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Biological Assessment for the Klamath River Rural Broadband Initiative

Fiber Optic Cable Project – Proponent’s Environmental Assessment

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Biological Report

Fiber Optic Cable Project – Proponent’s Environmental Assessment

SECTION I SUMMARY OF FINDINGS AND CONCLUSIONS

The focus of this assessment was on special status animals and plants within Humboldt County, CA. The study for wildlife began with the list published periodically by the California Department of Fish and Wildlife, the Special Animals List. This list of species was reviewed and species outside the influence area of the project, or with no habitat in the project area, were eliminated from consideration. This resulted in a list of special status species with suitable habitat potentially present in the Biological Assessment Area (BAA). The definition of “special status species” is found in the California Natural Diversity Database (CNDDDB) publications above-referenced, in used as specified in those publications, and is incorporated herein by reference. The definitions of the various rankings are found On June 8, 2016, the CNDDDB was queried for recorded instances of special status animal and plant species on quadrant maps that are crossed by this project.

The following report is for the Proponent’s Environmental Assessment (PEA) for the Klamath River Rural Broadband Initiative (KRRBI). After a detailed review of the available fish, wildlife, and plant databases and relevant literature 111 sensitive species were identified as potentially within the assessment area (see Table 1.). An overview of potentially impacted sensitive species is provided here as a summary of our findings. Most will not likely be impacted by the proposed construction activity. There are a few species that will require attention to avoid potential impacts. Impacts to the majority of these species requiring attention can be achieved using seasonal restrictions to avoid sensitive periods of the year when most of them reproduce. Northern Spotted Owl (*Strix occidentalis*) activity centers will have to be avoided within ¼ mile if currently active, but there are no known activity centers within ¼ mile of the Project route. This species is well surveyed and careful monitoring is possible. Marbled Murrelet (*Brachyramphus marmoratus*) habitat is present in places and should be avoided with seasonal restrictions. Most of the habitat is where restricted operations are planned on the Redwood National and State Parks (RNP) lands. Willow Flycatcher (*Empidonax trailli*) habitat is present along much of the route. Two California Species of Special Concern (CSSC): Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Ictera virens*) may nest or attempt to nest in the suitable alder and willow riparian habitat adjacent to the project area along the Klamath River and Redwood Creek. No riparian or other habitat will be removed during construction activities and the physical footprint of disturbance from construction activities will be confined to the immediate road shoulder. Throughout much of the proposed project route, construction activities will not significantly add to the current level of disturbance (e.g. high traffic areas of highway 101 and highway 96). The nature of the proposed construction activities, confined to the existing road and road shoulder, brief time of activity in any one location, and presence of pre-existing human and vehicle disturbance, make the likelihood of significant impacts to any sensitive species very low.

SECTION II (2.0) INTRODUCTION, BACKGROUND, AND PROJECT UNDERSTANDING

Background

The purpose of this study is to determine which special status species may be of concern for the KRRBI Project and where along the project route they may be found. The intent of this study is to take all known species in the area, then review the list for those for which habitat is present, then to further narrow that list to those species that could be adversely affected by the construction or operation of this project. The Direct Impact Area (DIA) is an area 10 feet on either side of the proposed centerline for the project, as there will be no ground or vegetation disturbance further away from the line than that distance. Where underground installation is planned, disturbance will be limited to the ditch area along the side of a paved or graveled road for over 95 percent of the project area, probably 3 to 4 feet on either side of the proposed centerline. The Indirect Impact Area (IIA) varies by species (depending on the species' sensitivity to construction noise, light, dust, etc.) and may be as large as one half mile on either side of the centerline. Because there are species that may be disturbed by construction even if the species is located well away from the DIA, the full study area, or BAA was defined as an area one half mile on either side of the proposed centerline for the KRRBI fiber optic line, plus an area one half mile on either side of Alternative 5A.

This biological assessment was prepared to meet the required environmental documentation for construction of a new fiber optic cable route into the less populated portions of rural Humboldt County. The KRRBI Project will pass through many habitat types and possibly encounter sensitive plant, fish and wildlife species. The goal of the KRRBI fiber optic cable project is to provide internet access to the rural community along the proposed route. This biological assessment is to determine the potential impact of construction activities on the surrounding sensitive plants and animals. Full construction details of the proposed project are provided in the PEA. To provide an initial list of sensitive species for the BAA, California Department of Fish and Wildlife's (CDFW) CNDDDB was queried to identify species with records of occurrence within the BAA.

The CNDDDB provides "location and natural history information on special status plants, animals, and natural communities to the public, other agencies, and conservation organizations" "Records in the database exist only where species were detected. This means there is a bias in the database towards locations that have had more development pressures, and thus more survey work. Results are returned from the CNDDDB by 24,000-scale topographic quadrant maps, as refined by the BAA. Quadrants returning results were:

Segment 1	Orleans, Weitchpec, Hopkins Butte, and Fish Lake
Segment 2	Weitchpec, Johnsons, and French Camp Ridge
Segment 3	Weitchpec, French Camp Ridge, and Bald Hills
Segment 4	Bald Hills, Johnsons, Orick, Holter Ridge, and Rodgers Peak
Segment 5 and Alternative 5A	Orick, Rodgers Peak, Bald Hills, Crannell, Trinidad, Arcata North, and Fern Canyon

The query is conducted by overlaying the BAA on the CNDDDB's Geographic Information System (GIS). That database represents species presence by polygons of varying sizes, depending on the reliability of the data and the species. A species presence is returned if its polygon is overlapped by the BAA, even though the species sighting might have been outside the BAA. The results from the CNDDDB search, results from other searches known to the author from the general area, and the refined list from the initial CDFW lists were all reviewed. Species without suitable habitat along the proposed project route were dismissed.

Species were also eliminated if they occupy a habitat type that is technically within the BAA but not at all impacted by the project. For example, Alternative 5A travels along Highway 101 and Patrick's Point Drive. Within half a mile of the centerline of that alternative there are rocky coastline or outer dune habitats, but the project will not have any impact on those habitats and species using those habitats were eliminated from consideration.

Wildlife and plant species were considered for inclusion in the environmental analysis based on the following three criteria:

Species range includes BAA—Species is known to or likely to occur in the area of the BAA. The species listed on the CDFW Special Animals and Plants List April 2016 was the initial source used for species to consider and both CNDDDB and published accounts of species occurrence (e.g., Hunter et al. 2005) were used to identify species' ranges. Species with ranges overlapping the BAA but clearly outside the influence of the proposed project, such as occurring at elevations or under other conditions not encountered by the proposed project route, were dismissed at this point.

Suitable habitat potentially present in BAA—Species with range overlapping the BAA and with suitable habitat likely present in the BAA met this criterion. Both the CNDDDB records and all other published and unpublished records for species occurrence and for identifying characteristics of suitable habitat we used for this phase of assessment. Species whose ranges overlapped the BAA but the proposed project route did not include potentially suitable habitat were dismissed based on this criterion. In addition, species were also dismissed if suitable habitat within the BAA was separated from the proposed project route, such as rocky coastline or the wave slope of outer dune habitats, and therefore are unlikely to be impacted by either ground disturbing activities or noise from the proposed construction activities.

Suitable habitat present that *may be impacted within the BAA*—Species in this category are considered for potential impacts and Project-wide mitigation measures are identified to avoid or minimize potential impacts from the proposed construction activities. All species meeting this criterion are presented in the species accounts to follow.

SECTION III (3.0) METHODS

A. 3.1 Field Observation and Studies

An initial review of possible biological impacts was based on a query of CDFW's sensitive species inventory the CNDDDB. This helped to identify species of concern potentially present in the project area. For each species of concern potentially present in the project area, an assessment of whether suitable habitat is present was conducted. An excellent working knowledge of the ecology of the various forest habitats along the route has been established over many years with the cooperation of many biologists. Consideration of suitable habitat was possible as the author is very familiar with the habitat along the route, which because it is adjacent to the roads is easily seen. The project covers a wide range of habitat types found in Humboldt County. These habitats include dry inland mixed-conifer forest habitats around Orleans, riparian and riverine habitats along the Klamath River and Redwood Creek, oak woodland habitat along the Bald Hills road in RNP, and redwood-dominated forest and lacustrine habitats along highway 101 south to McKinleyville. In addition, biological information from public land management agencies, tribes, and willing private landowners adjacent to the project area was included in this assessment.

The information described above was synthesized to produce a list of species of potential concern. Based on the geographic location of the project within Humboldt County any sensitive species whose range, may overlap the project area was initially considered. In Section 4.1.3 the Federal and State Protected Endangered, Threatened, and Sensitive (PETS) species potentially present in the project area are reviewed. All possible PETS species whose ranges overlapped the project area in Humboldt County were considered. However, lack of suitable habitat in the project area eliminated many from further evaluation for potential impacts from the proposed project.

The initial assessment relied on the CNDDDB and a working knowledge of the wildlife habitats traversed by the proposed project area. Table 3.4-2 shows the results of the CNDDDB search with additional species known to the author with presence in the BAA. The table provides the species common and scientific names, global and state ranking for imperilment, and listing where appropriate as federally or state-listed species under the respective endangered species acts. Designations from the California Native Plant Society (CNPS) are listed in addition for native plants. Past survey efforts by land managers and landowners along the proposed project area have included those typical for Federal and State Threatened and Endangered (T&E) species in Humboldt County. Previous and some ongoing surveys have been conducted for: Northern Spotted Owls (NSO), Marbled Murrelets, Pacific Fishers, Humboldt marten (*Martes caurina humboldtensis*), small mammals including white-footed (*Arborimus albipes*) and Sonoma tree (*Arborimus pomo*) voles, Willow Flycatcher, and raptors including Golden Eagles (*Aquila cryseotas*), Northern goshawks (*Accipiter gentilis*), Bald eagle (*Haliaeetus leucocephalus*), Peregrine falcon (*Falco pergrinus*), and Osprey (*Pandion haleaitus*). Community-level surveys have been conducted for both listed and non-listed species including annual breeding bird survey routes (USGS 2012), bird point counts, and the Humboldt Breeding Bird Atlas (HBBA), a 5-year assessment of the distribution of breeding birds (Hunter et al. 2005). In particular such combined survey efforts across the landscape has provided details of nesting/roosting locations (activity centers) for NSO an important Federal and State T&E species for timber management. Within this broader landscape of survey effort, many locations of numerous other sensitive fish, plant, and wildlife species have been identified. In addition, scientific studies have been conducted in Humboldt County on numerous PETS plant and wildlife species by local scientists that provide a broader understanding of each species' local ecology.

B. 3.2 Trustee and Other Agency Consultation

Consultation History There are no known formal consultations at this time.

C. 3.3 Document and Report Review

The assessment area for the CNDDDB query included 0.5 miles on either side of the proposed project area. The following resources were reviewed and synthesized: published scientific literature from professional journals, biological reviews and assessments, unpublished scientific reports, Habitat Conservation Plans (HCP), documents unpublished reports prepared for regulatory and land management agencies, Humboldt breeding bird atlas distribution maps (Hunter et al. 2005), e-Bird species locations and breeding bird survey data (USGS 2012).

D 3.4 Cumulative Biological and Watershed Effects

Cumulative effects were evaluated primarily by using knowledge of the ecology of sensitive species, and the management guidelines used for on public and private lands within the broader project area over the past 25 years. There have been repeated surveys and assessment of impacts by multiple agencies, private

landowners, and tribes for much of the proposed project area. Wildlife surveys, habitat management and timber harvest have all been the goals of the various land users along the route. For such activities to move forward a consideration of potential biological impacts is required. This has been conducted by many landowners for the various natural resources regulatory agencies. Larger landowners along the route include: the Yurok Tribe (YT), the US Forest Service (USFS), RNP and Green Diamond Resource Company (GDRC). This pooled information, the CNDDDB and an adaptive management approach to wildlife since the 1990's has created the basis for sound habitat management in the assessment area. A very thorough coverage of the forested habitats, riverine corridors and open oak savannah habitats has been possible. Familiarity with similar species, habitats and circumstances throughout Humboldt County further assisted in any wider impact determination.

SECTION IV 4.0 RESULTS AND DISCUSSION

A. 4.1 (A) Existing Conditions

The project area overlaps portions of the mid- and lower-Klamath River watershed, lower-Redwood Creek watershed, several lagoons (i.e., Freshwater, Stone, Big), and the lower Little River watershed. The topography is highly diverse and the overall landscape is dominated by coniferous forest. The forest distribution is described as being, Douglas-fir mixed hardwood forest, with redwood and oak woodlands. There are small portions of annual grasses and pines. The rivers flow through confined topography, aligned along a northwestern trend. The mid- and lower-Klamath River and lower Redwood Creek watersheds, lagoons, and Little River watersheds are located in Humboldt County, entirely north of Highway 299, approximately 350 miles northwest of San Francisco. The overall climate of the project area is typical of north coastal California, with and is characterized by dry summers and cool wet winters with heavy annual rainfall. Summer fog mediates the hot summer temperatures where it occurs in the western portion of the project area and provides a important source of moisture during the driest portion of the year which influences vegetation density and diversity.

4.1.1 Terrestrial Habitats

The surrounding landscape is primarily early to mid-seral upland second- or third-growth forest habitat. Substantial amounts of late-seral and old growth forest remain in the RNP complex and on the Six Rivers National Forest (SRNF). Riparian forest habitat, dominated by red alder (*Alnus rubra*), willow (*Salix* spp.) and black cottonwood (*Populus spp.*) in the overstory and thimbleberry (*Rubrus parviflorus*), elderberry (*Sambucus* spp.), Himalayan blackberry (*Rubrus armeniacus*). Early seral, smaller, shrubby willows in the understory, occur along the Klamath and Little River, and lower portions of Redwood Creek.

The majority of the proposed project area is flanked by conifer dominated forests. A strong west-east gradient in summer moisture, provided by fog drip, provides moist conditions supporting largely redwood-dominated forest types west of Weitchpec and more xeric mixed conifer forest dominated by Douglas fir (*Pseudotsuga menzeseii*) east of Weitchpec to Orleans. In these forested habitats, dominant forest habitat types include: coast redwood (*Sequoia sempervirens*), Douglas-fir, Sitka Spruce (*Picea sitchensis*). Montane hardwood-conifer forest habitat also includes significant hardwood components, including tanoak (*Notholithocarpous densiflorus*), black oak (*Quercus kelloggii*), and Pacific madrone (*Arbutus menzeseii*). More than 70% of the broader project area has been harvested for timber. Areas with the majority of the uncut late-seral and old growth forest habitat occur on SRNF and RNP lands. Previous harvested forest habitat varies in its values for wildlife and some areas of harvested forest retain

large-diameter legacy structures including live trees and snags important for some sensitive species. The Bald Hills portion of the project area includes oak woodland and oak prairie habitats, dominated by black oaks, that are regionally uncommon in northern Humboldt County.

Riparian habitat types along the route of the KRRBI project can be described as: upland forest and scrub with coast redwood, Douglas-fir, red alder and big-leaved maple (*Acer macrophyllum*), coyote brush (*Baccharis pilularis*), thimbleberry (*Rubus parviflorus*), Himalayan blackberry (*Rubus armeniacus*), willow scrub/shrub, palustrine scrub coyote brush, and poison hemlock (*Conium maculatum*), all within the assessment area. Characteristic species of forested areas of the Pacific Northwest are relatively abundant.

These include black bear (*Ursus americanus*), black-tailed deer (*Odocoileus hemionus*), Northern Flicker (*Colaptes auratus*) and other woodpeckers, songbirds, western fence lizards (*Sceloporus occidentalis*), and salamanders. The CNDDDB has locations for numerous species with special status which inhabit the varied Klamath River/Redwood Creek watershed. The CDFW database for the NSO provides information on several known territories for the species in the BAA, and the wider area. The NSO is a well-studied and annually surveyed species throughout Humboldt County. This endangered species is documented in forest habitat throughout the region. All three North American accipiter species Cooper's Hawk (*Accipiter cooperi*), Sharp-shinned Hawk (*Accipiter striatus*) and Northern Goshawk occur in the watershed. Pacific giant salamanders (*Dicamptodon tenebrosus*) and Pacific tailed frogs (*Ascephus truei*) are found in the forested streams and seeps. Riparian-associated wildlife species also exhibit a high degree of diversity and density. Wildlife species richness is high compared to other riparian locations in the west. Species sighted in the watershed during surveys include several special status species such as the Willow Flycatcher, Yellow-breasted Chat and Yellow Warbler. Willow Flycatcher is well documented to have juvenile migrants utilizing the river corridor in the fall as well as occasional adult occurrences that have been recorded in the riparian habitat during the summer breeding season. Rare raptors present, include: Bald Eagle, Peregrine Falcon, Osprey, and Merlin (*Falco columbarius*). A few shorebirds and waterfowl inhabit the BAA they include herons, egrets, sandpipers, Wood Duck (*Aix sponsa*), and Common Mergansers (*Mergus merganser*). Some common breeding species are found along roadsides in vegetation provided by gardens, verges, embankments and cuts. These would be the most likely species encountered or impacted along the majority of the proposed route. Small changes in availability of habitat may result in increases and decreases in understory vegetation during operations. This would cause subtle shifts in the bird community, but not cause any significant impacts. There would be potential impacts to sensitive plant species. Those species that use roadside habitats, openings and disturbed areas are the most likely to be impacted. The Western lily (*Lilium occidentale*) for example is a T&E species that will use roadsides on occasion. The checkerblooms and a few other species are also regularly found along roadsides.

Terrestrial portions of the project area can be considered to be environmentally sensitive habitats (ESHAs). Terrestrial ESHAs can be classified as follows:

- 1) Douglas-fir Mixed Hardwood: This is the dominant interior forest habitat type along the survey route. Douglas-fir, tanoak, and dry conditions reflect the species composition and environment. A variety of seral stages are present. Stand disturbance includes both timber harvest and wildfire.
- 2) Oak Savannah Grassland/Prairie: This habitat type is present in Segment 3 and Segment 4. Open grasslands with scattered oak trees, sometimes as larger stands, with the Douglas-fir in-growth around the boundaries.

