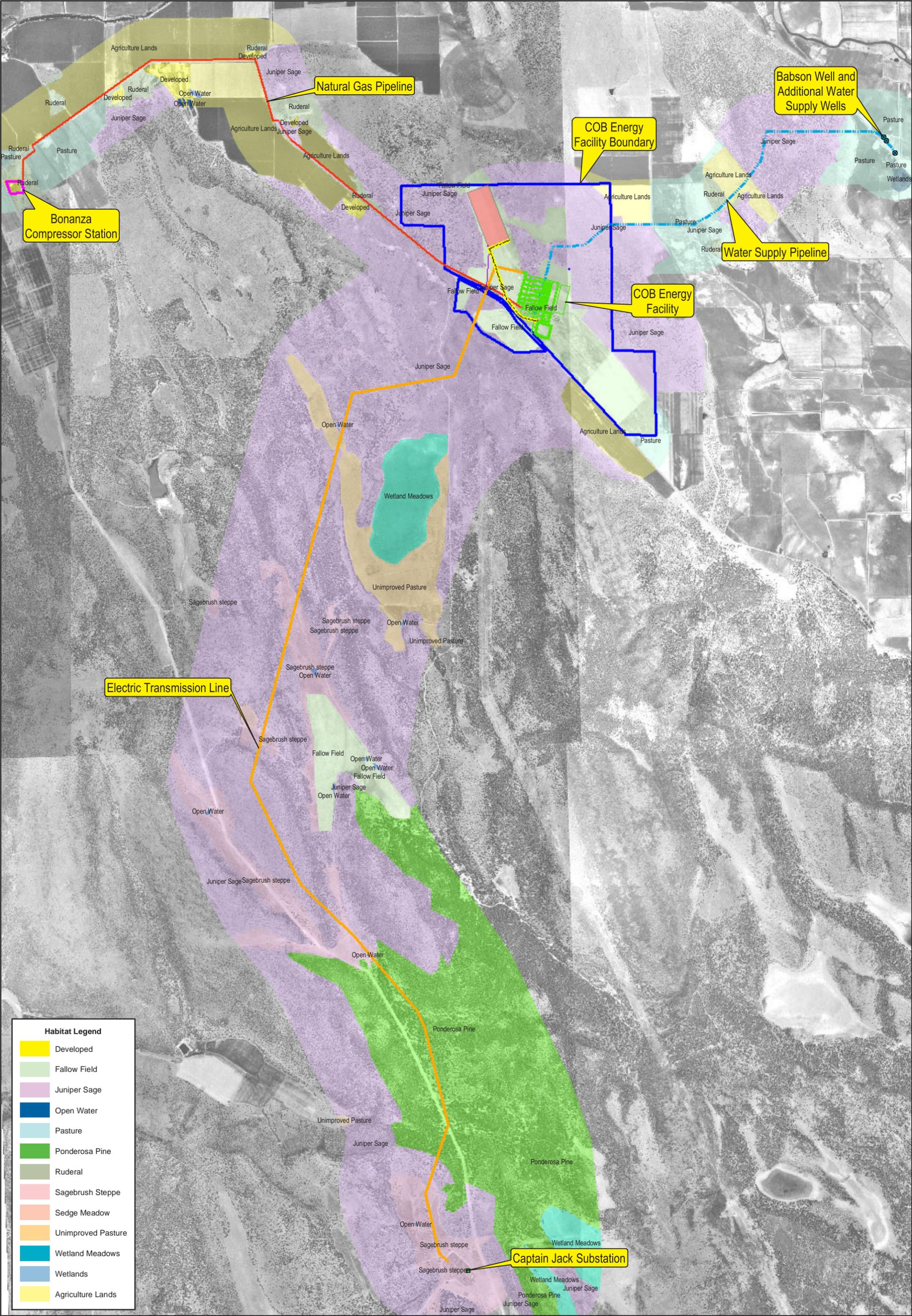
**Oregon Department of Fish and Wildlife (ODFW)**

- C Candidate for state listing as threatened or endangered
- V Vulnerable species for which listing as threatened or endangered is not believed to be imminent, and can be avoided through protective measures and monitoring.
- U Undetermined status; more information is needed to determine the conservation status of the species
- P Peripheral or naturally rare species, species on the edge of their natural range in Oregon, or have naturally low populations within the state