3) Coast Redwood: This habitat covers the west portion of Segment 3 and Segment 4 and Segment 5. A variety of seral stages are found throughout this route Segment. The Redwood Creek watershed has a concentration of larger mature and Wildlife Habitat Relationship (WHR) size class 6 (multilayered old-growth) trees associated with the RNP. Marbled Murrelets are known to occupy and nest in these stands. The route south through GDRC traverses managed timberlands with a patchwork of mostly early and mid-seral second- or third-growth redwood stands.

4) Coastal Dunes: This habitat is restricted to the outer coast along Alternative 5A. Although within 0.5 miles, with associated species records in the CNDDDB, this habitat is distinctly removed from the proposed operations along the route. Habitat areas are located on the dune spits west of the lagoons and Hwy. 101. The closest location of DUNE is adjacent to Freshwater Lagoon. Here the lagoon is to the east and Hwy101 passes along the spit immediately adjacent to the beach and limited strip of vegetated back-dune.

5) The riparian scrub habitat (Palustrine Scrub-Shrub Wetland; broad-leaved deciduous) occurs on "islands" next to the low flow channels and is the most extensive plant community within the active channel. Portions of this habitat are inundated every winter during high river flows. The Mixed Willow Series dominates the vegetation growing within the riparian scrub habitat. The understory is minimal and is comprised of weedy annual grasses and forbs. Only a sparse covering (40%) of shrubs is found in this community. This includes deciduous wetland species: narrow-leaved willow (*Salix exigua*), Pacific or shiny willow (*S. lucida*), red willow (*S. laevigata*) with the occurrence of red alder and black cottonwood in varying densities. The riparian scrub habitat with coyote brush, willows and annual vegetation supports a variety of wildlife species. The following are some of the species that use the areas for foraging, nesting and cover. Mesocarnivores such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), gray fox (*Urocyon cinereoargenteus*), prey species including rodents and brush rabbits (*Sylvilagus bachmani*) and many other wildlife can be found.

6) Mature Willow/Cottonwood Gallery Forest (WCGF). This habitat is uncommon in the project area. Occasionally the riparian habitat is mature enough to have developed the multi-layered canopy and large cottonwood trees that are characteristic of WCGF. The lower reaches of Redwood Creek, near the junction of Segments 4 and 5, encompass some of this habitat type.

Two additional types of general habitat can be found along the proposed route in addition to those described above. There is the open recently planted early seral stage clear-cut conifer stands scattered within the Klamath River and Redwood Creek watersheds as a result of recent logging activity. The agricultural-orchard-rural residential areas on surrounding lands that are more populated is the other habitat along the route. Mammals typical to these areas include black-tailed deer, raccoon, Virginia opossum (*Didelphis virginiana*), American mink (*Neovison vison*), stiped skunk, North American porcupine (*Erethizon dorsatum*), pocket gophers, Dusky-footed wood rats (*Neotomoa fuscipes*), and deer mice. Representative reptiles and amphibians include the foothill yellow-legged frogs (*Rana boylei*) and northern red-legged frogs (*Rana aurora*), Pacific giant salamanders, rough-skinned newts (*Taricha granulosa*), and common garter snakes: Oregon garter snake (*Thamnophis atratus hydrophilus*), Coast garter snake (*Thamnophis elegans terrestris*) and red-sided garter snake (*Thamnophis sirtalis infernis*).

4.1.2 Aquatic Habitats

Aquatic habitats include riverine, lacustrine (coastal lagoons), wetlands, and ocean shorelines. The mid- and lower-Klamath River and Redwood Creek watersheds drain >100 mi² in Humboldt County, respectively. The Klamath River enters the Pacific Ocean at the town of Klamath (21 miles south of Orick) and Redwood Creek enters the Pacific Ocean 2 miles south of the town of Orick. These and other large rivers in the Pacific Northwest support some of the largest populations of T&E salmonid species on the west coast. The gravel bars along the course of these rivers are, for the most part, un-vegetated due to high flows and annual bar scour. There are deciduous riparian trees (alder, willow and cottonwood) along the edge of the channel anchored into fissures in bedrock substrate both within and outside the bank-full channel. Conifer forests flank the rivers and their vegetated slopes provide cooling canopy cover for the tributary creeks and streams flowing into the main channels. This provides critical cold water during the stressful summer months for salmon fry development. Willow scrub is located in isolated patches on both shorelines, and out on the open bars. The main river channels provide migratory passage to T&E Pacific salmonids, on their way to spawning gravel where they excavate redds in their tributary natal spawning grounds.

Aquatic portions of the project area can be considered to be ESHAs can be classified as follows:

- 1) Riverine aquatic habitats include river channels and lower reaches of major creeks (e.g., Redwood Creek) and the occasional off-channel ponds that form under summer low water conditions. These habitats support invertebrates, fish including >5 species of Pacific salmonids, amphibians, aquatic birds (e.g., American dipper (*Cinclus mexicanus*), Common Merganser, piscivorous birds (e.g., Bald Eagle, Osprey, Belted Kingfisher (*Megaceryle alcyon*), aquatic and semi-aquatic mammals including North American river otter (*Lutra canadensis*), American beaver (*Castor canadensis*), American mink, and raccoon. Riverine habitats provide important resources, including water and vegetation, used by many species during the driest periods of the year.
- 2) The exposed cobble in the gravel bars adjacent to the low-flow channels provides roosting/nesting habitats for some avian species: Killdeer, (*Charadrius vociferous*) and Spotted Sandpiper (*Calidris aethene*), but otherwise represents one of the sparsest habitats in terms of wildlife diversity and numbers. Adult foothill yellow-legged frogs bask on the cobble river edges and immediately disperse into the river when disturbed.
- 3) Outer Coastal Rocky Shoreline: This habitat type is located around the town of Trinidad. Such wave washed locations, although within 0.5 miles, support several PETS species. All of which, however, will not be impacted by the proposed project and OCRS is not further discussed in this report.

4.1.3 Special Animal and Plant Species

The special animal (CDFW and NDD 2016a) and plant (CDWF and NDD 2016b) species considered here are formally identified by one or more federal or California state statutes or identified by CDFW or public regulatory or land management agency included in the biological assessment area as species that must be considered for minimizing adverse impacts to from management actions. Federal statutes applicable here include: Endangered Species Act (ESA), and Bald and Golden Eagle Act. Note that the Migratory Bird Treaty Act (MBTA) protects native birds in the BAA, regardless of their listing status, from direct take as well as from take of eggs or nests, which includes disturbance at a level that causes nest abandonment. State statutes include the California Endangered Species Act (CESA). CDFW has identified California Species of Special Concern (CSSC) that are also protected. CSSC are defined as those species,

subspecies, or distinct populations of native animals, plants, and invertebrates that currently satisfy one or more of the following (not necessarily mutually exclusive) criteria:

- 1) Are extirpated from the state totally or in their primary seasonal or breeding role and were never listed as state threatened or endangered.
- 2) Are listed as federally, but not state, threatened or endangered.
- 3) Meet the state definition of threatened or endangered but have not formally been listed.
- 4) Are experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify them for state threatened or endangered status.
- 5) Have naturally small populations exhibiting high susceptibility to risk from any factor(s) that if realized could lead to declines that would qualify them for state threatened or endangered status.

All CSSC are considered here except any meeting only criterion 1. These PETS no longer occur in the assessment area.

In addition, for plants and animals we used the global and state rankings from the CNDDDB. Additionally for plants the California Rare Plant Ranking (CRPR), which originates from the former California Native Plant Society's (CNPS) classification of California rare plants, was used. The following are the official categories for ranking the concern for plant species at the global and state level.

GLOBAL RANKING--The Global rank (G-rank) is a reflection of the overall status of a plant throughout its known range. Both Global and State ranks represent a letter and number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on Rarity than the other two. Global ranks range from G1 to G5 and are defined as:

G1 Critically Imperiled. At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors

G2 Imperiled. At risk because of rarity due to the very restricted range, very few populations, (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province

G3 Vulnerable. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent widespread declines, or other factors

G4 Apparently Secure. Uncommon but not rare; some cause for long-term concern due to declines or other factors

G5 Secure – Common; widespread and abundant

Subspecies receive a T-rank attached to the G-rank. With the *subspecies*, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the *subspecies* or *variety*.

STATE RANKING-- The S-rank is assigned much the same way as the G-rank, but only for within state boundaries. S-rankings range from S1 – S5: Critically Imperiled, Imperiled, Vulnerable, Apparently Secure, and Secure, respectively. Each rank is defined as follows:

S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

S5 = Secure—Common, widespread, and abundant in the state.

CALIFORNIA RARE PLANT RANKS—The following alphanumeric codes are the CNPS List, California Rare Plant Ranks (CRPR):

- 1A Presumed extirpated in California and either rare or extinct elsewhere
- 1B Rare or Endangered in California and elsewhere
- 2A Presumed extirpated in California, but more common elsewhere
- 2B Rare or endangered in California, but more common elsewhere
- 3 Plants for which more information is needed – Review List
- 4 Plants of limited distribution – Watch List

The CRPR use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. Most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations in California. Threat Code extensions and their meanings are as follows:

- 1) Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 2) Moderately threatened in California (20-80% of occurrences threatened / moderate degree and of threat)

3) Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

To identify a list of PETS species using the CNDDDB query, the proposed route for the fiber optic cable was buffered on each side by 0.5 mi. This buffer area defines the boundary of the biological assessment area (BAA) for this assessment. Using this buffer to define the BAA, the CNDDDB species query, and other sources identified 111 PETS species in the project. The following species accounts for each of the PETS identified in the BAA are based on the synthesis of historical and contemporary information gathered to address their specific distribution relative to the BAA, habitat needs, and potential impacts from the proposed project. Table 2 provides an annotated list of the species considered for this assessment.

The majority of PETS species were considered within this report for offsite, indirect impacts to individuals or habitat. The individual PETS species accounts address the wildlife, fish and plant species with suitable habitat considered potentially present in the wider project area. Initial screening considered all possible species within their respective range for Humboldt County. Species distribution and lack of suitable habitat in most cases eliminated further concern. The following species were dismissed from further consideration due to either the absence of suitable breeding habitat in the BAA or suitable habitat being separated from areas of the BAA likely to be impacted by construction activities: Fork-tailed Storm Petrel (*Oceanodroma furcata*), Brown Pelican (*Pelecanus occidentalis*), Western Snowy Plover (*Charadrius nivosus nivosus*), Black Oystercatcher (*Haematopus bachmani*), Rhinoceros Auklet (*Cerorhinca monocerata*), Tufted Puffin (*Fratercula cirrhata*), Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), Short-eared Owl (*Asio flammeus*), Long-eared Owl (*Asio otus*), Burrowing Owl (*Athene cunicularia*), Black Swift (*Cypseloides niger*), Merlin (*Falco columbaris*), American badger (*Taxidea taxus*), longfin smelt (*Spirincus thaleichthys*) tidewater goby (*Eucyclogobius newberryi*), pink sand verbena (*Abronia umbellata*), Humboldt Bay owl's clover (*Castilleja ambigua*), lagoon sedge (*Carex-lenticularis-var. limnophila*), Oregon coast paintbrush (*Castilleja affinis*), dark-eyed gilia (*Gilia millefoliata*), beach layia (*Layia carnosa*), seaside pea (*Lathyrus japonicus*), and Tracy's mistmaiden (*Romanzoffia tracyi*),

In comparison to the surrounding landscape, the proposed project area follows an existing road corridor with light (e.g., the Bald Hills road) to heavy (e.g., Highway 101) human use. This existing level of disturbance already influences local wildlife species and their habitat. No vegetation will be removed, apart from the immediate roadside. The ½ mile wide buffer for the BAA extends the assessment area well beyond the likely extent of potential habitat disturbance. Species with large home ranges would be expected to experience minimal impacts compared to those with small home ranges where higher proportions of their home ranges could be potentially impacted. The pre-existing disturbance from the existing road and existing levels of human use have to be considered for assessing potential impacts for each PETS species in the BAA. Potential impacts from the proposed project therefore should be assessed as one cumulative effect in conjunction with the pre-existing effects from the road and its current level of use. The following individual PETS species accounts are listed in order of priority for protection.

Birds

Golden Eagle (*Aquila chrysaetos*)

Legal Status: Golden Eagles (GOEA) are a federally protected under the Bald and Golden Eagle Act.

Species Description and Habitat Needs: GOEA are a rare to uncommon resident and a locally rare breeder in Humboldt County (Harris 2005). When present, they are often located near open grasslands for

hunting and within dense forest for nesting (Hunter et al. 2005). Rolling terrain with good thermal lift, and nest sites that are secluded from disturbances are favored by GOEA.

Status in the Assessment Area: Suitable habitat is available along Segment 3, and GOEA are expected to forage or potentially nest along this portion of the proposed route. Currently GOEA numbers seem to be stable in Humboldt County. Large platform trees used to support possible nest structures were present on the hillslopes. This species may not currently nest within 0.25 miles of the proposed route, but GOEA do have a very large home range which may incorporate part of the proposed route. GOEA was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat along the Bald Hills Road is available and they would be likely to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded GOEA as present and possibly breeding along the proposed route. This species is unlikely to be affected by construction activities associated with the proposed project.

Bald Eagle (*Haliaeetus leucocephalus*)

Legal Status: The Bald Eagle (BAEA) is a federally protected under the Bald and Golden Eagle Act and listed as state endangered under the CESA. The BAEA was formerly listed under the ESA but was delisted in 2007.

Species Description and Habitat Needs: In Humboldt County, BAEA are a rare to uncommon resident and a locally rare breeder (Harris 2005). Suitable habitat includes open water, such as rivers, large creeks, lakes, coastal lagoons, where they can capture fish, their most typical prey. BAEA typically nest in undisturbed shorelines or forested areas in close proximity to foraging habitat (Hunter et al. 2005). Tall perches with long sight lines that are secluded from human disturbances are favored for nesting sites.

Status in Assessment Area: Fish bearing waters are available and BAEA are expected to forage or potentially nest along the major river portions of the proposed route. Currently BAEA seem to be increasing in Humboldt County due to both the increase in sightings along the coast and of new nest locations in the past decade. Large platform trees used to support possible nest structures were present on the hillslopes. No large nest structures are known in the BAA. This species may not currently nest within 0.25 miles of the proposed route, but BAEA do nest within the greater Klamath River/Redwood Creek watershed. They have been confirmed as historically nesting along the proposed route. There was a record near Orleans in Segment 1 from the CNDDDB report of the BAA. This species is unlikely to be affected by construction activities associated with the proposed project.

Marbled Murrelet (*Brachyramphus marmoratus*)

Legal Status: Marbled Murrelet (MAMU) is listed as threatened under the ESA and endangered under the CESA.

Species Description and Habitat Needs: This nearshore pelagic alcid uses the wide limbs on "Old-growth" trees for nesting platforms. Coast redwood is the most typical habitat choice, but mature moist forests along the coast including Douglas-fir also support MAMU.

Status in the Assessment Areas: Suitable old-growth habitat is present along the proposed route, much of it within RNP. MAMU are known sporadically from other isolated patches within the Klamath River drainage. One such single detection was heard near Johnson's in 2014 from an old-growth mixed redwood/Douglas-fir stand. Cappel Creek on Hwy 169 is another suitable habitat location inside the BAA. MAMU were recorded by the CNDDDB on western portion of the proposed route in Segment 3, Segment 4, Segment 5 and Alternative 5A. The majority of known MAMU locations are within RNP, this portion of the route will have special seasonal restrictions as specified by the RNP for "old-growth" habitat. This will ensure no impact on this portion of the MAMU population. This species will not likely be affected in the few other mature stands along the route by construction activities associated with the proposed project.

Northern Spotted Owl (*Strix occidentalis occidentalis*)

Legal Status: The Northern spotted owl (NSO) is listed as threatened under the ESA. It is a candidate for threatened listing under the CESA, and is a CSSC.

Species Description and Habitat Needs: Humboldt County supports a substantial number of breeding pairs of NSO (Hunter et al. 2005) and they are considered an uncommon resident and breeder (Harris 2005). They are often associated with old growth forests but in northwestern California they also occur in second growth redwood-tanoak stands that support high densities of their preferred prey dusky-footed woodrats and that retain suitable trees for nests. (Hunter et al. 2005).

Status in the Assessment Areas: This species is known to occur within the broader area around the BAA on USFS lands, tribal lands, and commercial timberlands. Suitable foraging habitat and potential nesting habitat is present in large portions of the BAA, but NSO likely avoid using habitat in close proximity to high use roads. They may use habitat along lower use roads where activity, especially at night, is minimal. NSO were recorded by the CNDDDB on all segments of the proposed route. Only NSO and OSPR are this widely documented by the CNDDDB. There are no known nests or activity centers within ¼ mile of the Project centerline. No suitable NSO foraging habitat will be removed. This species is carefully monitored throughout Humboldt County timberlands and on-going surveys will determine or confirm where the current NSO activity centers are located. This species will not be significantly affected by construction activities associated with the proposed project.

California State Protected Species

White-tailed Kite (*Elanus leucurus*)

Legal Status: White-tailed Kite (WTKI) is a Fully Protected species by CDFW.

Species Description and Habitat Needs: The WTKI is a common breeding resident of coastal plains of Humboldt County. Habitat preferred by the WTKI support California Vole (*Microtus californicus*) populations, their primary prey, that are characterized by grasses 1 to 4 feet in height with a layer of decadent thatch beneath (Hunter et al 2005). Furthermore, typical sites that support kites tend occur in networks of interconnected grassland patches. Nesting sites have been reported in the sub-canopies of deciduous or conifer trees and can often be located ≥ 0.5 mi from foraging areas (Harris 2005).

Status in the Assessment Area: Suitable habitat for WTKI along the proposed project route is limited to the Bald Hills oak woodlands and the grassland and dune habitats along lower Redwood creek and Little River. WTKI may nest in either the open areas or in forest habitat with a suitable nesting structure in close proximity (<0.5 mi) to foraging habitat in the BAA. WTKI was not recorded on the CNDDDB

enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded WTKI as present and possibly breeding along the proposed route. This species will not likely be affected by construction activities associated with the proposed project.

American Peregrine Falcon (*Falco peregrinus anatum*)

Legal Status: The American Peregrine Falcon (PEFA) is currently a CDFW Fully Protected species CSSC. The PEFA was delisted from both the ESA and CESA in the 1990s.

Species Description and Habitat Needs: PEFA is a common migrant and wintering bird, but a rare breeding species in Humboldt County (Harris 2005). Breeding sites are limited to nesting in coastal and inland cliffs, and occasionally bridges or platforms in the broken tops of large conifer trees, often near bodies of water (Grinnell 1944).

Status inside the Assessment Area: Foraging habitat is widespread along the proposed project route, however suitable nesting habitat is limited. Known nesting locations of PEFA in the BAA is limited to a site along highway 96 at near the mouth of Bluff Creek. PEFA was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded PEFA as present and possibly breeding near Segment 1. This species will not likely be affected by construction activities associated with the proposed project.

Little Willow Flycatcher (*Empidonax traillii brewsteri*)

Legal Status: The Willow Flycatcher (WIFL) is listed as an Endangered under the CESA.

Species Description and Habitat Needs: Detections of WIFL in Humboldt County can be relatively common during spring and fall migrants. Only three pairs have been confirmed breeding in Humboldt County since 1930 (Hunter et al. 2005, Hewitt 2009). One on the lower Klamath River area and one each on the lower Eel and lower Mad Rivers in the vicinity of the towns of Fortuna and Blue Lake, respectively. Other possible or probable breeding observations of WIFL have been located just inland along the North Coast. Although very rare in Northern California, WIFL regularly breed in 10-20 year old re-generating clear-cuts in the Coast Ranges of Oregon and Washington. These habitats are typically 1000-3000 feet in elevation and contain young conifers along with willow and alder and other mesic broad-leaved shrubs and only 1 location of confirm WILF nesting has been found in this habitat type (lower Klamath River). In contrast to this nesting habitat type, the other known nesting locations along the Eel and Mad Rivers have been located in more classical nesting habitat conditions for WIFL. In these nesting locations the habitat is composed of large stands of dense willow/cottonwood dominated riparian habitat in close proximity to surface waters. Unconfirmed potential nesting locations, based on the detection of WIFL during the breeding period, have recently occurred along the mid- and lower-Klamath River and lower Redwood Creek.

Status inside the Assessment Area: No confirmed nests have been reported in the BAA, however potential nesting locations based on recent detections of WIFL during the breeding period occur along the lower portion of Bald Hills road adjacent to Redwood creek riparian habitat (Segment 4). In addition,

suitable nesting habitat is present in along the Klamath River and the lower portion of Little River. WIFL was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded WIFL as present and possibly breeding along the proposed route. This species will not likely be affected by construction activities associated with the proposed project.

California Species of Special Concern

Northern Harrier (*Circus cyaneus*)

Legal Status: The Northern Harrier (NOHA) is a CSSC Priority 3 species.

Species Description and Habitat Needs: The NOHA is a resident but uncommon breeding species in Humboldt County (Harris 2005). Breeding harriers occur most frequently in coastal lowland open areas composed of contiguous marsh, tall grasslands, coastal dunes, and overgrown pastures. Nests are placed on the ground under tall grass or bushes (Harris 2005).

Status in the Assessment Area: Suitable foraging and nesting habitat in the BAA occurs along the Bald Hills road, and dune and pasture habitats along the lower Redwood Creek and lower Little River. These open habitats along the proposed project route are large enough to support nesting NOHA, but due to the current levels of human disturbance along the existing travel corridors it is unlikely they would nest in close proximity to the roads along the proposed route. NOHA was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded NOHA as present and possibly breeding along the proposed route. NOHA will not likely be affected by construction activities associated with the proposed project.

Northern Goshawk (*Accipiter gentilis*)

Legal Status: The Northern Goshawk (NOGO) has a Natural Heritage rank of G5/S3. Nesting NOGO are a CSSC, and a Sensitive species with the USFS, CDF and BLM.

Species Description and Habitat Needs: A long-lived species, NOGO is a forest hawk that uses mature conifer habitat at higher elevations of the interior of Humboldt County. An open understory is preferred for hunting and large mature conifers are needed for the multiple nest sites within its territory.

Status in the Assessment Area: This species is a very rare breeding bird in Humboldt County. The NOGO is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located near Orleans in Segment 1 of the proposed project route. The HBBA also documented a nesting goshawk during the late 1990's in the Orleans vicinity. This species is quite sensitive to human disturbance and would be very unlikely to nest within 0.5 miles of the project area. The proposed construction activities along the KRRBI fiber optic project route will not have an additional significant impact on this species.

Vaux's Swift (*Chaetura vauxi*)

Legal Status: The Vaux's Swift (VASW) is a CSSC Priority 2 species.

Species Description and Habitat Needs: The VASWs is a common migrant and breeding species in Humboldt County (Harris 2005). They occur in most habitats in the county but are more abundant in the redwood zone of Humboldt County. VASW are aerial insectivores and most often forage over the canopies of forest and other habitats. VASW nest in the cavities of large diameter tree and snags, most often with broken tops providing access to the cavity. VASW also use human structures, such as chimneys in buildings for nesting and communal roosting.

Status in the Assessment Area: Suitable habitat for VASW occurs throughout the BAA, but suitable nesting locations are likely to uncommon to rare. VASW was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur inside the BAA. Due to their aerial foraging activity, they are unlikely to be disturbed while foraging. Due to their use of internal cavities for nesting they are only likely to be impacted by construction activities if nests sites are in the immediate vicinity (100m). Structures typically used by this species such as redwood "goose-pens" are not usually right beside the road. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded VASW as present and possibly breeding along the proposed route. VASW will not likely be affected by construction activities associated with the proposed project.

Olive-sided Flycatcher (*Contopus cooperi*)

Legal Status: The Olive-sided Flycatcher (OSFL) is a CSSC Priority 2 species .

Species Description and Habitat Needs: The OSFL is a common migrant and breeding species in Humboldt County (Harris 2005). These flycatchers are found throughout the county and are typically associated with conifer forests that have ample openings between stands. They are mostly vacant in the more oak-dominated landscapes of interior sites of Humboldt County (Hunter et al. 2005). Olive-sided Flycatchers will be recorded along the majority of the cable route, however it is an abundant species in our area. OSFL nest in cavities in snags, usually at mid to upper canopy height.

Status in the Assessment Area: The OSFL is a common and widespread species throughout Humboldt County. It was recorded on 34% of the HBBA survey blocks, several of which show confirmed breeding. It was one of the 50 most widespread species (rank = 37) of all (n = 181) breeding species documented between 1995 and 1999. OSFL was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur inside the BAA. The BAA may include habitat for this species and it was recorded as a breeding species in 33, of the 41, 5km "blocks" traversed by the proposed project route. OSFL will not likely be affected by construction activities associated with the proposed project.

Purple Martin (*Pogone subis*)

Legal Status: The Purple Martin (PUMA) is a CSSC Priority 2 species.

Species Description and Habitat Needs: The PUMA is an uncommon migrant and breeding species in Humboldt County (Harris 2005). Most documented nesting sites for PUMA occur in the redwood zone and along the major rivers of Humboldt County. PUMA are obligate cavity nesters and use primarily large diameter conifer snags for nesting as well as some human structures such as cavities in old buildings or telephone poles (Hunter et al. 2005).

Status in the Assessment Area: PUMA may also forage over the route, especially during migratory periods. Large conifer snags for nesting will remain and this species will not be impacted by proposed operations. PUMA was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they would be likely to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded PUMA as present and confirmed as breeding along the proposed route. Given their nesting location well above ground in large snags, PUMA will not likely be affected by construction activities associated with the proposed project.

Yellow-breasted Chat (*Icteria virens*)

Legal Status: The Yellow-breasted Chat (YBCH) is a CSSC Priority 2 species.

Species Description and Habitat Needs: The YBCH is a rare migrant and a locally uncommon breeding species (Harris 2005). YBCHs are variable in their nesting habitat preferences, but in general occur in riparian and riparian scrub habitat with dense understory or low vegetative cover. These habitats occur most often along rivers and lower reaches of large creeks (Hunter et al. 2005). In addition, YBCHs can occur in mesic shrub-dominated habitats or recently disturbed areas regenerating with dense low vegetation away from riparian areas.

Status in the Assessment Area: YBCHs regularly occur in the BAA along the Klamath River, lower Redwood Creek, and in the vicinity of the Little River. This species was not recorded on the CNDDDB enquiry. It is included here because suitable habitat is abundant and they are widespread inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded YBCH as present and confirmed as breeding along the proposed route. Additional significant impacts to YBCH from construction activities are minimized due to existing regular human disturbance along the proposed project route. However areas of proposed roadside vegetation removal for the project route will encounter YBCH nesting in the immediate vicinity. Disturbance of breeding YBCH is possible as they use low scrub habitat that might be adjacent to the road, at ground level. Given the proximity of the proposed route to its preferred habitat YBCH could be affected by construction activities associated with the proposed project. Mitigation measure BIO-1 will avoid disturbance of YBCH and other migratory bird nests.

Yellow Warbler (*Setophaga petechial*)

Legal Status: The Yellow Warbler (YEWA) is a CSSC Priority 2 species .

Species Description and Habitat Needs: The YEWA is a locally common migrant and breeding species (Harris 2005). YEWA typically occur in mature riparian areas with stands of black cottonwood, willow, and alder (Hunter et al. 2005). Most of the suitable riparian habitat throughout Humboldt County is occupied by breeding YEWA.

Status in the Assessment Area: Suitable habitat for YEWA in the BAA occurs throughout the proposed route where riparian habitat occurs, such as along the Klamath River, lower Redwood Creek, and Little River. This species was not recorded on the CNDDDB enquiry. It is included here because suitable habitat is available and it is expected to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded YEWA as present and confirmed breeding along the proposed route. YEWA will also occur during migratory period, spring and fall, in the most minimal riparian habitat. Additional significant impacts to this species are unlikely due to existing human disturbance along the proposed project route. As a canopy nesting neo-tropical migrant, this species may be far enough away from significant disturbance due to the construction activities on the ground.

Grasshopper Sparrow (*Ammodramus savannarum*)

Legal Status: The Grasshopper Sparrow (GRSP) is a CSSC Priority #2.

Species Description and Habitat Needs: The GRSP is a locally uncommon migrant and breeding species (Harris 2005). These birds are closely associated with grassland habitats that receive little disturbance from humans (Hunter et al. 2005, Irvin et al. 2013). These habitats exist both coastally and well inland in Humboldt County.

Status in the Assessment Area: Suitable occupied habitat for GRSP occurs along the proposed route in the Bald Hills area (Segment 3). GRSP was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they are expected to be present. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded GRSP as present and confirmed as breeding along the proposed route. Historical GRSP territories are known to occur in close proximity to the proposed route in this area, based on the presence of singing males on top of fence posts within 30m of the road during the nesting season. They will be protected through mitigation measure BIO-1.

California Watch List Species

Ruffed Grouse (*Bonasa umbellus*)

Legal Status: The Ruffed Grouse (RUGR) is on the CDFW Watch List.

Species Description and Habitat Needs: RUGR inhabit the moist lower slopes of the redwood valleys in this region. It is thought RUGR feed on alder buds which are often concentrated along roadsides in riparian habitat. It is one of the expected game bird of the redwood region, but it is found nowhere else in the state. It is much more widespread outside of California.

Status in the Assessment Area: This species is a regular breeding bird across the NW portion of the Cascadia bio-region. It is on the watch list due to its restricted range within the state. This species is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located in Segment 2 of the proposed project route. Construction activities along the proposed KRRBI fiber optic project route will not have a significant impact on this species.

Double-crested Cormorant (*Phalacrocorax auritus*)

Legal Status: Double-crested Cormorant (DCCO) nesting colonies are specifically protected as a CSSC, and the species is on the Watch List.

Species Description and Habitat Needs: The DCCO is a long-lived colonial nesting waterbird that occurs in freshwater and near-coast saltwater habitats that support their primary prey, small fish populations. They breed along the coast as well as on large inland lakes and can fly up to forty miles from nesting areas to foraging areas. In addition to foraging habitat, cormorants need perching areas for resting which most often include large rocks or large trees.

Status in the Assessment Area: The DCCO occurs along the mid- and lower- Klamath River, lower Redwood Creek, and along the entire coastline from Orick to McKinleyville. No nesting locations are known to occur within the BAA and therefore potential disturbance from construction activities for foraging birds at a distance is unlikely. They will be observed flying up and down the rivers of the BAA for foraging. DCCO were recorded by the CNDDDB on Alternative 5A of the proposed route. The HBBA recorded that DCCO only nested along the outer coast, or in Humboldt Bay. They will not nest within the immediate vicinity of the project area. DCCO will not be affected by the KRRBI project.

Great Blue Heron (*Ardea Herodias*)

Legal Status: Great Blue Heron (GBHE) nesting colonies are fully protected by CDFW.

Species Description and Habitat Needs: The GBHE is a widespread and common wader that typically nests in well-established rookeries closely associated with wetland habitats. Rookeries are usually a single or small number of large trees where multiple nests are constructed in close proximity to each other. These communal nesting sites are vulnerable to disturbance and represent a critical element of their life history.

Status in the Assessment Area: Current colony locations are known from Indian Island and Hookton Road based on a recent statewide inventory. A small colony is also present along the Klamath River between Orleans and Happy Camp across the river from Highway 96, well north of the BAA. This species is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located in Segment 1 of the proposed project route. Currently there are no known nesting colonies, or individual nests along the proposed route. The proposed construction activities along the KRRBI fiber optic project route will not have a significant impact on this species.

Black-crowned Night Heron (*Nycticorax nycticorax*)

Legal Status: Black-crowned Night Heron (BCNH) nesting colonies are protected. This species is on the CDFW Special Animals List where it is ranked G5/S4.

Species Description and Habitat Needs: The BCNH is a colonial nesting heron. It roosts during the day and leaves at dusk to forage for amphibians and other food items. BCNH are often found in small numbers within a larger heron rookery. They do also nest in smaller monotypic groups.

Status in the Assessment Area: There are several known BCNH colonies in Humboldt County. Current colony locations are known from Indian Island, Blue Lake, and Hookton Road based on a recent statewide inventory. This species is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located in Segment 4 of the proposed project route. The proposed construction activities along the KRRBI fiber optic project route will not have a significant impact on this species.

Cooper's Hawk (*Accipiter cooperii*)

Legal Status: The Cooper's Hawk (COHA) is a CSSC Watch List species .

Species Description and Habitat Needs: COHA are common migrants and winter visitors but an uncommon breeding species in Humboldt County (Harris 2005). However, COHA are much less dependent on contiguous tracts of forest than other accipiters and prefer areas with broken forest cover for foraging and nesting (Hunter et al. 2005). Preferred nesting habitats include riparian and lowland woodland settings as well as mixed conifer forest. COHA have developed a tolerance for human disturbances which has allowed for their increase in some residential areas, especially in winter.

Status in the Assessment Area: Suitable forested nesting habitat for COHA occurs throughout the BAA. This species would be expected to use the BAA for hunting, and probable nesting. COHA was not recorded on the CNDDDB enquiry. It is included as a PETS species because forest cover is abundant and they would be likely to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded COHA as present and possibly breeding along the proposed route. The existing level of human disturbance probably eliminates concerns for this species as it would be very unlikely to nest close to the proposed project route. COHA will not likely be affected by construction activities associated with the proposed project.

Sharp-shinned Hawk (*Accipiter striatus*)

Legal Status: The Sharp-shinned Hawk (SSHA) is a CSSC Watch List species .

Species Description and Habitat Needs: SSHA are common migrants and winter visitors but an uncommon breeding species in Humboldt County (Harris 2005). Preferred nesting habitats include dense stands of young to mid-seral conifer habitat.

Status in the Assessment Area: Suitable forested nesting habitat for SSHA occurs throughout the BAA. This species would be expected to use the BAA for hunting, and probable nesting. SSHA was not recorded on the CNDDDB enquiry. It is included as a PETS species because forest cover is abundant and they would be likely to occur inside the BAA. Personal knowledge of the avifauna of Humboldt County and its distribution, with the breeding records of the HBBA (1995-1999), provided the basis for this species' inclusion. The HBBA recorded SSHA as present and possibly breeding along the proposed route. The existing level of human disturbance probably eliminates concerns for this species as it would be very unlikely to nest close to the proposed project route. SSHA will not likely be affected by construction activities associated with the proposed project.

Osprey (*Pandion haliaetus*)

Legal Status: The Osprey (OSPR) is a CSSC Watch List species .

Species Description and Habitat Needs: The OSPR is a common resident and breeder in Humboldt County. Breeding OSPR primarily occupy habitat within a few miles of fish-bearing water bodies (Harris 2005). They almost always nest in the flat or broken tops of native conifer trees or snags (Hunter et al. 2005) Nesting locations vary from near water's edge to well upslope of water's edge. This species regularly nests along the Klamath River/Redwood Creek. The immediate vicinity of the proposed route may not have any particularly suitable nesting sites and may have more human activity than would be tolerated by this species. OSPR can adjust to various habitats, nesting in any location that can provide them with a sufficient food supply. They will live by saltmarshes, river, ponds and estuaries. They are found on all continents except Antarctica, and only appear in South America as non-breeding migrants. Live fish make up 99% of the OSPR diet. OSPR require nesting areas that are in open areas that are easy to approach and Nest are often constructed in large-diameter snags, live trees, cliffs, or human-built platforms (Poole et al. 2002).