**Oregon Natural Heritage Program (ONHP)**

- 1 Taxa that are threatened or endangered throughout their range
- 2 Taxa that are threatened or endangered in Oregon, but more secure elsewhere
- 3 Review list, taxa for which more information is needed to determine the conservation status
- 4 Species that are of conservation concern, but are not currently threatened or endangered





**Electric Transmission Line**

**Natural Gas Pipeline**

**COB Energy Facility Boundary**

**COB Energy Facility**

**Water Supply Pipeline**

**Babson Well and Additional Water Supply Wells**

**Bonanza Compressor Station**

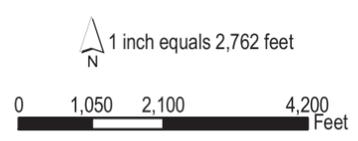
**Captain Jack Substation**

**Habitat Legend**

Developed
Fallow Field
Juniper Sage
Open Water
Pasture
Ponderosa Pine
Ruderal
Sagebrush Steppe
Sedge Meadow
Unimproved Pasture
Wetland Meadows
Wetlands
Agriculture Lands

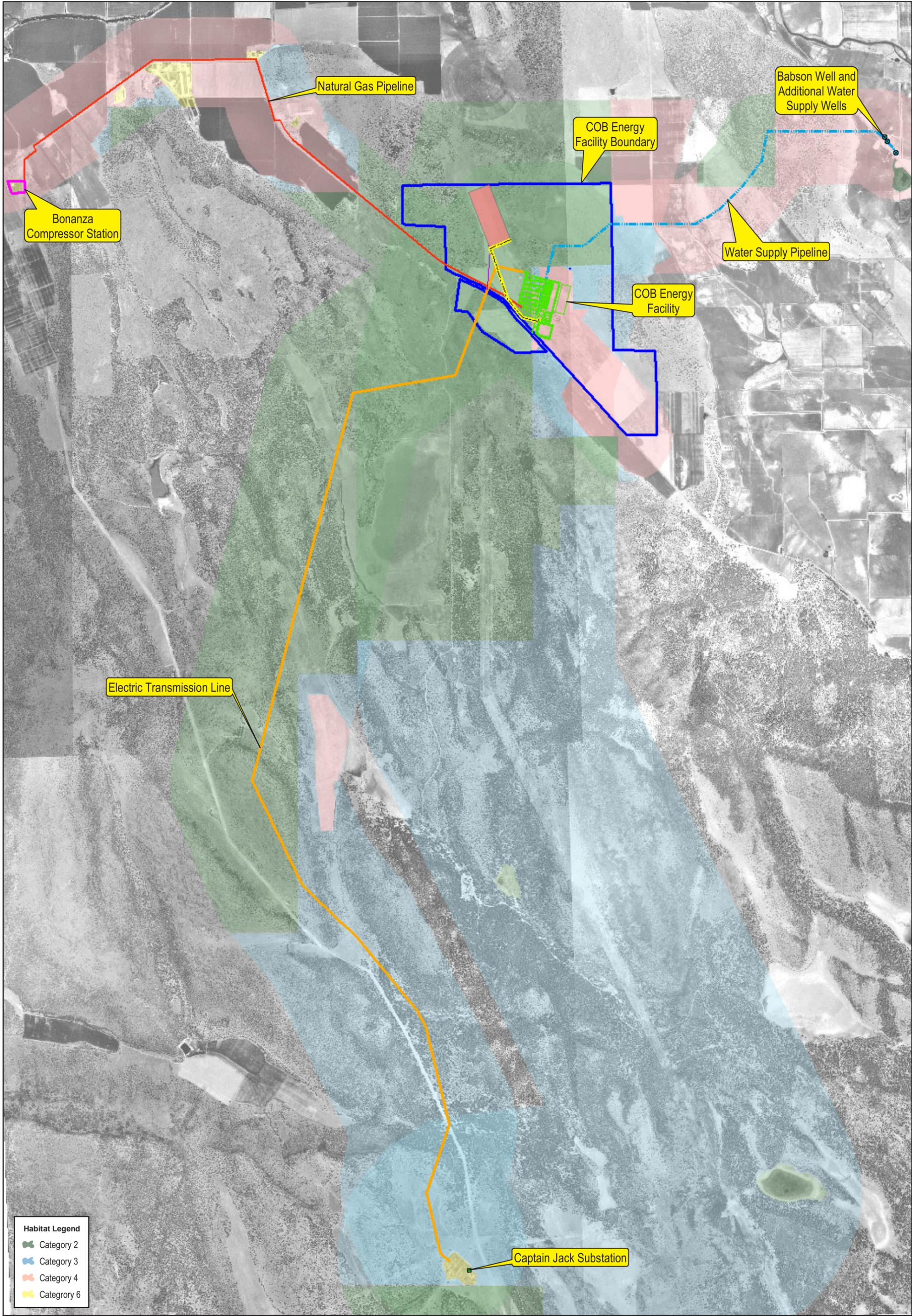
**Legend**

Captain Jack Substation	COB Energy Facility	Irrigation Pipeline
Babson Well and Additional Water Supply Wells	Electric Transmission Line	Irrigated Pasture Area Access Road
Bonanza Compressor Station	Natural Gas Pipeline	Irrigated Pasture Area
	Water Supply Pipeline	



**Figure 3.4-1**  
 Habitat Types  
 COB Energy Facility  
 Bonanza, OR  
 PEOPLES ENERGY RESOURCES

Figure 3.4-1  
11 x 17  
Color  
Back

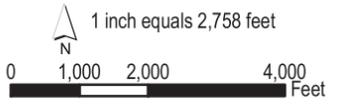


**Habitat Legend**

	Category 2
	Category 3
	Category 4
	Category 6

**Legend**

	Captain Jack Substation		COB Energy Facility		Irrigation Pipeline
	Babson Well and Additional Water Supply Wells		Electric Transmission Line		Irrigated Pasture Area Access Road
	Bonanza Compressor Station		Natural Gas Pipeline		Irrigated Pasture Area
			Water Supply Pipeline		