Status in the Assessment Area: OSPR are regular nesting birds along the rivers in the BAA. Several records were reported from the CNDDDB. OSPR was documented in all Segments of the project area in the CNDDDB report. It and NSO were the only species to be recorded in all segments of the proposed route. Many known and historical nests are monitored annually by the various land managers within the BAA. Certain nest locations in busy areas demonstrate that this species can become habituated to human activity. OSPR will not be affected by construction activities associated with the KRRBI.

MAMMALS

Sensitive mammal species have been detected in the survey area, and would be expected to occur within the BAA. Riparian mammals occurring along the main-stem Klamath River/Redwood Creek include numerous rodent species, whose distributions are linked to the distribution of riparian vegetation. Evidence and occasional sightings of larger, semi-aquatic species, such as beaver and river otter, is often seen. A variety of bat species can be widely distributed within the BAA, but they are rarely seen. Larger mammals such as bear and deer are present along the river travel corridors.

Pallid bat (*Antrozous pallidus*)

Legal Status: The pallid bat (PABA) is a CSSC with a Natural Heritage ranking of G5/S3

Species Description and Habitat Needs: The PABA is found throughout California, except at high elevations, and while is best known from arid desert habitats (Hermanson and O'shea 1983) it also occurs in mixed conifer forest habitats in northern California (Baker et al. 2008). PABA most often use rock crevices or human structures that provide crevice-like features for day and night roosting (Hermanson and O'Shea 1983), however in mixed conifer forest habitats in northern California they utilize large diameter (>100 cm DBH) live trees and snags as well as rock crevices and human-made structures with crevices (Baker et al. 2008). Roosting sites in trees and snags are most often in cavities, including basal hollows, and less commonly in external cervices or underneath exfoliating bark. Bridges may be used as night roosts and individual bats typically exhibit high fidelity to particular night roosts (Lewis 1994, Hayes 2003).

Status in the Assessment Area: Concrete bridges for PABA can be used as either day or night roosts (Lewis 1994). PABA was recorded by the CNDDDB on Segment 3 and Segment 4 of the proposed fiber

optic cable route. No new bridge hangs are proposed for concrete bridges for installation of the KRRBI Project. No impact to this species is expected.

Townsend's big-eared Bat (*Corynorhinus townsendii*)

Legal Status: The Townsend's big-eared bat (TBEB) is a candidate threatened CESA species and a CSSC. It is ranked as G3G4/S2.

Species Description and Habitat Needs: The TBEB occurs throughout California, but complete details of its distribution are unclear, and it occurs in both forested and non-forested habitats (Hayes 2003). TBEB appears to use bridges for night roosts less often than more common bat species in the Oregon coast range (Adam and Hayes 2000) and elsewhere (Sherwin et al. 2000).

Status in the Assessment Area: TBEB was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they are expected to be present.. If present, bats would already be habituated to traffic noise and vibration. No new bridge hangs are proposed for concrete bridges for installation of the KRRBI Project. No impact to this species is expected.

Silver-haired bat *Lasionycteris noctivagans*

Legal Status: The Silver-haired bat (SHBA) is on the CDFW Special Animals List (2016) and is ranked G5/S3S4

Species Description and Habitat Needs: The SHBA is a forest dwelling species that is regarded as a solitary tree-roosting species that roosts in cavities or bark crevices (Kunz 1982). SHBAs forage in or near coniferous or mixed conifer-hardwood forests and often near bodies of water, such as streams and ponds, associated with these forest habitats (Kunz 1982).

Status in the Assessment Area: This species is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located in Segments 3 and 4 of the proposed project route. Impacts to bat species would be minimal considering their arboreal roosting locations and aerial foraging activity. Nocturnal foraging activity will avoid the majority of the construction disturbance.

Yuma myotis *Myotis yumanensis*

Legal Status: The Yuma myotis (YUMY) is ranked G5/S4, it is BLM Sensitive

Species Description: The YUMY is found in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds (Duff 2007). Their natural roosts include caves, rock crevices, and hollow trees, they are more commonly found today in artificial structures close to water. In suitable locations, they have been reported to establish colonies with as many as 10,000 members. They are relatively inactive during the winter and spend some time in torpor, but probably do not migrate away any significant distance.

Status in the Assessment Area: The YUMY is a colonial-roosting species that occurs in a variety of habitat types, including mixed conifer-hardwood forests and oak woodlands (O'Farrell, 1980). Roost sites are typically in caves and human-created structures such as mine shafts and buildings. This species

is documented as present within the BAA. It was recorded by the CNDDDB enquiry as located in Segment 4 of the proposed project route. Impacts to bat species would be minimal considering their cave/structure, roosting locations and aerial foraging activity. Nocturnal feeding activity will avoid the majority of construction period. If present, bats would already be habituated to traffic noise and vibration. No new bridge hangs are proposed for concrete bridges for installation of the KRRBI Project. There will be no significant impacts to YUMY as a result of the proposed project.

White-footed vole (*Alborimus albipes*)

Legal Status: The white-footed vole (WFVO) is a CSSC.

Species Description and Habitat Needs: The WFVO is a nocturnal species WFVO has an elevational range of 0-1000m. They are most abundant in deciduous forests, although they have been observed in WFVO all types of forest throughout their range. Their main habitat requirement is the presence of hazel and density of alder. WFVO eat a variety of herbaceous plants, roots, mosses and pollen (Weinstein 1999). Due to their preference for mesic plant as their primary food, WFVO often occurs close to streams and near fallen trees.

Status in Assessment Area: WFVO were only recorded by the CNDDDB along the coast in Alternative 5A of the proposed fiber optic cable route. This species can use a wide variety of habitats and would be unlikely to use poor quality roadside vegetation. None required. There will be no significant impacts on WFTV as a result of the proposed KRRBI project.

Sonoma tree vole (*Arborimus pomo*)

Legal Status: The Sonoma tree vole (STVO) is a CSSC.

Species Description and Habitat Needs: The STVO is found chiefly within coniferous forest within the fog belt in northwestern California. The range of the STVO occurs from Freestone, Sonoma County, north through Mendocino, Humboldt, and western Trinity Counties to the South Fork of the Smith River, Del Norte County where it is replaced further northward in Del Norte County and into coastal Oregon by the Red Tree Vole (*Arborimus longicaudus*). There is some disagreement over the specific identity (*pomo* versus *longicaudus*) of tree voles at the northern extent of the range in northern California (Blois 2015). STVO builds their nests within the canopies of trees and feeds almost exclusively on Douglas-fir needles. The species' habitat consists of mixed evergreen forests; optimum habitat appears to be wet and mesic old-growth Douglas-fir forest, but this species also occurs in younger forests (e.g., Douglas-fir 47 years old). This vole is primarily arboreal but exhibits some terrestrial activity. It nests in trees, 2-50 m above ground; it may use old nests of birds, squirrels, or woodrats. Nests usually are in Douglas-fir trees but sometimes may be in other conifer or in Pacific madrone (Meiselman, 1996, Vrieze, 1998). STVO nests were most abundant in old-growth forests; the species was associated with large-diameter Douglas-fir, high percentage canopy cover, high stump density, low snag density, shorter snags and logs, and lower elevation; all nests were in Douglas-fir, mostly adjacent to the trunk on the south side (Meiselman, 1996). The SOTV feeds primarily on Douglas-fir needles. It also eats needles of Grand or Lowland White Fir, Sitka Spruce, and Western Hemlock. It may eat inner bark of twigs as well (Benson and Borell 1931). An individual vole may eat an average of 2,400 needles per day, taking the young shoots and eating everything but the center resin duct, which it used to construct their nests. The STVO usually feeds inside or on top of its nest. STVO nest very high in trees, so high that finding them is very difficult and many records come from individuals that were found after a tree had been cut down.

Status in the Assessment Area: Suitable habitat occurs throughout most of the BAA where mature and old growth Douglas fir trees are present. STVO were recorded by the CNDDDB on the wetter western portion of the BAA in Segment 3, Segment 4 and Segment 5 of the proposed fiber optic cable route. Due to the highly arboreal habits of the SOTV and because no large Douglas-fir trees will be removed during construction activities for the proposed project, there will be no significant impacts to this species.

Humboldt marten (*Martes caurina humboldtensis*)

Legal Status: The Humboldt marten (HUMA) is a candidate Endangered species under CESA and a CSSC.

Species Description and Habitat Needs: The HUMA historically occurred chiefly within the fog-influenced conifer forests <20km from the coast from northwestern Sonoma county to coastal Oregon (Zielinski et al. 2001). They are currently known from 2 small remnant populations in California, the largest of which occurs in northern Humboldt, southern Del Norte, and the western edge of Siskiyou counties. The smaller population occurs between highway 199 and the Siskiyou Wilderness in northeastern Del Norte County (Slauson et al. in press). The HUMA primarily occurs in late successional and old growth conifer-dominated forests with dense spatially-extensive ericaceous shrub cover, but does also occur in forest habitats on serpentine forest habitat with dense shrub cover (Slauson et al. 2007).

Status in the Assessment Area: Although HUMA occur just to the north of highway 96 and immediately to the east of highway 169 near the town of Johnson's, HUMAs are only known to occur within the BAA in a single location near Johnson's but >500 feet upslope from the proposed project route in that location. HUMA was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they might be present. Due to the existing human disturbance associated with the road near Johnson's and presence of HUMAs several hundred feet above the proposed project route, no impacts to this species are likely. There will be no significant impacts on HUMA as a result of the proposed project.

Pacific fisher (*Pekania pennanti*)

Legal Status: The Pacific fisher (PAFI) is a candidate Threatened species under the CESA and a CSSC. The PAFI was recently removed as a candidate Threatened species under the ESA.

Species Description and Habitat Needs: In California, the PAFI occurs in mature mixed conifer hardwood forests of the northern coast range, Klamath, Siskiyou, and Sierra Nevada mountain ranges. PAFIs can be found in forest habitats from near sea level on the coast up to 6,000 feet in interior mountain ranges (Lofroth et al. 2010).

Status in the Assessment Area: Detections, sightings, and road kills of PAFIs have occurred throughout much of the BAA. Although considered a CSSC this species has a wide distribution and reasonable population, as shown in the database report. The CNDDDB reported PAFI from Segment 2, Segment 3, Segment 4 and Segment 5 of the proposed fiber optic cable route. PAFI was one of only seven species in the suite of 111 considered that had a distribution over 4, or in all 5, Segments of the proposed route. PAFI likely occur in numerous locations along the proposed route, with the highest frequency of habitat use likely along portions of the route with little human disturbance with adjacent suitable forest habitat. Fishers have large home ranges that typically exceed several square miles (Lofroth et al. 2010). Potential

disturbances from project activity will likely only impact very small portions of any individual fisher's home range, leaving the majority of any home range overlapping the project route not impacted. There will be no significant impacts on PAFI as a result of the proposed project.

4.2.2 Aquatic Habitats

AMPHIBIANS AND REPTILES

Sensitive amphibian species include the Pacific tailed frog (*Ascaphus truei*), the Del Norte Salamander (*Plethodon elongatus*) and the southern seep salamander, aka. Southern torrent salamander (*Rhycotriton varigatus*). Based upon their habitat requirement for, fast moving forest streams and seeps, it is assumed that the tailed frog and southern torrent salamander could occur within the project area. Excellent amphibian habitat is present throughout the BAA.

Southern torrent salamander (*Rhycotriton varigatus*)

Legal Status: The southern torrent salamander (STSA) is a CSSC and a USFS Sensitive species.

Species Description and Habitat Needs: Southern Torrent Salamanders (STSA) are mainly aquatic, but capable of terrestrial activity, living primarily in seeps and headwater streams where the water remains cold year round (Tait and Diller 2006). Aquatic larvae live in clear shallow water and still murky creeks with accumulated leaves. These salamanders are typically found in disjointed populations on north-facing slopes and relatively high elevations or in mature to old-growth forests. STSA is the smallest salamander endemic to the Pacific Northwest, ranging from Northern California to Northern Oregon. STSA lives in aquatic environments from egg through metamorphic stages. Their preferred habitat is cool seeps and mountain brooks that are high in oxygen and have coarse gravel beds. Southern torrent salamanders can travel away from the stream, but only do so when ground moisture content is high.

Status in Assessment Area: Threats to this species includes urbanization, logging, road building, and climate change. As the temperature warms (exceeding the stress threshold of 63 degrees F) the salamanders will have to adapt to the warmer climate or face extinction. Although considered a CSSC this species has a wide distribution and relatively large population as seen in the database report. The CNDDDB reported STSA from Segment 2, Segment 3, Segment 4 and Segment 5 of the proposed fiber optic cable route. STSA was one of only seven species in the suite of 111 considered that had a distribution over 4 or all 5 Segments of the proposed route. There may be pockets of suitable habitat at the mouths of small creeks that empty into the Klamath River that support this species. Mitigation measure WATER-1 will result in BMPs for sediment control that will benefit STSA that are very dependent on clean, cold running water.

Del Norte salamander (*Plethodon elongatus*)

Legal Status: The Del Norte Salamander (DNSA) is a G3/S3 CSSC and a USFS Sensitive species.

Species Description and Habitat Needs: Del Norte salamander (DNSA) are mainly terrestrial and bury themselves deep into talus slopes. The species occurs in areas of moist talus and rocky substrates in redwood or Douglas fir forests. It is typically encountered among moss-covered rocks or under bark and other forest litter, usually avoiding very wet areas. Del Norte salamander is locally abundant in suitable habitat. It is threatened by habitat loss caused by logging.

Status in Assessment Area: Threats to this species includes urbanization, logging, road building, and climate change. As the temperature warms (exceeding the stress threshold of 63 degrees F) the salamanders will have to adapt to the warmer climate or face extinction. Although considered a CSSC this species has a wide distribution and relatively large population and can often be found in road cuts in moist forested areas. The CNDDDB reported DNSA from Segment 1 of the proposed fiber optic cable route. There is suitable habitat present. Mitigation measure WATER-1 will result in BMPs for sediment control that will benefit DNSA that are very dependent on clean, cold water in the interstitial spaces of the talus. This species with its habit of using cut banks is unlikely to have any cumulative impacts. Underground for much of the time DNSA would not be significantly disturbed.

Foothill yellow-legged frog (*Rana boylei*)

Legal Status: The foothill yellow-legged frog (FYLF) is a CSSC and a USFS Sensitive species.

Species Description and Habitat Needs: FYLF are fairly common on the rocky perennial river tributaries within the forest and are fairly common along rivers throughout the north coast. They have been detected regularly along the Klamath River/Redwood Creek including along the margins adjacent to the river. The adults and sub-adults prefer river bars along both riffles and pools, with some shade. Occasionally, FYLF are found in other riparian habitats such as backwater, isolated pools, or slow moving water with mud substrate. In the spring, adult frogs congregate along gravel/cobble river bars, where breeding occurs in shallow, slow flowing water. Previous literature reports breeding to occur from late March through May. Growth to maturity is also temperature dependent; some individuals may reproduce as early as 6 months after metamorphosis (Jennings 1988, as cited by Ashton et al. 1997). The FYLF is a small frog (3.7- 8.2 cm) that can be found from northern Oregon, through California's coast and into Baja Mexico. FYLF are fairly common on the rocky perennial river tributaries within the forest and are fairly common along rivers throughout the north coast. Forty percent of streams in the Pacific Northwest support these frogs. While literature lends overall evidence that they prefer higher gradient, shallower streams with more canopy cover and less vegetative streamside cover than do the Northern Red-Legged Frog (NRLF) the overwhelming observations established over the years depicts this species preferring open canopy cover along gravel banks for thermoregulation. If water is too fast-flowing the frogs will refuse to mate, and will wait until conditions are ideal. Females will lay anywhere from 100 to 1000 eggs which can hatch in 5 days or up to 30, depending on the surrounding water temperature.

Status in the Assessment Area: The CNDDDB reported FYLF from Segment 1 and Segment 4 of the proposed fiber optic cable route. Threats to this species include predation by garter snakes, rough skinned newts, bullfrogs and toads. In addition, habitat loss, pesticide use, competition, logging, water impoundment and grazing in riparian zones are factors in their decline. The FYLF population is considered stable within the lower Klamath River/Redwood Creek, and the frog has available dispersal habitat into the river if potentially disturbed. No significant impacts are expected to FYLF.

Northern red-legged frog (*Rana aurora*)

Legal Status: The northern red-legged frog (NRLF) is a G4/S3 CSSC, a BLM and a USFS Sensitive species.

Species Description and Habitat Needs: NRLF require freshwater ponds, pools in slow streams, marshes, or reservoirs with submerged vegetation for egg attachment and emergent vegetation for cover.

They are sometimes found in damp woods and meadows away from water bodies, especially during wet weather (Geoffrey 2008). This species requires the still waters of ponds, marshes or streams for mating and laying eggs. NRLF is highly aquatic for breeding early in the year, preferring thickly vegetated shorelines. By March or April most have matured and dispersed in the moist forest uplands. NRLF return to their breeding sites in October, and sometimes as late as January. This depends on latitude, cumulative rainfall for the season, and average temperature. Oviposition generally takes place in densely vegetated, shallow portions of wetlands with little current. Breeding sites can be either permanent or temporary, with inundation usually necessary into June for successful metamorphosis. Adults leave the breeding pond soon after the breeding activity is concluded, and may migrate about one half kilometer to their summer locations, which are likely to be riparian zones. Juveniles disperse in a similar manner, but are slower to leave the breeding ponds. Breeding NRLF are found in many of the freshwater marshes and ponds in the lower Klamath River/Redwood Creek area.