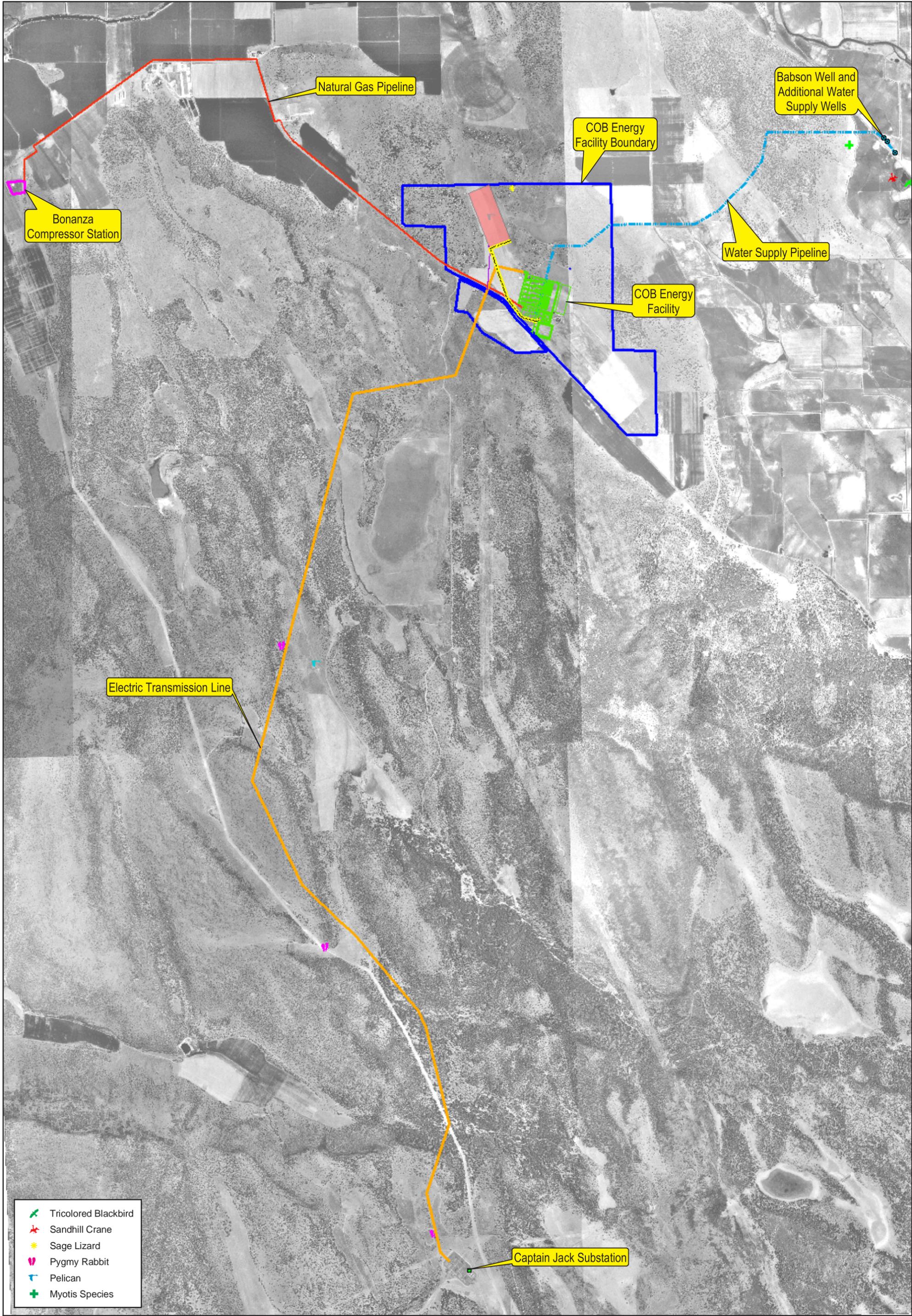


**Figure 3.4-2**  
Oregon Department of Fish and Wildlife (ODFW) Habitat Categories

COB Energy Facility  
Bonanza, OR



Figure 3.4-2  
11 x 17  
Color  
Back



Electric Transmission Line

Natural Gas Pipeline

COB Energy Facility Boundary

Babson Well and Additional Water Supply Wells

Bonanza Compressor Station

Water Supply Pipeline

COB Energy Facility

Captain Jack Substation

- ✓ Tricolored Blackbird
- ★ Sandhill Crane
- ★ Sage Lizard
- ♥ Pygmy Rabbit
- T Pelican
- + Myotis Species

Legend

- Captain Jack Substation
- ▭ COB Energy Facility
- ~ Irrigation Pipeline
- Babson Well and Additional Water Supply Wells
- Electric Transmission Line
- Irrigated Pasture Area Access Road
- Natural Gas Pipeline
- Irrigated Pasture Area
- Bonanza Compressor Station
- Water Supply Pipeline