Status in the Assessment Area: Although considered a CSSC this species has a wide distribution and relatively large population as seen in the database report. The CNDDDB reported NRFR from Segment 2, Segment 3, Segment 4 and Segment 5 of the proposed fiber optic cable route. NRLF was one of only seven species in the suite of 111 considered that had a distribution across 4, or all 5, Segments of the proposed fiber optic cable route. NRLF will use ponds, marshes and the moist forest floor debris throughout the BAA as habitat. Threats to this species include: fragmentation, alteration, or loss of habitat resulting in increased water temperatures, decreased pool depth, or decreased riparian vegetation; and introduction of exotic fishes and/or bullfrogs; wetland destruction, urbanization, reservoir construction, off-road vehicle activity. NRLF habitat is present in the BAA and this species will likely be present. However, this locally common species will remain in the moist shaded forested areas away from the dry exposed construction activities. No impacts to any amphibian species are expected as a result of the proposed operations.

Pacific tailed Frog (*Ascephus truei*)

Legal Status: The Pacific tailed frog (PTFR) is a G4/S3S4 CSSC.

Species Description and Habitat Needs: PTFR is one of the two species of frogs found in the genus *Ascephus*. They are found from British Columbia to northern California and from elevations of 0- 8400 ft. PTFR habitat includes cold, clear streams in mature forests. All life stages are adapted for life in fast flowing streams. Eggs in strings of 40-80 are attached to the underside of rocks to keep them from floating away. Eggs take 3-6 weeks to hatch, usually in August and September. Metamorphosis takes from one to four years, and after that the young may disperse into the forest.

Status in Assessment Area: Threats to this species include deforestation, sedimentation and rise of water temperature in their cold, fast flowing streams, due to timber harvesting, road building and other activities. The CNDDDB reported PTFR from Segment 5 of the proposed fiber optic cable route. There may be pockets of suitable habitat at the mouths of small creeks that empty into the Klamath River that support this species. Mitigation Measure WATER-1 will result in BMPs that will benefit PTFR that are very dependent on clean, cold running water.

Northwestern Pond Turtle (*Clemmys marmorata*)

Legal Status: The northwestern pond turtle (NPTU) is a G3/S4S3 CSSC, a BLM and a USFS Sensitive species.

Species Description and Habitat Needs: The NPTU is found in the Klamath River/Redwood Creek watershed. In northern California, it basks intermittently in the morning, and then in late afternoon or early evening they begin foraging. In one population in a northern California stream, a male home range was estimated to be 2.4 acres; the female's range was much smaller (0.6 acres). It can be found in a wide variety of wetland habitats including rivers and streams (both permanent and intermittent), lakes, ponds, reservoirs, permanent and ephemeral shallow wetlands, abandoned gravel pits, stock ponds, and sewage treatment lagoons (Holland 1994, as cited by Lovich Undated). It is active from February to November, and is often observed basking on surfaces above water. During summer droughts, it can bury itself in soft bottom mud. Breeding occurs between April and August, when females climb onto stream or pond margins, to dig a nest. In northern California and Oregon, hatchlings remain in the nest through the winter (Holland 1994, as cited by Lovich Undated). Federal agencies have designated this species as a sensitive species. Wetland habitat destruction is their single greatest threat; predation by bullfrogs is also noted (Lovich Undated). This species can evade activities and retreat into the river. NPTU will not be significantly impacted by construction operations.

Status in Assessment Area: NPTU was not recorded on the CNDDDB enquiry. It is included as a PETS species because suitable habitat is available and they are expected to be present. This species is regularly seen basking on the banks or logs in the river channel of the Klamath River. They have been personally observed at several locations along the Klamath River in Segment 1. This species can easily avoid disturbance and move away into the main river channel. There will be no significant impacts to this species.

FISH

The following anadromous species utilizing the Klamath River/Redwood Creek are Federally listed species (herein referred to as Pacific salmonids), and their designated critical habitat were considered for this assessment: Southern Oregon/Northern California Coasts (SONCC) coho salmon (*Oncorhynchus kisutch*) is listed under the ESA as threatened. California Coastal (CC) chinook salmon (*O. tshawytscha*) is listed under the ESA as threatened, and Northern California (NC) steelhead (*O. mykiss*) is listed under the ESA as threatened. In general the lower Klamath River/Redwood Creek provides summer rearing habitat for juvenile salmonids, late summer/fall holding areas for adults, smolt and pre-smolt outmigration habitat and is a fall/winter migration route for adult salmonids. Designated SONCC coho salmon critical habitat encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon. Designated CC chinook salmon critical habitat includes all river reaches and estuarine areas accessible to listed Chinook salmon from Redwood Creek (Humboldt County, California) to the Russian River (Sonoma County, California). In addition to critical habitat designations for listed Pacific salmonids, Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Act (MSA) require this heightened consideration of habitat for commercial species in resource management decisions, including EFH for SONCC coho salmon and CC chinook salmon, and their designated critical habitats are currently Federally listed as Threatened under ESA.

Coast cutthroat trout (*Oncorhynchus clarkii clarkia*)

Legal Status: The coast cutthroat trout (CCTR) is a CSSC and a USFS Sensitive species.

Species Description and Habitat needs: CCTR also known as the sea run cutthroat, or harvest trout is one of the several subspecies of cutthroat trout found in Western North America. The CCTR occurs in

four distinct forms. A semi-anadromous or sea-run form is the most well-known. The native range of the coastal cutthroat trout extends south from the southern coastline of the Kenai Peninsula in Alaska to the Eel River in Northern California. CCTR are resident in tributary streams and rivers of the Pacific basin and are rarely found more than 100 miles (160 km) from the ocean. Adults migrate from the ocean to spawn in fresh water. Juveniles migrate to the sea where they feed and become sexually mature before returning to fresh water to overwinter and spawn. Unlike steelhead and Pacific salmon, CCTR do not make lengthy migrations out to sea. Generally speaking, CCTR will remain in or near estuarine waters, usually within 5–10 mi (10–15 km) of their natal stream. Sea-run forms while in salt water and shortly after returning to fresh water are silvery with a bluish back, yellowish lower flanks and fins, and display sparse spots. Cutthroats usually display distinctive red, pink, or orange linear marks along the undersides of their mandibles in the lower folds of the gill plates. CCTR usually inhabit and spawn in small to moderately large, clear, well-oxygenated, shallow rivers with gravel bottoms. They typically spawn from December through June, with peak spawning in February. Eggs begin to hatch within six to seven weeks of spawning. Spawning begins when water temperatures reach 43 to 46°F (6 to 8°C). Depending on temperature, alevins emerge as fry between March and June, with peak emergence in mid-April. CCTR use a large variety of habitat types, including lower and upper reaches of both large and small river systems, estuaries, sloughs, ponds, lakes, and near shore ocean waters. They spend more time in fresh water environments than other anadromous Pacific salmonids. In fresh water they prefer deeper pool habitat and cover, such as that formed by woody debris. The semi-anadromous forms of CCTR do not overwinter in saltwater and rarely make extended migrations across large bodies of water. Semi-anadromous CCTR typically spend two to five years rearing in fresh water before making their initial migration into saltwater. Semi-anadromous CCTR spend short periods offshore during summer months and return to estuaries and fresh water by fall or winter.

Status in Assessment Area: Threats to this species include forest management such as logging, agriculture, dams, industrial development, habitat degradation as well as competition with rainbow trout and other species. Although considered a CSSC this species has a wide distribution within the BAA, as shown in the database report. The CNDDDB reported CCTR from Segment 2, Segment 3, Segment 4 and Segment 5 of the proposed fiber optic cable route. CCTR was one of only seven species in the suite of many considered that had a distribution over 4, or in all 5, Segments of the proposed route. It was the most widely reported PETS fish species. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. There will be no significant impacts to CCTR as a result of the proposed KRRBI project.

Southern Oregon, North Coast California (SONCC) coho salmon *Oncorhynchus kisutch*

Legal Status: The Southern Oregon/Northern California Coasts (SONCC coho salmon is federally listed as threatened.

Species Description and Habitat Needs: SONCC coho salmon life history is typified by four life stages (CDFW Undated). Adult SONCC coho salmon enter fresh water from September through January to spawn. They move upstream after heavy rains have opened the sand bars that form at the mouths of many California coastal streams, but may enter larger rivers earlier. In the upper reaches of these streams, spawning generally peaks in November and December, but timing varies by stream and/or flow (CDFW Undated). In California, spawning occurs mainly from November to January, although it can extend into February or March if drought conditions are present. Females usually choose spawning sites near the head of a riffle, just below a pool, where the water changes from laminar to turbulent flow and there is a medium to small gravel substrate. The redd flow characteristics usually provides good aeration of eggs

and embryos, and the flushing of waste. Fry emerge from the gravel between March and July, with peak emergence occurring from March to May. They seek out shallow water, usually moving to the stream margins, where they form schools. As the fish feed heavily and grow, the schools generally break up and individual fish set up territories. At this stage, the fish are termed parr (juveniles). As the parr continue to grow and expand their territories, they move progressively into deeper water until July and August, when they inhabit the deepest pools. This is the period when water temperatures are highest, and growth slows. Rearing areas used by juvenile SONCC coho salmon are low-gradient coastal streams, lakes, sloughs, side channels, estuaries, low-gradient tributaries to large rivers, beaver ponds, and large slack water portions of the river. The most productive juvenile habitats are found in smaller streams with low-gradient alluvial channels containing abundant pools formed by large woody debris. Adequate winter rearing habitat is important to successful completion of coho salmon life history (CDFW Undated). After one year in fresh water, smolts begin migrating downstream to the ocean in late March or early April. In some years, outmigration can begin prior to March and can persist into July. Peak downstream migration in California generally occurs from April to early June.

Status in Assessment Area: After hatching, the alevins are translucent in color. This is the SONCC coho salmon's most vulnerable life stage, during which they are susceptible to siltation, freezing, gravel scouring and shifting, desiccation, and predation, and remain in the interstices of the gravel for 2 to 10 weeks until their yolk sacs have been absorbed. Factors that affect the onset of outmigration include the size of the fish, flow conditions, water temperature, dissolved oxygen levels, day length, and the availability of food. Low stream productivity, due to low nutrient levels or cold water temperatures, can contribute to slow growth, potentially causing SONCC coho salmon to postpone outmigration. Threats to this species include forest management such as logging, agriculture, dams, industrial development, habitat degradation as well as competition with rainbow trout and other species. Although this species does not have federal or state status it is a CSSC because of declining populations. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. There will be no significant impacts to SONCC coho salmon as a result of the proposed KRRBI project.

Northern California (NC) steelhead (*Oncorhynchus mykiss irridius*)

Legal Status: Northern California steelhead (NC steelhead) is federally protected as a threatened species under the ESA. It has a Natural Heritage ranking of G5T2T3Q/S2S3.

Species Description and Habitat needs: NC steelhead is reported to exhibit the most complex and variable life history of the Pacific salmonids. They can be freshwater resident or anadromous; the anadromous NC steelhead can spend up to 7 years in fresh water before reaching the smolt stage, and then up to 3 years in the ocean before first spawning (NOAA 1996). Further, they are classified into two types, the summer NC steelhead (that matures in freshwater, requiring several months to mature and spawn), and the winter NC steelhead (that matures in the ocean, entering fresh water ready to spawn). The Klamath River supports both summer and winter steelhead. NC steelhead can spawn more than once before dying, unlike Pacific salmon. Intermittent streams may be used for spawning, and cover is important because they can enter streams weeks before they spawn. Summer NC steelhead utilize habitat that is not fully utilized by winter NC steelhead, and often spawn farther upstream than winter steelhead (NMFS 2004a). Their egg incubation time is dependent on water temperature, varying from 1.5 to 4 months, generally between February and June. Fry inhabit shallow water along banks of perennial streams. Summer rearing occurs in faster parts of pools (NMFS 2004a). Winter rearing occurs across a wide range of fast and slow velocity habitats, but is characterized primarily by complexity such as large in-stream wood. Larger and older juveniles will move downstream to rear in larger tributaries and the main river channel. Rearing is usually 2 years in California ESUs (NMFS 2004a).

Status in Assessment Area: NC steelhead is not reported on the CNDDDB enquiry of the BAA. They are known from the three main rivers inside the BAA and given suitable habitat and known presence it is included in the PETS list. Threats to this species include forest management such as logging, agriculture, dams, industrial development, habitat degradation as well as competition with rainbow trout and other species. Although this species does not have federal or state status it is a species of concern because of declining populations. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. There will be no significant impacts to NC steelhead as a result of the proposed KRRBI project.

California Coastal (CC) chinook salmon (*Oncorhynchus tshawytscha*)

Legal Status: California Coast Chinook Salmon (CC) chinook salmon is Federally listed as threatened.

Species Description and Habitat needs: The CC chinook salmon runs are designated by adult upstream migration timing. Spring-run CC chinook can now only be found on the Rogue, Klamath, and Trinity rivers. In the larger river systems (Rogue, Upper Klamath, and Eel), fall-run CC chinook return to fresh water in August and September. In coastal rivers the fall-run begins in late October. On the larger river systems, spawning occurs in late October and early November. Eggs resulting from the fall run spawning incubate and emerge from December into mid-April. Fry use woody debris and cobble interstitial spaces as cover, but as they grow their habitat preferences change to deeper water with slightly higher velocity.

Status in Assessment Area: The CC chinook salmon was recorded in Segment 1 by the CNDDDB. The Pacific salmonid fishery, for the Klamath River in particular is very thoroughly studied. The status still appears to be one of decline. There are many reasons for this, cumulative off-shore impacts, and spawning ground impacts are the primary factors. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. There will be no additional significant impacts to CC chinook salmon as a result of the proposed construction activities.

Longfin Smelt (*Spirinchus thaleichthys*)

Legal Status: The Longfin Smelt (LOSM), is CESA listed as Threatened, and has a Natural Heritage ranking of G5/ S1.

Species Description and Habitat needs: LOSM is an anadromous smelt (family Osmeridae) found in California's bay, estuary, and nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon border. The San Francisco Estuary and the Sacramento-San Joaquin Delta supports the largest longfin smelt population in California, and Humboldt Bay likely ranks second in longfin smelt abundance. Most descriptions of longfin smelt life history in California focus on San Francisco Bay populations. Relatively little is known about North Coast longfin smelt or specifics about their life history.

Status in Assessment Area: The CNDDDB reported LOSM from Alternative 5A of the proposed fiber optic cable route. Human threats include overfishing from commercial and subsistence fisheries as well as bycatch of ground fish and shrimp fishing. Forestry practices such as logging, road construction and dredging may also affect the smelt due to concern about sediment and storm-water run-off. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. LOSM will not be significantly impacted by the proposed KRRBI project.

Eulachon (*Thaleichthys pacificus*)

Legal Status: The Eulachon, southern DPS (Distinct Population Segment) was federally listed as Threatened in 2010 and has a Natural Heritage ranking of G5/ S3.

Species Description and Habitat needs: EULA, sometimes called smelt or candlefish is an anadromous fish that is found along the Pacific coast from California to Alaska. Relatively small they can weigh up to 2.5 ounces and be as long as 8.5 inches. Smelt occur in nearshore ocean waters up to 1,000 feet in depth, except for when they return to their natal streams to spawn. EULA usually spend 3 to 5 years in saltwater before returning to freshwater and spawn from late winter through mid-spring in their natal areas. Eggs are fertilized in the water column and sink to the river bottom, adhering to the gravel and coarse sand. Most smelt will die after spawning, but not always. Eggs hatch in 20 to 40 days and the larvae are then carried downstream and dispersed by the currents. Juvenile smelt will move towards shallow or mid-depth areas near the shore. Eulachon abundance changes considerably from year to year. However, it has been noticed that all spawning runs from California to southern Alaska have been declining for the past 20 years. Commercial catches of eulachon in the middle to late 1900's were around 2 million pounds. From 1993 to 2006 the catches have only been around 43,000 pounds, showing a 97% reduction.

Status in Assessment Area: The CNDDDB reported EULA from Segment 5 of the proposed fiber optic cable route. Segment 5 is the closest to the coast, and river estuaries which the EUCH prefers. Populations in the Klamath, Mad and Sacramento rivers are said to be nearly extirpated. EULA abundance changes considerably from year to year. However, it has been noticed that all spawning runs from California to southern Alaska have been declining for the past 20 years. Commercial catches of EULA in the middle to late 1900's were around 2 million pounds. From 1993 to 2006 the catches show a 97% reduction. Threats to this species include habitat loss and degradation. Hydroelectric dams often block access to historical spawning grounds as well as affect the quality of the spawning substrate, mainly causing siltation. Global climate change may also affect the EULA significantly as the ocean warms, affecting prey species, spawning and rearing success. EULA have been shown to carry high levels of chemical pollutants, and although it may not directly lead to their immediate mortality, it may cause them to have lower fitness as well as affect their reproductive success. Human threats include overfishing from commercial and subsistence fisheries as well as bycatch of ground fish and shrimp fishing. Forestry practices such as logging, road construction and dredging may also affect the smelt due to concern about sediment and storm-water run-off. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. EULA will not be significant impacted by the proposed KRRBI project.

INVERTEBRATES

MOLLUSCS

Oregon shoulderband (*Helminthoglypta hurtleini*)

Legal Status: The Oregon shoulderband (ORSH) is G1S1 critically imperiled in California

Species Description and Habitat needs: The ORSH is endemic to northern California and southwest Oregon. It has a G1 ranking as the most sensitive mollusk in the suite of species reviewed. There is a geographically defined population of ORSH found from southern Douglas County, OR, south into Northern CA. Generally associated with, though not restricted to talus and other rocky substrates. It is suspected to be found within its range wherever permanent ground cover and/or moisture is available

(BLM 2016). This may include rock fissures or large woody debris sites. This species is also adapted to somewhat dry conditions during a portion of the year. Seasonal deep refugia include talus deposits and outcrops, which contain stable interstitial spaces large enough for snails to enter. These seasonal refugia also provide protection from fire and predation during inactive periods. Within rocky habitat, the species is also associated with subsurface water, herbaceous vegetation and deciduous leaf litter, generally within 30m. of stable talus deposits or rocky inclusions. Vegetation types where the species has been located include dry conifer and mixed conifer/hardwood forest communities as well as oak communities. Forest canopy cover moderates the extremes in environmental conditions and may provide additional moisture to the site in the form of condensation drip. Woody debris and deciduous leaf litter is often used as daily refugia during foraging and dispersal in the moist seasons.

Status in Assessment Area: ORSH was reported as present within the BAA. It is located in Segment 1 along the Klamath River portion of the proposed route, as recorded on the CNDDDB enquiry. Habitat alteration and fragmentation leading to isolated populations is considered to be the major threat to the species. The species is vulnerable to activities which increase temperature, decrease moisture, or decrease food supplies available in populated sites. Habitat changes that likely impact this species include quarry development, road construction, mining, fire, herbicide use, recreation development, and timber harvest. In general, land snails cannot tolerate extremely dry (xeric) conditions, have restricted ranges, and are slow to disperse. Maintaining environmental conditions in these habitats is especially critical to survival of local populations. Project construction will not disturb talus and adjacent forested areas with vegetative cover sufficient to maintain suitable environmental conditions. There will be no impact to this species.

Trinity shoulderband (*Helminthoglypta talmadgei*)

Legal Status: The Trinity shoulderband (TRSH) is not federally or state listed but it is Natural Heritage ranked as G2/S2 and is a BLM sensitive species.

Species Description and Habitat Needs: The TRSH is a terrestrial land snail with presumably similar habitat needs to the Oregon shoulderband.

Status in Assessment Area: This species was reported as present within the BAA. It is located in the BAA of Segment 1 as recorded on the CNDDDB enquiry. Project construction will not disturb talus and adjacent forested areas with vegetative cover sufficient to maintain suitable environmental conditions. There will be no impact to this species.

Redwood Juga (*Juga orickensis*)

Legal Status: The redwood juga (JUOR) is not federally or state listed, but is ranked as G2/S1S2.

Species Description and Habitat Needs: JUOR aquatic gastropod mollusk from a genus of freshwater snails with a gill and an operculum, in the family Semisulcospiridae. Juga are native to the rivers of the northwestern United States and adjacent British Columbia. Little information is available for this species and more research is required.

Status in Assessment Area: JUOR was reported as present within the BAA. It is located in Segment 4 and Segment 5 along the western portion of the proposed route, as recorded on the CNDDDB enquiry.

The adjacent waterways provide an easily accessible dispersal route for this aquatic invertebrate. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. Significant negative impacts to JUOR are not expected as a result of the proposed construction activities.

Western pearlshell

Legal Status: The Western pearlshell (WEPE) is not federally or state listed, but is State ranked as S1S2.

Species Description and Habitat Needs: Freshwater mussels, including WEPS require a host fish to reproduce and disperse. Because freshwater mussels are not able to move far on their own, their association with fish allows them to colonize new areas, or repopulate areas from which mussels have been extirpated. WEPE inhabit perennial rivers, streams and creeks at depths of 1.5 to 5 feet, and they tend to congregate in areas with boulders and gravel substrate, with some sand, silt and clay (Roscoe 1964).

Status in Assessment Area: The CNDDDB reported this species from Segment 1 in the upper portion of the Klamath River near Orleans. Sedimentation and nutrient enrichment may affect the status of this species because freshwater mussels are filter feeders, they generally cannot handle high levels of siltation that come from agricultural runoff, silvicultural operations and clearcutting (Bogan 1993). WEPE in particular, appear to require fast-flowing, clean water for survival. The EPA considers fifty percent of the rivers and streams in the U.S. that were assessed to be impaired, primarily due to sedimentation, nutrient enrichment, contamination with pathogens and habitat alterations (U.S. EPA 2010). Freshwater mussels can be valuable indicators of pollutants, since they are sedentary, occupy a low position on the food chain, frequently bio-accumulate heavy metals, pesticides, and other contaminants, and, especially in the case of WEPE, are long-lived. Mitigation Measure WATER-1 will result in BMPs that avoid sedimentation of watercourses. There will be no significant impacts to WEPE as a result of the proposed KRRBI construction activities.

INSECTS

Behren's silverspot butterfly *Speyeria zerene behrensii*:

Legal Status: The Behren's silverspot butterfly (BSBU) federally listed as an endangered species and has a Natural Heritage rank of G5T1/S1

Species Description and Habitat Needs: BSBU is in the family Nymphalidae, or brush-footed butterflies. It is a medium sized butterfly with a wingspan of 2.2 in. with dorsal wings that are golden brown with black spots and lines. The underside of their wings has either silvered or un-silvered marginal spots that are more triangular than those of the closely related *Speyeria coronis*. These butterflies can be found in early successional coastal terrace prairie habitat that contains *Viola adunca* (early blue violet) which is the larval host plant as well as the adult nectar source and adult courtship area. Several populations have been extirpated and the species is only likely to be remaining at one location near Point Arena in Mendocino County, California. BSBU males will spend all day patrolling for females. Females may delay laying their eggs until late summer. Eggs are laid on leaf litter near violets. Unfed first-stage caterpillars are fed on violet leaves. The caterpillars will go through metamorphosis and take flight from mid-June to early September.

Status in Assessment Area: BSBU was reported as present within the BAA. It is located in the coastal portion of the proposed route in Alternative 5A, as recorded on the CNDDDB enquiry. Threats to this species include invasion by exotic species, natural land succession, fire suppression regimes, residential development and collection of the butterflies for specimens (fed). Roadside vegetation removal will impact potential food plants of many nectar feeding invertebrates. The global population is considered secure, but the *behrensii* sub species has the highest possible Heritage ranking of T1. However, the CNDDDB comments state that it is extirpated from Humboldt County and as such will be very unlikely to be detected or impacted. Vegetation removal will be kept to a minimum (Mitigation Measure SOIL-1) and there should be available food plants nearby. Considering the greater impact to this species from vehicle strikes, significant impacts to BSBU are not expected.

Obscure bumble bee- *Bombus caliginosus*

Legal Status: The obscure bumble bee (OBBE) is on the CDFW Special Animals List, it has a Natural Heritage ranking of G4(?) S1S2.

Species Description and Habitat Needs: The distribution of the OBBE ranges from Washington through Oregon and all the way to southern California. OBBE inhabits open grassy coastal prairies and Coast Range meadows. Nesting occurs underground as well as above ground in abandoned bird nests. Males patrol circuits in search of mates. Bumble bees are eusocial insects that live in colonies composed of a queen, workers, and reproductive individuals (males and new queens). Colonies are annual and only the new, mated queens overwinter. Nests are often located underground in abandoned rodent nests, or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees. Initially, the queen does all of the foraging and care for the colony until the first workers emerge and assist with these duties. Bumble bees collect both nectar and pollen of the plants that they pollinate. In general, bumble bees forage from a diversity of plants, although individual species can vary greatly in their plant preferences. OBBE has been noted on 19 families of plants. The queens emerge from hibernation in late January, the first workers appear in early March, and the males follow by the end of April. The colony dissolves in late October, when all the inhabitants die except the new queens.

Status in Assessment Area: OBBE was reported as present within the BAA. It is located in the BAA in Segment 4 and Segment 5 of the proposed route, based on the CNDDDB enquiry. Threats to this species include climate change and extensive development. This species does not appear to do well in heavy agricultural or urban areas where they get outcompeted by yellow faced bumble bees. Habitat loss seems to be their most serious threat. The minimal removal of road ditch vegetation prior to construction may impact potential food plants of many nectar feeding invertebrates. The work will be completed quickly and the suitable habitat is in a relatively small area, and impacted for a relatively short period. The additional cumulative impact as a result of the project on OBBE will be minimal and not a significant effect, the mobile foraging bumble bees can avoid potential impacts from the construction activities. Considering the greater impact to this species from vehicle strikes, increased significant impacts to obscure bumble bee are not expected due to construction activities.

Suckley's cuckoo bumble bee *Bombus sucklei*

Legal Status: Suckley's cuckoo bumble bee (SCBB) is on the CDFW Special Animals List with a ranking of GU and S1.

Species Description and Habitat Needs: The SCBB requires a variety of nectar bearing plants, such as sweet pea, lupine and or clovers.

Status in the Assessment Area: This species was reported as present within the BAA. It is located along the Klamath River in Segment 1, based on the CNDDDB enquiry for the proposed route. The removal of road ditch vegetation may impact potential food plants of many nectar feeding invertebrates. The work will be completed quickly and the suitable habitat is in a relatively small area, and impacted for a relatively short period. The additional cumulative impact, as a result of the project on OBBE, will be minimal and not a significant effect. Considering the greater impact to this species from vehicle strikes, additional significant impacts to SCBB are not expected.

Western bumble bee *Bombus occidentalis*

Legal Status: Western bumble bee (WBBE) is not federally or state listed, but is ranked as G2G3 and S1.

Species Description and Habitat Needs: For the WBBE a new colony typically starts in the early spring with a solitary queen. The queen finds a suitable nest site, which like other bumble bees, WBBE nests underground in cavities or random burrows left behind by rodents or other animals. The queen must then construct a wax structure and collect pollen to create a mass to lay eggs on.

Status in the Assessment Area: WBBE was once one of the most common bee species in the North West America. They have been found from the Mediterranean habitats of California all the way up to the tundra region of Alaska, making them one of the bees with the widest range geographic range (Hattfield 2015). However, recently there has been a noticeable decline in population (Colla and Ratti 2010). In the past decade, the population of WBBE has dropped by around 40.32%. The disappearance of these bees has been especially significant in CA, western OR, and western WA. This species was reported as present within the BAA. It is located along the Klamath River in Segment 1, based on the CNDDDB enquiry for the proposed route. The minimal removal of road ditch vegetation may impact potential food plants of many nectar feeding invertebrates. The work will be completed quickly and the suitable habitat is in a relatively small area, and impacted for a relatively short period. The mobile foraging bumble bees can avoid potential impacts from the construction activities. Considering the greater impact to this species from vehicle strikes significant impacts to WBBE are not expected.

PLANTS

Pink sand verbena- *Abronia umbellata* var. *breviflora*

Legal Status: Pink sand verbena (ABUM) does not have federal or state status but is state ranked G4G5T2/S1 and in California has a CRPR of 1B.1.

Species Description and habitat Needs: ABUM is classified as a forb/herb that inhabits the coastal dunes of WA, OR and CA. It occurs at elevations 0-10 m and blooms June-October. Although it once persisted along the entire Pacific coast there are now only a few populations due to ecological limiting factors and human-caused habitat degradation. This species is an obligate out-crosser, using native insects and wind to propagate. Ripe fruit falls off when touched and seeds are dispersed by strong winds and waves. Since populations are typically found at or below zone of driftwood accumulation, they are often obliterated by winter storms. Each spring, the population re-establishes from seeds that persist in the sand. In protected sandy areas, 3% of population over-winters and flowers the next year (Kaye et al., 1998).

Status in the Assessment Area: This species was reported as present within the BAA. The CNDDDB reported ABUM from the coastal portion of the BAA, along Alternative 5A of the proposed fiber optic cable route. Natural population sizes vary widely over time and space, ABUM grows in a dynamic habitat characterized by winter storms that destroy old plants, but also create new habitat and disperse seeds. Threats to this species include trampling by vehicle and foot traffic as well as invasion of beach grass. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A outside the DIA in coastal dune habitat.

Bald Mountain Vetch (*Astragalus umbraticus*)

Legal Status: The Bald Mountain vetch (ASUM) is recognized as a CNPS listed species with a CRPR of 2B.3. It has a Natural Heritage ranking of G3/S2.

Species Description and Habitat Needs: This vetch is a perennial herb that grows in the woodlands of mountains in the coastal Klamath and Coast ranges of California and Oregon. It favors foothill wetlands, lower montane coniferous forest. Occasionally it is found along roadsides. The elevation range is 150-1,250m and it blooms from May to August.

Status in the Assessment Area: This species was reported as present within the BAA. It is located along Segment 2, Segment 3 and Segment 4 of the proposed route within the BAA on the CNDDDB enquiry. There will be no significant impacts to ASUM as a result of the KRRBI project.

Humboldt Bay owl's clover (*Castilleja ambigua* var. *humboldtiensis*)

Legal Status: The Humboldt Bay owl's clover (CAAM) is not a federal or state listed species but has G-4/T-2 and S-2 ranks and has a CRPR of 1B.2.

Species Description and Habitat Needs: CAAM is an annual herb that inhabits coastal marshes and swamps and blooms in April- August and is endemic to California. Its elevational range is very narrow, only 0-3 m and has only been found in three counties in California (Humboldt, Mendocino & Marin)

although it could be present in other suitable habitat areas. Threats to this species include coastal development and non-native plants.

Status in the Assessment Area: CAAM was reported as present within the BAA. This species was only recorded in Alternative 5A according to the CNDDDB enquiry. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location within the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A in coastal dune habitat.

Northern clustered sedge (*Carex arcta*)

Legal Status: This species is included in the CNPS list of rare and endangered species as CRPR 2B.2

Species Description and Habitat Needs: Northern clustered sedge is native to northern North America including most of Canada and northern parts of the United States. It grows in wet areas, especially in coniferous forests. This sedge produces dense clumps of erect stems up to about 80 cm (31 in) high. The leaves are pale green to grayish, flat, and have reddish or purple-dotted sheaths at the base, and they are sometimes longer than the stems. The inflorescence is a dense, oblong cluster of up to 15 spikes of pointed flowers, each cluster up to 3–4 cm (1.2–1.6 in) long and each individual spike up to 1 cm (0.39 in) long. The fruit is covered in a sac called a perigynium which is greenish and veined with a reddish tip.

Status in the Assessment Area: Suitable habitat is present and this species was recorded in Segment 5 according to the CNDDDB enquiry for the proposed project route. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands by overhead installation or directional drilling. No impact to this species is anticipated.

Lagoon sedge (*Carex lenticularis* var. *limnophila*)

Legal Status: Lagoon sedge (CALE [1]) is not a federal or state listed species but has a Natural Heritage rank of G5T5/S-1, and a CRPR of 2B.2.

Species Description and Habitat Needs: The lagoon sedge is a monocot and a perennial herb that is found in California, although there have only been 10 known occurrences, all historical. The lagoon sedge can be found on gravelly beaches and shorelines. It will also inhabit bogs, marshes and the north coast coniferous forest. Its elevation range is from 0- 6 m along beaches which is very limited;

Status in Assessment Area: The CNDDDB reported CALE [1] from the coastal portion of the BAA, along Alternative 5A of the proposed fiber optic cable route. The extreme rarity of this species, and habitat needs eliminates this species from further concern. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A outside the DIA in coastal dune habitat.

Bristle-stalked sedge (*Carex leptalea*)

Legal Status: Bristle-stalked sedge (CALE[2]) is not a federal or state listed species but is ranked as a G5/ S1, and it is a CRPR 2B.2 species.

Species Description and Habitat Needs: Native to much of North America including most of Canada, the Dominican Republic, the U.S., CALE[2] has the widest geographic range of all North American sedges. It only grows in wetlands. This sedge produces dense clusters of thin stems up to 70 cm tall from a network of branching rhizomes. The thin, deep green leaves are soft, hairless, and sometimes drooping. The inflorescence is up to 16 mm long but only 2 to 3 mm wide, and is yellow-green in color. There are only a few perigynia on each spikelet, and they are green and veined.

Status in Assessment Area: This species was reported as present within the BAA. The CNDDDB reported CALE[2] from the coastal portion of the BAA, outside the DIA of Alternative 5A. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Oregon Coast Paintbrush (*Castilleja litoralis* var. *humboltensis*)

Legal Status: Oregon coast paintbrush (CALI) is not federally or state listed. It has a ranking of G4/S3 and is CRPR 1B.2

Species Description and Habitat Needs: CALI is a dicot perennial herb that is native to California. It inhabits sandy coastal bluff scrub, coastal dunes and coastal scrub at elevations from 15-100 m. It only blooms in June.

Status in the Assessment Area: This species was reported as present within the BAA. CALI is briefly addressed as there was a reported location within the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A in coastal dune habitat outside the DIA. Threats to this species include development, recreational activity, and erosion. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as the outer coastal dune habitat is not impacted by the project DIA.

Lyngbye's sedge (*Carex lyngbyei*)

Legal Status: Lyngbye's sedge (CALY) is not a federal or state listed species but has rankings of G5/S3, and a CRPR of 2B.2

Species Description: CALY is native to the west coast of North America from Alaska to California, where it is the common sedge of the Pacific coastal salt marshes (FNA 2016). It prefers to grow in silty sediment rather than sand and in habitat with brackish water, such as salt marshes.

Status in the Assessment Area: Suitable habitat is present outside the DIA and this species was recorded in the BAA for Alternative 5A according to the CNDDDB enquiry. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Mendocino Coast Paintbrush (*Castilleja mendocinensis*)

Legal Status: Oregon coast paintbrush (CAME) is not federally or state listed. It has a ranking of G2/S2 and is CRPR 1B.2

Species Description and Habitat Needs: CAME is a species of Indian paintbrush known by the common name Mendocino Coast Indian paintbrush. It is endemic to the coastline of Mendocino County, California, where it grows in coastal sage scrub habitat. CAME is threatened by coastal development, erosion, recreation, foot traffic, non-native plants, and habitat fragmentation. It is also known from isolated occurrences in Humboldt County.

Status in the Assessment Area: This species was reported as present within the BAA. CAME was reported in the BAA of Alternative 5A by the CNDDDB. Threats to this species include development, recreational activity, and erosion. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A in coastal dune habitat.

Northern Meadow sedge (*Carex praticola*)

Legal Status: The northern meadow sedge (CAPR) is not federally or state listed but has ranks of G5/S2, and a CRPR of 2B.2.