1 inch equals 2,751 feet

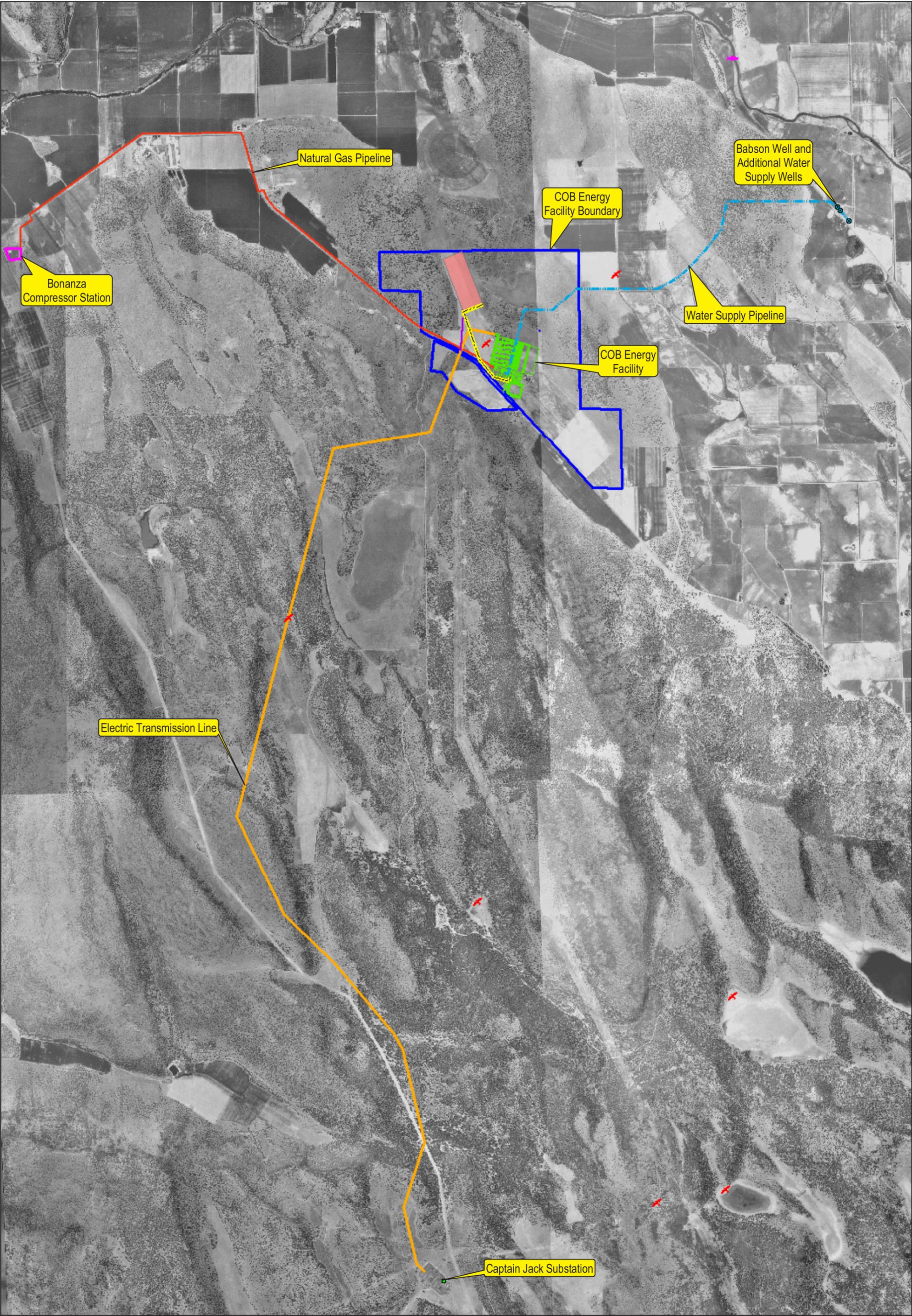


Figure 3.4-3

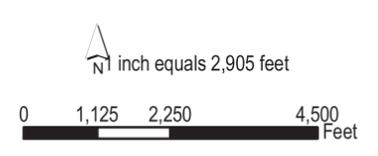
Special-Status Species  
COB Energy Facility  
Bonanza, OR



Figure 3.4-3  
11 x 17  
Color  
Back



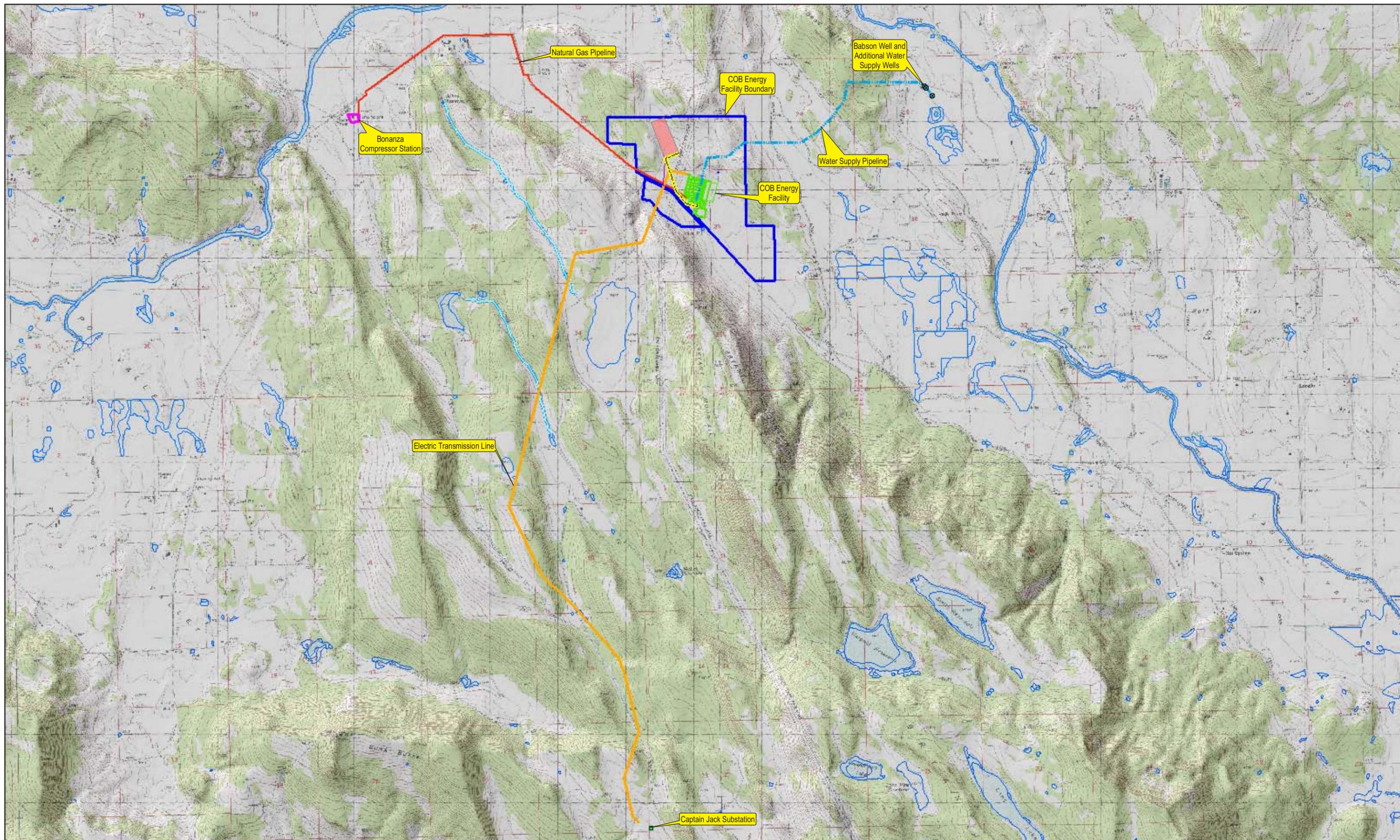
- Legend**
- Captain Jack Substation
  - ▭ COB Energy Facility
  - ~ Irrigation Pipeline
  - ✕ Bald Eagle
  - Babson Well and Additional Water Supply Wells
  - ▭ Electric Transmission Line
  - ▭ Irrigated Pasture Area Access Road
  - ▭ COB Energy Facility Boundary
  - ~ Natural Gas Pipeline
  - ▭ Irrigated Pasture Area
  - ~ Water Supply Pipeline
  - ◆ Shortnose Sucker
  - ▭ Bonanza Compressor Station