Species Description and Habitat Needs: CAPR is found across North America. CAPR grows in many habitat types from wet to dry, including moist mountain meadows and woodlands. This sedge produces dense clumps of stems approaching a meter in maximum height. The inflorescence is an erect or nodding cluster of several flower spikes in color light greenish or brown to white

Status in the Assessment Area: Suitable habitat is present and this plant species was recorded in Segment 4 from the CNDDDB enquiry. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Deceiving Sedge (*Carex saliniformis*)

Legal Status: The deceiving sedge is not federally or state listed but is state and globally ranked as G2/S2 with CRPR 1B.2

Species Description and Habitat Needs: The deceiving sedge is a perennial rhizomatous herb that is in the *Cyperaceae* family that is endemic to California. It can be found in coastal prairies, coastal scrub, meadows, marshes and swamps. The blooming period is June through July, its elevational range is from 3-230 m.

Status in the Assessment Area: This species may only be threatened by grazing and/or competition with invasive species. This species was reported as present within the BAA. Suitable habitat is present and this species was recorded in the BAA of Segment 5 according to the CNDDDB enquiry. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Green yellow sedge (*Carex viridula* ssp. *Viridula*)

Legal Status: The green yellow sedge (CAVI) has no federal or state status but is state ranked as G5T5/S2, and has a CRPR of 2B.3.

Species Description and Habitat Needs: The CAVI is a perennial plant in the Cyperaceae family that favors freshwater swamps and bogs. It grows near rivers and lake shores in tufts. The sedge has hollow stems that are pale brown at the base and straight or slightly wiry. As with other members of the sedge family, the little green sedge has small flowers that are arranged as spikes. Each individual flower may only be either a male or a female, but reproduces asexually from underground rhizomes. It has an elevation range from sea-level to 1,600m. CAVI sedge blooms between May and September and usually lives for around two years.

Status in the Assessment Area: Suitable habitat is present, and this species was recorded in the coastal end of the project area in Segment 5 according to the CNDDDB enquiry. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Oregon goldenthread (*Coptis laciniata*)

Legal Status: The green yellow sedge (COLA) has no federal or state status but is state ranked as G4/S3, and has a CRPR of 2B.3.

Species Description and Habitat Needs: COLA prefers habitats associated with redwoods. It is usually found in wetlands and swamps, but may also be found in other habitats. CAVI sedge blooms between March and April.

Status in the Assessment Area: Suitable habitat is present, and this species was recorded in the coastal end of the project area in Segment 5 according to the CNDDDB enquiry. It is unlikely that the KRRBI project will have an adverse impact on this species since no disturbance of its habitat is anticipated.

Naked flag moss (*Discelium nudum*)

Legal Status: Naked flag moss (DINU) has no federal or state status but is very rare throughout its range in California. DINU has a Natural Heritage rank of G5G4/S1 and has a CRPR of 2B.1.

Species Description and Habitat Needs: DINU is an ephemeral moss that grows on coastal bluff scrub (soil, on clay banks). Naked flag moss is a very tiny, brownish-green, budlike plant that arises from a persistent protonemal mat. Leaves are few, 1.3-1.8 mm long, ovate to oblong-lanceolate, tapering to a narrow blunt apex, margins plane, entire or irregularly toothed at the apex, leaf cells are smooth, costa lacking or weak. Sporophytes are brown, with 0.6-1 mm ovoid, horizontal to cernuous urns, occurring on top of a smooth, 6 - 18 mm tall seta that is twisted when dry. Naked flag moss is the only moss in this region that occurs on fine textured mineral soil where the leafy gametophyte is barely visible; the red brown seta and small sporangium make it very distinct. DINU occurs on silt banks along rivers and ditches. Its persistent protonemal mat and tiny reduced budlike plants that form extensive mats appear to be adaptations to the unstable silt bank environment.

Status in the Assessment Area: Found in Humboldt and Del Norte counties- presumed extant in two locations on the coast of Humboldt County. Suitable habitat is present in the BAA of Alternative 5A. Threats to this species include trying to stabilize unsteady ground such as river banks and roadside ditches, as well as competition with vascular plants. There may be an impact on this species but adverse effects are unlikely because construction will not occur on riverbanks or in unstable ground if Alternative 5A is chosen.

Black crowberry (*Empetrum nigrum*)

Legal Status: Black crowberry (EMNI) has no state or federal status, but it has a CRPR of 2B.2 and a global and state ranking of G5/S1?

Species Description and Habitat Needs: EMNI is an evergreen shrub that likes to grow in woodland, rocky bluffs and mossy places. Crowberry foliage is dark green and linear, resembling small fir needles. The leaves are arranged in whorls of four along a prostrate stem and purplish brown flowers occur in leaf axils, followed by dark purple fruit. It is a resilient plant that is not affected by frost. Crowberry flowers from May to June and the seeds ripen in September.

Status in the Assessment Area: Suitable habitat is present and EMNI was reported within the BAA. . It was found in the coastal portion of Alternative 5A near Orick on the CNDDDB enquiry. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present outside the DIA in the BAA of Alternative 5A in coastal dune habitat.

Scabland Fleabane/Waldo Daisy (*Erigeron bloomer* var. *nudatus*)

Legal Status: This Scabland Fleabane (ERBL) is not federally or state listed and has a CRPR of 2B.3 and a Natural heritage rank of G5T4/S3 for the particular subspecies.

Species Description and Habitat Needs: ERBL or Waldo daisy is a dicot, a perennial herb that is native to California and Oregon (Calflora). It grows on serpentine slopes, meadows and rocky hillsides of the western U.S. The perennial herb is a little under 8 “ tall, forming clumps over a taproot. It has mostly basal leaves several cm long which may have dense hair or be nearly hairless. Atop its short stems are inflorescences consisting of single flower heads. Each head is 1-2 cm wide and is packed with small golden flowers.

Status in the Assessment Area: This species was recorded in the BAA Alternative 5A according to the CNDDDB enquiry. A serpentine favoring species, which is lacking in the BAA. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A.

Coast fawn lily (*Erythronium revolutum*)

Legal Status Coast fawn lily (ERRE) is not a federal or state listed species but has ranks of G4G5?/S3, and CRPR 2B.2.

Species Description and Habitat Needs: ERRE is a small pink-flowered bulbiferous member of the Liliaceae which blooms in the spring. The geographical distribution of this species in California encompasses Sonoma, Mendocino, Humboldt, Del Norte, Trinity, Tehama, and Siskiyou counties (CNPS 2014), from near sea level to over 1,600 meters (5,249 feet). It also occurs in western Oregon, Washington and southern British Columbia (Hitchcock 1973). Its preferred habitats are moist Douglas-fir and mixed evergreen forests and woodlands, and it can be found along stream banks and other obviously wet or moist locations as well as places that are well shaded but not otherwise distinctly moist. Based on the limited results of post-impact monitoring, it appears that this species can

tolerate some level of disturbance, but maintaining shaded conditions, and avoiding direct mechanical impact to individual plants is important (HRC 2014).

Status in the Assessment Area: Suitable habitat is present and ERRE was reported as present within the BAA. Suitable habitat is present and this plant species was recorded by the CNDDDB in Segment 1, Segment 2 and Segment 3 of the proposed project route. Although it has “coast” in the name, it was located in the eastern portion of the proposed route, in the drier inland areas. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Pacific gilia (*Gilia capitata*)

Legal Status: Pacific gilia (GICA) is not federally or state listed and is ranked G5T3/ S2, and is a CRPR 1B.2

Species Description and Habitat Needs: GICA is an annual herb in the Polemoniaceae (Phlox family). The tiny blue-violet flowers, present from April to August, are clustered into heads atop a 25-50 cm stem, with cauline and basal leaves that are twice-pinnate. GICA habitat is coastal bluffs and prairies up to 1330 meters (4,364 feet) according to CNPS (2014). The second edition of the Jepson Manual (Baldwin 2012) notes that the subspecies usually occurs at less than 400 meters (1,312 feet). GICA occurs in Mendocino, Humboldt, and Del Norte counties in California, and extends into Oregon (CNPS 2014, Hickman 1993).

Status in the Assessment Area: Suitable habitat may be present outside the DIA and this plant species was recorded from the CNDDDB enquiry once in 1974 without accurate location in the Cranell Quad in the BAA for Alternative 5A, close to the coast,. Construction will not disturb expected habitat types, such as prairies in the coastal mountains. No impact to this species is anticipated.

Dark-eyed gilia (*Gilia millefoliata*)

Legal Status: The dark-eyed gilia (GIMI) is not federally or state listed but has a Natural Heritage rank of G2/S2, and a CRPR of 1B.2.

Species Description and Habitat Needs: GIMI is native to the coastline of Oregon and Northern California where it grows in sand dune habitat. GIMI is a species of flowering plant in the phlox family known by the common name many leaf gilia. It is native to the coastline of Oregon and northern California, where it grows in sand dune habitat. This wildflower grows a branching stem reaching maximum heights near 30 cm. The stem is dark green with some red coloration and is covered in abundant glandular hairs. The fleshy leaves are mainly located in a basal rosette at the ground and they are sparsely scattered along the stem as well. The inflorescences at the ends of the stem branches are small clusters of glandular flowers. Each flower is up to 1 cm wide and is mainly lavender to purple with a white or yellowish throat with purple spots. The fruit is a small capsule up to a cm wide.

Status in the Assessment Area: Suitable habitat is present and this plant species was recorded in the BAA of Alternative 5A, close to the coast, from the CNDDDB enquiry. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present in Alternative 5A in coastal dune habitat.

Dudley’s rush (*Juncus dudleyii*)

Legal Status: Dudley's rush (JUDU) is not federally or state listed but has ranks of G5/S1, and CRPR of 2B.3.

Species Description and Habitat Needs: JUDU Flowers and fruits from spring to early summer. Exposed or shaded sites in sandy to clayey soils, usually moist areas such as along stream banks, ditches, around springs

Status in the Assessment Area: Suitable habitat is present and this plant species was recorded by the CNDDDB in the BAA for Segment 1. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Sierra rush (*Juncus nevadensis* var. *inventus*)

Legal Status: The Sierra rush (JUNE) is not a federal or state listed species but has ranks of G5T3T4/S1, and a CRPR of 2B.2.

Species Description and Habitat Needs: JUNE is native to much of western North America from British Columbia to New Mexico, where it grows in wet areas in many habitat types. This is a rhizomatous perennial herb which varies in appearance.

Status in the Assessment Area: Suitable habitat is present and this plant species was recorded by the CNDDDB in Segment 1, and in Alternative 5A at the other end of the proposed route at the coast. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Small groundcone (*Kopsiopsis hookeri*)

Legal Status: Small groundcone (KOHO) is not a federal or state listed species but has heritage rankings of G5/S?, and a CRPR of 2B.3.

Species Description: KOHO is a species of parasitic plant in the broomrape family native to western North America from British Columbia to northern California, where it grows in North American coniferous forests. It is parasitic on *Gaultheria shallon* and *Vaccinium* spp., which it parasitizes by penetrating them with haustoria to tap nutrients. The groundcone is visible aboveground as a purplish, brown, or yellowish cone-shaped inflorescence 3 to 6 centimeters long. Pale-colored flowers emerge from between the overlapping bracts.

Status in the Assessment Area: This species was reported as present within the BAA for Segment 1 near Weitchpec, according to the CNDDDB enquiry. This species is dependent on plant species readily present in the BAA, salal and *Vaccinium* spp. It will not be directly impacted. No significant impacts to KOHO are expected.

Beach layia *Layia camosa*

Legal Status: Beach layia (LACA) is listed as endangered under both the ESA and CESA and has ranks of G2/ S2, and CRPR of 1B.1, No critical habitat has yet been designated.

Species Description and Habitat Needs: LACA is a succulent, annual herb belonging to the sunflower family (Asteraceae). In most of its range the species occurs in the nearshore dunes, in open and low vegetation such as the sand-verbena-beach bursage series described by Sawyer and Keeler-Wolf (1995). LACA also occurs in lower densities along margins of lupine scrub, herbaceous hollows, and open areas with moving sand. The species often occurs in open, semi-disturbed areas adjacent to trails and roads. LACA readily colonizes newly created bare sand areas, and is resilient to disturbance. However, it generally does not establish or survive for long in areas where there is high cover of either native or non-native plants.

Status in the Assessment Area: This species was reported as present within the BAA of Alternative 5A but outside the DIA along the coast on the CNDDDB enquiry. The species often occurs in open, semi-disturbed areas adjacent to trails and roads. Threats to this species include loss of habitat due to coastal development, encroachment of non-native species as well as trampling from vehicle and pedestrian traffic, especially in its growing season from mid-winter to late spring. Potential impacts to LACA are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species found in coastal dune habitats were dismissed.

Marsh pea (*Lathyrus palustris*)

Legal Status: The marsh pea (LAPA) is not a federal or state listed species but has ranks of G5/S2, CRPR of 2B.2.

Species Description and Habitat Needs: The LAPA is a perennial herb that is found in wetland habitats including freshwater marshes, bogs, and fens.

Status in the Assessment Area: Suitable habitat is present and LAPA was recorded in Alternative 5A according to the CNDDDB enquiry for the proposed project route. It occurs well outside the DIA. Impacts to this species from the KRRBI project are unlikely.

Seaside pea (*Lathyrus japonicas*)

Legal Status: The Seaside pea (LAJA) is not a federal or state listed species but has ranks of G5/S2, and CRPR 2B.1.

Species Description and Habitat Needs: The LAJA is native to temperate parts of Europe, Asia, North and South America. LAJA typical habitat is sandy or stony seashores and other coastal locations. The unusually extensive native range is explained by the ability of the seeds to remain viable while floating in sea water for up to five years, enabling the seeds to drift nearly worldwide. Germination occurs when the hard outer seed coat is abraded by waves on sand and gravel.

Status in the Assessment Area: This species was reported as present within the BAA of Alternative 5A by the CNDDDB. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this species were dismissed as it was only present outside the DIA but in the BAA for Alternative 5A in coastal dune habitat.

Heckner's lewisia (*Lewisia cotyledon* var. *heckneri*)

Legal Status: Heckner's lewisia (LECO) is not a federal or state listed species but has ranks of G4/T3, S3, and CRPR 1B.2.

Species Description and Habitat Needs: A perennial herb, 10 to 30 cm tall, arising from a thick, short base and taproot LECO grows on outcrops and cliffs of various rock types, often near streams of rivers, in a variety of forest types, at elevations from 1000 to 6000 feet (300 to 1800 meters). Populations grow in part to full shade, usually on north slopes.

Status in the Assessment Area: This species was recorded once in 1942, and not since, near Weitchpec in the BAA for Segments 1 and 2 in the interior portion of the proposed project route according to the CNDDDB enquiry. No impact on this species is anticipated.

Western Lily (*Lilium occidentale*)

Legal Status: The Western Lily (LIOC) is listed as endangered under both the ESA and CESA is ranked G1/S1 and has a CRPR of 1B.1

Species Description and Habitat Needs: One of the typical orange lilies of the west coast redwood forest, LIOC prefers open roadside habitats. Botanists from the CNPS wrote "The western lily grows primarily along the coast in boggy areas, wetlands, and coastal prairies. It is threatened by housing development and by competition from the overgrowth of shrubs in bogs and in coastal prairie or coastal scrub..(Fremontia 2003 V31:2 p 21). Known populations of this endangered species are carefully monitored annually.

Status in the Assessment Area: This species was recorded in the BAA for Segment 5 at its southern end according to the CNDDDB enquiry. Based on its rarity specific locations are not shown on the quadrant maps. LIOC prefers moist sites and is recorded on the CNDDDB as far north as Crescent City indicating its coastal preference. This species was the rarest and most highly ranked at risk species of all the species considered. The KRRBI project, along routinely disturbed road ditches and existing utility rights of way in agricultural and rural residential areas, is not near suitable habitat or known populations. No impact to this species is expected.

California globe mallow (*Iliamna latibracteata*)

Legal Status: The California globe mallow (LLLA) is not a federal or state listed species but has ranks of G2G3/S2, and a CRPR of 1B.2.

Species Description and Habitat Needs: This species is found throughout North coast coniferous forests. It favors seepage areas in silty clay loam above 500m.

Status in the Assessment Area: Suitable habitat is present and this species was recorded in Segment 3 and Segment 4 according to the CNDDDB enquiry for the proposed project route. The species was identified on either side of Bald Hills Road about three miles east of Schoolhouse Peak. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Running Pine *Lycopodium clavatum*:

Legal Status: Running pine (LYCL) is not a federal or state listed species but has ranks of G5/S3, and a CRPR of 4.1.

Species Description and Habitat Needs: A spore-bearing vascular plant LYCL is the most widespread species in the genus *Lycopodium* of the clubmoss family. This species grows prostrate along the ground with stems up to 1 m long. The stems have many branches, densely covered with spiraled leaves. The leaves are 3-5 mm long and tapered to a fine hair-like white point. The branches bearing spore cones are more vertical and have fewer leaves than the horizontal stems that produce roots at regular intervals, allowing the stem to grow almost indefinitely along the ground. The stems resemble seedlings of coniferous trees although they are not related. Typically found along forest edges, openings and along wet roadsides, LYCL blooms from June to September.

Status in the Assessment Area: Although this species has a widespread distribution it is confined to undisturbed areas and sites with regular burning. As a result it is endangered in many areas. This species was reported as present within the BAA. The CNDDDB report shows LYCL in Segment 4 along Bald Hills Road within RNP about three miles west of Highway 101 and also in Segment 5 off the GDRC roads, and along Alternative 5A off the Trinidad Tap road, all on GDRC lands where GDRC staff have conducted botanical surveys. Roadside ditch construction in disturbed areas is unlikely to disturb this species.

Inundated bog-club moss (*Lycopodiella inundata*)

Legal Status: Inundated bog-club moss (LYIN) is not a federal or state listed species but has ranks of G5/S1?, and a CRPR of 2B.2.