**Figure 3.4-4**  
*Rare, Threatened, and Endangered Species*  
 COB Energy Facility  
 Bonanza, OR



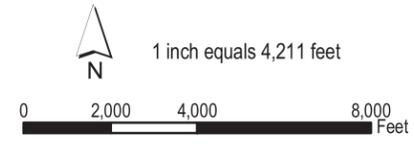
Figure 3.4-4  
11 x 17  
Color  
Back



**Legend**

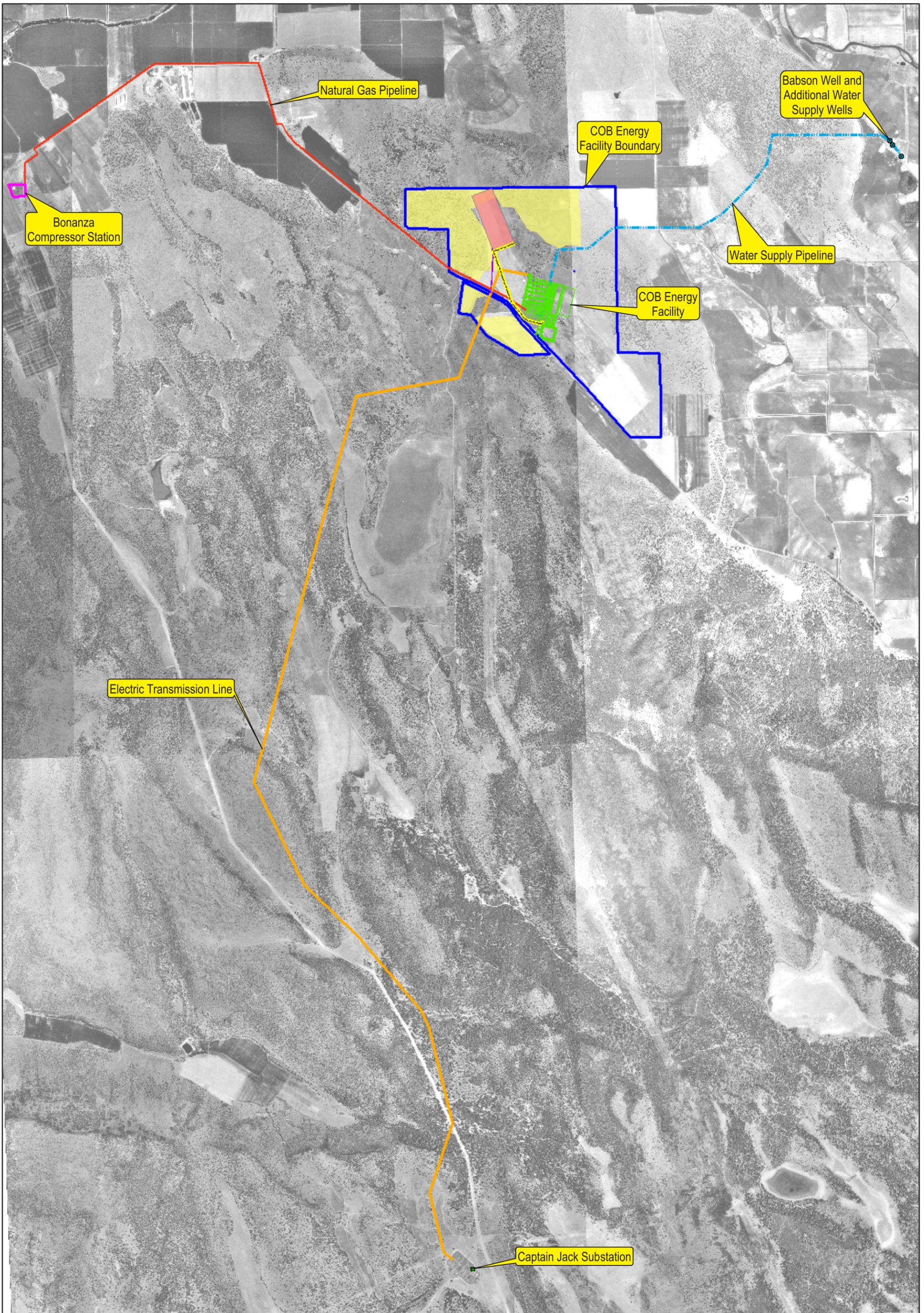
- |                                               |                                    |                            |                              |                                            |
|-----------------------------------------------|------------------------------------|----------------------------|------------------------------|--------------------------------------------|
| Captain Jack Substation                       | Natural Gas Pipeline               | Irrigated Pasture Area     | COB Energy Facility          | National Wetlands Inventory (NWI) Wetlands |
| Babson Well and Additional Water Supply Wells | Irrigation Pipeline                | Field-Observed Wetlands    | Bonanza Compressor Station   |                                            |
| Water Supply Pipeline                         | Irrigated Pasture Area Access Road | Electric Transmission Line | COB Energy Facility Boundary |                                            |

Source: National Wetlands Inventory (NWI). Malin, Bonanza, Bryant Mountain and Lorella 1:24,000 Scale Quadrangle Series. Digitized from aerial photo interpretation.



**Figure 3.4-5**  
Wetlands  
COB Energy Facility  
Bonanza, OR

Figure 3.4-5  
11 x 17  
Color  
Back



<p><b>Legend</b></p> <ul style="list-style-type: none"> <li>■ Captain Jack Substation</li> <li>● Babson Well and Additional Water Supply Wells</li> <li>□ Bonanza Compressor Station</li> <li>■ Proposed Mitigation Areas</li> <li>▭ COB Energy Facility</li> <li>▭ Electric Transmission Line</li> <li>▭ Natural Gas Pipeline</li> <li>▭ Water Supply Pipeline</li> <li>▭ Irrigation Pipeline</li> <li>▭ Irrigated Pasture Area Access Road</li> <li>▭ Irrigated Pasture Area</li> </ul>		<p>1 inch equals 2,757 feet</p>	<p><b>Figure 3.4-6</b> Proposed Mitigation Areas COB Energy Facility Bonanza, OR</p>
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Figure 3.4-6  
11 x 17  
Color  
Back