Species Description and Habitat Needs: LYIN occurs throughout the northern hemisphere from the Arctic to montane temperate regions in Eurasia and North America. It grows in wet habitat, such as bogs, ponds, moist spots on the tundra, and longstanding borrow pits. This is a small plant forming patches on the ground,

Status in the Assessment Area: LYIN was reported as located in the BAA but outside the DIA for Alternative 5A in the moist western portion of the proposed route, from the CNDDDB enquiry. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

Howell's montia (*Montia howelli*)

Legal Status: Howell's montia (MOHO) is not a federal or state listed species, but has ranks of G3G4/S3, and CRPR of 2B.2

Species Description and Habitat Needs: MOHO is a tiny winter-growing annual recently placed in the family Montiaceae (miner's lettuce family). Germinating when the cold rains arrive in late fall, it grows through the early spring, flowers from March to May, then sets seed and quickly disappears. The current geographical distribution of this species in California includes Humboldt County and the very western edge of Trinity County (CNPS 2014). It has been reported from near sea level to about 835 m (2,740', CNPS 2013). Its preferred habitats are vernal wet, compacted soils (Hickman 1993, Baldwin 2012), meadows and seeps, vernal pools, and vernal mesic areas in the North Coast coniferous forest (CNPS 2014). This is the most widely distributed PETS plant species for this assessment. It is found on roads, roadsides, skid trails, turnouts, landings, grazed meadows, and other areas where compacted soils

maintain a vernal wet area and competing vegetation is minimal during its growing season. It is always associated with disturbance (Renner 2012).

Status in the Assessment Area: MOHO was identified on the CNDDDB query west of Martins Ferry, north and outside of the DIA but within the BAA for Segments 2 and 3. It was also identified within the BAA but outside the DIA in Segment 5. MOHO is adapted to disturbance. They will not be affected by the roadside vegetation removal. There will be no impacts in the DIA.

Wood Nymph (*Moneses uniflora*)

Legal Status: Wood Nymph (MOUN [1]) is not federally or state listed as threatened or endangered but is ranked as G5/S3, and CRPR 2B.2.

Species Description and Habitat Needs: MOUN [1] or oneflower, wintergreen is a perennial herb in the Ericaceae family. This perennial herb is present in the western half of the U.S. as well as in all of Canada. This flower is associated with damp mountain forests. It is characterized by a single white flower about two inches across with 5 thick petals, yellow stamens, and a bright green style and ovary. The whole plant is no more than 4 or six inches tall. The wood nymph pollinates using bumble bees to disperse pollen to other plants.

Status in the Assessment Area: MOUN [1] was reported in the CNDDDB as present within the BAA but outside the DIA for Alternative 5A within the Harry Mello State Recreation Area. This species is threatened by forestry practices, as well as any kind of terrain disturbance. Road ditch construction will avoid this plant's habitat and there will be no impact on this species.

Ghost Pipe (*Monotropa uniflora*)

Legal Status: Ghost pipe (MOUN [2]) is not a federal or state listed species but has ranks of G5/S2, CRPR 2B.2,

Species Description and Habitat Needs: This native plant species is found throughout the majority of the United States in humus in deep, shady woods at low to moderate elevations. MOUN [2] is included within the Ericaceae. It is generally scarce or rare in occurrence and found in broadleaved upland forest. Unlike most plants, it is white and does not contain chlorophyll. Instead of generating energy from sunlight, it is parasitic, more specifically a myco-heterotroph. Its hosts are certain fungi that are mycorrhizal with trees, meaning it ultimately gets its energy from photosynthetic trees. The complex relationship that allows this plant to grow also makes propagation difficult.

Status in the Assessment Area: This species was reported as present within the BAA. The CNDDDB reports this species in multiple occurrences near Bald Hills Road in the old-growth redwoods. Road ditch construction will avoid this plant's habitat and there will be no impact on this species.

Wolf's Evening primrose (*Oenothera wolfti*)

Legal Status: Wolf's Evening primrose (OEWO) is not federal or state listed, but is globally and state ranked as G2/S1, and has a CRPR of 1B.1.

Species Description and Habitat Needs: OEWO is a species of primrose in the *Onagraceae* family that grows along the coast of Oregon and northern California. It can be found on coastal prairies, dunes and coastal forest and woodland habitat. Local locations of this plant include Del Norte and Humboldt counties in California and on the southern coast of Oregon. There are only 9 sites in California where this species occurs.

Status in the Assessment Area: OEWO was reported as present within the BAA. It is located in Segment 1 (reported in 1945—possible misidentification) and along Alternative 5A, reported on the Freshwater Lagoon Spit, and in the BAA for Segment 5, near Dows Prairie Road. Threats to this species include habitat loss from expansion, road paving, as well as pesticide use. There will be no effect on this species as a result of the KRRBI construction activities.

Nodding Semaphore Grass (*Pleuropogon refractus*)

Legal Status: Nodding semaphore grass (PLRE) is not federally or state listed but has a CRPR of 4.2 and a Natural Heritage rank of G4/S4.

Species Description and Habitat Needs: The PLRE is generally found within the North Coast Coniferous Forest, within riparian areas, meadows, wetlands, and seeps. The species is almost always found in wetland sites, and is shade tolerant. Light shade provided by the mature red alder canopy, and the prolonged wet soil provide the suitable habitat conditions for PLRE above Freshwater Lagoon.

Status in Assessment Area: This means the species is of limited distribution and fairly threatened within California. Encroachment from a developing understory can threaten the persistence of the species. PLRE was not recorded on the CNDDDB enquiry. It was a recent location discovered during a project botanical survey near the BAA for Alternative 5A in 2016. It has yet to be submitted to the CNDDDB. It is included as a sensitive plant species because suitable habitat is available and PLRE occurs inside the BAA. It was located on moist slopes above Freshwater Lagoon dominated by red alder. It was located in small openings and along wet roadsides. The preferred habitat types used by this species are wet areas. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

White-flowered rein orchid (*Piperia candida*)

Legal Status: White flowered rein orchid (PICA) is not a federal or state listed species but is ranked G3/S2, and it has a CRPR of 1B.2.

Species Description and Habitat Needs: PICA is a perennial herb of the Orchidaceae (orchid family). The white flowered rein orchid is 10-60 cm tall with 2-3 basal leaves approximately 3cm by 10 cm, which do not generally persist after anthesis. The inflorescence is typically one-sided and may have as many as 100 flowers. Flowers are predominantly white with a green mid-vein on the upper sepal. Other parts of the flower may have some hints of green also. Coleman (1995) describes the habitat as coniferous and mixed evergreen forest, in dense shade to full sun and from gravel bars to flat terrain or steep hillsides in elevations from near sea level to 1,200 m (3,937 ft). CNPS (2014) has records as high as 1,310 meters (4,298 feet). It occurs in coastal California from the San Francisco Bay Area, northward to Alaska (CNPS 2014, UDSA 2010). surveys conducted for PICA between May and September find PICA in areas that are predominately Douglas-fir forest or mixed Douglas-fir/redwood forest with a strong hardwood component. The sites are xeric to mesic and mostly on or near old skid trails or roads (HRC 2014).

Status in the Assessment Area: PICA was reported as present within the BAA but outside the DIA. The CNDDDB shows an occurrence more than ½-mile from the DIA north of Segment 1 along Cavanaugh Creek and another occurrence more than ½-mile east of the DIA of Segment 2 about 2 miles north of Martins Ferry. There is no habitat for this species in the roadsides and ditches proposed for construction. There will be no impact to this species.

Oregon polymonium (*Polynmonium carneum*)

Legal Status: The Oregon polymonium (POCA) is not a federal or state listed species but is ranked G3G4/S2, and CRPR 2B.2.

Species Description and Habitat Needs: POCA grows in the lowlands and in prairies to moderate elevations in the mountains, and inhabits woody thickets, open and moist forests, prairie edges, and roadsides.

Status in the Assessment Area: Suitable habitat is present and the CNDDDB shows an occurrence of this species near the south end of Big Lagoon outside the DIA but within the BAA and very near the coast for Alternative 5A according to the CNDDDB enquiry. There is no habitat for this species in the roadside ditch of Highway 101. No impact is anticipated to this species.

Columbia yellow cress (*Rorippa columbiae*)

Legal Status: The Columbia yellow cress (ROCO) is not a federal or state listed species but has ranks of G3/S1, and a CRPR of 1B.2

Species Description and Habitat Needs: It is native to the western United States from central Washington to northeastern California, where it grows in moist to wet, sandy habitat types, such as playas (dry lakes). It is not a common plant; it is known from about fifteen occurrences in the Modoc Plateau region of California.

Status in the Assessment Area: The CNDDDB reports an occurrence of this ROCO along Camp Creek west of Orleans in the BAA for Segment 1 dating from 1956. It is not shown as present in the Klamath River watershed in the current best available information in installation for the fiber optic cable is overhead on existing poles in this area. No impact to Camp Creek or this water-dependent species is anticipated.

Tracy's romanzoffia (*Romanziffa tracyi*)

Legal Status: Tracy's romanzoffia (ROTR) or Tracy's mistmaiden is not a federal or state listed species but has ranks of G4/S2, and for the CNPS list a CRPR of 2B.3.

Species Description and Habitat Needs: ROTR is native to the coastline of western North America from far northern California north to the southern tip of Vancouver Island, where it grows among rocks on oceanside bluffs.

Status in the Assessment Area: Suitable habitat is present and this species was recorded in the BAA for Alternative 5A. Potential impacts to this species are considered very unlikely. It is briefly addressed as there was a reported location from the BAA on the CNDDDB enquiry. Any further concerns for this

species were dismissed as it was only present in Alternative 5A. No habitat for this species is found in the DIA. No impacts are anticipated due to the project.

Tracy's sanicle (*Saniculae tracyi*)

Legal Status: Tracy's sanicle (SATR) is not a federal or state listed species but has ranks of G4/S4, CRPR 4.1.

Species Description and Habitat Needs: SATR is a species of flowering plant in the parsley family. It is endemic to northwestern California, where it is known from woodlands and coniferous forest in hills and mountains.

Status in the Assessment Area: This species was reported as present within the BAA in 1929. The CNDDDB reports a single occurrence along Bald Hills Road in the vicinity of Wiregrass Prairie in Segment 3 of the proposed project route. No habitat for this species is found in the DIA and it is unlikely to be present in county- and state-maintained roadsides and roadside ditches. No impacts are anticipated due to the project.

Siskiyou checkerbloom (*Sidalcea malviflora* spp. *patula*)

Legal Status: The Siskiyou checkerbloom (SIMA) is ranked as G5T2/S2 with a CRPR 1B.2.

Species Description and Habitat Needs: SIMA is a perennial rhizomatous herb that is native to California and inhabits road-cuts, grassy slopes, coastal bluff scrub and open forests at 15-880 m elevation. This species blooms May-August and is found only in California and Oregon. SIMA is a perennial herb of the Malvaceae (mallow family). It is 50 to 90 cm tall with long trailing rhizomes and rose-pinkflowers. Lower leaf blades are crenate to shallowly lobed and upper leaf blades are generally deeply lobed. Habitat for the species includes North Coast coniferous forest, coastal prairie (CNPS 2014), open coastal forest generally less than 700 meters (2,300 feet) in elevation (Hickman 1996), broadleaved upland forest (CNDDDB Rare Find, November 2014), along the coast on stable dunes and sea bluffs, sunny openings of foothill woodland (Smith and Wheeler 1992), and Redwood Forest plant communities (Munz and Keck 1970). It occurs in Mendocino, Humboldt, and Del Norte counties in California, and north into Oregon (CNPS 2014). It can be found along grassy roadsides, in prairies, and at the prairie interface with redwood or mixed evergreen forests (HRC 2014). Locally it has been found present in meadow habitat, roadsides, or in openings or at the edges of Douglas-fir or mixed evergreen forests (Reagan, 2014). The potential impacts to this plant arise primarily from re-establishment of conifer stands, road building, and road maintenance.

Status in the Assessment Area: Suitable habitat is present and this species is documented in the CNDDDB within the BAA for Segment 3, Segment 4 and Segment 5. It was about a mile west of Elk Camp and well outside the BAA of Segment 3 west of Dolason Prairie. It was also documented in the McKinleyville area in 1920 south of the DIA and just inside the BAA of Segment 5. No habitat for this species is found in the DIA and it is unlikely to be present in county- and state-maintained roadsides and roadside ditches. No impacts are anticipated due to the project.

Coast checkerbloom (*Sidalcea oregana* ssp. *exima*)

Legal Status: The Coast checkerbloom (SIOR) is not a federally or state-listed species and has a CRPR of 1B.2 and an overall ranking of G5T1/S1.

Species Description and Habitat Needs: SIOR is a perennial rhizomatous herb that is native to California-inhabits road-cuts, grassy slopes, coastal bluff scrub and open forests. SIOR is a perennial herb of the Malvaceae (mallow family). Habitat for the species includes North Coast coniferous forest, coastal prairie (CNPS 2014), open coastal forest generally, broadleaved upland forest along the coast on stable dunes and sea bluffs, sunny openings of foothill woodland. Regionally SIOR be found along grassy roadsides, in prairies, and at the prairie interface with redwood or mixed evergreen forests (HRC 2014). This habit, as with other species that favor roadsides will put them particularly at risk and surveys are needed to ensure SIOR avoidance.

Status in the Assessment Area: Suitable habitat is present and this species is documented within the BAA. The CNDDDB shows an occurrence in the Lake Prairie area on GDRC lands a mile north of Segment 1. Locally it has been found present in meadow habitat, roadsides, or in openings or at the edges of Douglas-fir or mixed evergreen forests. Potential impacts to this plant arise primarily from re-establishment of conifer stands, road building, and road maintenance. No habitat for this species is found in the DIA and it is unlikely to be present in county- and state-maintained roadsides and roadside ditches. No impacts are anticipated due to the project

Robust false lupine (*Thermopsis robusta*)

Legal Status: The Robust false lupine (THRO) is not a federal of state listed species but has ranks of G2/S2, and a CRPR of 1B.2.

Species Description and Habitat Needs: Species is 0.8-1.8 m tall, green to gray-hairy, stem erect, stout, branches zero-few at base. Leaf: leaflets 6-11 cm, Fruit: curved, spreading, densely hairy. Substrate and preferred habitats are shale, serpentine, open sites, forest at an elevation range of 150--1500m in broad forest types found in the Klamath Region.

Status in the Assessment Area: Suitable habitat is present and this species is documented in the BAA of Segments 1 and 2 in the CNDDDB near Orleans in 1931 and in the Yurok Indian Reservation (labeled on quads as the Hoopa Valley Indian reservation) in 1995 south of Capell and south of Segment 2. The dry interior roadsides are a typical location for this species. No habitat for this species is found in the DIA and it is unlikely to be present in county- and state-maintained roadsides and roadside ditches. No impacts are anticipated due to the project

Cylindrical trichodon (*Trichodon cylindricus*)

Legal Status: Cylindrical trichodon (TRCY) is ranked as G4/S2 with a CRPR of 2B.2

Species Description and Habitat Needs: TRCY is a species of moss that inhabits sandy exposed soils, roadbanks, upland forest, meadows and seeps as well as coniferous forests. It can be found at elevations of 50-200m and is visible all year round. The TRCY is a true moss in the family *Ditrichaceae*. It has a separated population in the U.S. where it is more common in the northwest and has only a few scattered locations in the east. This moss grows on sandy exposed soil, on road-banks, broadleaf upland forest, meadows and upper montane coniferous forest. The species is absent of capsules and barely larger than 1

cm. The “leaves” are very narrow, bent, curled and relatively lengthy. If a sporophyte is present it is yellow or reddish with a cylindrical smooth capsule that will appear from late spring to summer.

Status in the Assessment Area: Suitable habitat is present and this species was recorded in 1983 in the State Parks in the BAA of Alternative 5A according to the CNDDDB enquiry. Threats to this species include logging and road maintenance. No habitat for this species is found in the DIA and it is unlikely to be present in county- and state-maintained roadsides and roadside ditches. There will be no significant impacts to TRCY as a result of the proposed project.

Alpine Marsh Violet (*Viola palustris*)

Legal Status: Alpine marsh-violet (VIPA) is rare in California and is included in the CNPS list of rare and endangered species with a CRPR of 2B.2

Species Description and Habitat Needs: VIPA is a perennial forb in the genus *Viola*. It grows in wet meadows, marshes and stream banks in the northern parts of North America and Eurasia. Marsh violets have three lavender or pale blue petals that have darker veins. Clusters of upright leaves are supported by underground stolons. Leaves are large and heart shaped, about 2-4” wide. This violet can often grow on coastal bogs 0-15m. Often in patches and will be most noticeable in flowering season from May- June.

Status in the Assessment Area: Suitable habitat is likely not present in the DIA. VIPA was recorded in the BAA for Alternative 5A according to the CNDDDB enquiry. The KRRBI project intends to avoid wetlands where feasible by overhead installation or directional drilling. No impact to this species is anticipated.

CONCLUSION

NSO activity centers within ¼ mile of construction will have to be avoided if currently active, but no known activity centers exist within ¼ mile of the centerline of the KRRBI Project. This species is well surveyed and careful monitoring is possible. MAMU habitat is present in places within RNP. Potential indirect effect from construction noise will be avoided by seasonal restrictions imposed by the RNP for those areas. WIFL habitat is present in wetland areas near Segment 4. Two CSSC: Yellow Warbler and Yellow-breasted Chat may nest or attempt to nest in the suitable alder/willow riparian habitat adjacent to the project area along both banks of the Klamath River and Redwood Creek. No riparian habitat will be removed and the construction activities will not significantly add to the current level of disturbance and impacts to species potentially present. The low intensity of the construction activity, brief time of activity and location further ensure that no significant impacts to any sensitive wildlife species are expected as a result of the proposed activities. Sensitive plant species are unlikely to be present in the annually maintained roadsides and roadside ditches but may be present near the proposed construction. Restricting construction equipment to the road prism wherever possible and limiting vegetation removal (SOIL-1) to a minimum will avoid adverse impact to sensitive plant species. Overall, the KRRBI project will have no significant adverse effect on any sensitive species with the proposed mitigation measures in place.

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