
APPENDIX C. BIOLOGICAL RESOURCES EVALUATION



**TDS Telecommunications
Olinda Last Mile Underserved Broadband Project
Shasta County, California**

Biological Resources Evaluation

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July 13, 2015

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ABSTRACT

Happy Valley Telephone Company, d.b.a. TDS Telecommunications Corporation (TDS), proposes to construct the Olinda Last Mile Underserved Broadband Project (the Project), which will provide high-speed internet services to the communities of Olinda and Happy Valley as well as portions of unincorporated Shasta County, California.

This Biological Resources Evaluation (BRE) has been prepared to provide a summary of existing biological conditions, the potential presence of special status species and resources, an initial evaluation of impacts of the project on biological resources, and feasible avoidance and minimization measures to reduce potential impacts to a level typically considered less than significant under the California Environmental Quality Act (CEQA). This report is useful for the preparation of the proposed project's CEQA Proponent's Environmental Assessment/Mitigated Negative Declaration and is in compliance with the National Environmental Policy Act (NEPA).

As discussed herein, the BRE determines to what extent the proposed project may potentially impact biological resources subject to provisions of CEQA and NEPA. Based on existing conditions and characteristics of the study area, Foothill Yellow-legged Frog (*Rana boylei*), California Red-legged Frog (*Rana draytonii*), Western Spadefoot (*Spea hammondi*), Bald Eagle (*Haliaeetus leucocephalus*), Green Sturgeon (*Acipenser medirostris*), Central Valley Steelhead (*Oncorhynchus mykiss*), Chinook Salmon (*O. tshawytscha*), Conservancy Fairy Shrimp (*Branchinecta conservatio*), Vernal Pool Fairy Shrimp (*B. lynchi*), Vernal Pool Tadpole Shrimp (*Lepidurus packardii*), Pallid Bat (*Antrozus pallidus*), Townsend's Big Eared Bat (*Corynorhinus townsendii*), Western Red Bat (*Lasiurus blossevillii*), Big-scale Balsamroot (*Balsamorhiza macrolepis*), Nuttall's Ribbon-leaved Pondweed (*Potamogeton epihydrus*), and Western Pond Turtle (*Emys marmorata*) are known to occur or have the potential to occur; therefore these species are evaluated for potential impacts.

It was determined that the proposed project would have no effect on species and/or critical habitats listed under the Endangered Species Act and that the project would have no impact on habitats meeting the criteria for Sensitive Natural Communities as defined by the California Department of Fish and Wildlife (CDFW). In addition, it was determined that waterways and wetlands in the study area that may be Waters of the U.S. subject to U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or CDFW jurisdiction would not be impacted by the proposed project.

The BRE concludes that the proposed project would potentially impact special status species listed by the CDFW, and it may result in the spread of invasive plant species; however, implementation of the recommended avoidance and minimization measures will reduce these potential impacts to a less than significant level.

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1.0 INTRODUCTION

Happy Valley Telephone Company, d.b.a., TDS Telecommunications Corporation (TDS), proposes to construct the Olinda Last Mile Underserved Broadband Project (the Project), which will provide high-speed internet services to the communities of Olinda and Happy Valley as well as portions of unincorporated Shasta County, California.

This Biological Resource Evaluation (BRE) presents the results of a database search and a reconnaissance-level biological survey of regionally occurring special status species and sensitive biological resources within the project area. The purpose of this report is to document the dominant plant and animal species observed at the time of the survey, to discuss the general habitat types present, and to evaluate the potential for the project site and vicinity to contain or provide habitat for Federally or State-listed special status plant and animal species and sensitive natural communities. Additionally, this report provides standard recommended avoidance and minimization measures to reduce potential impacts to sensitive biological resources.

1.1 *Project Location*

The project area is located in southwestern Shasta County, California, west of the City of Anderson and the Sacramento River. Specifically, the project area is located in portions of Sections 27, 34, and 35, Township 31 North, Range 6 West; Sections 1 and 2, Township 30 North, Range 6 West; and Sections 5–11, 14–17, 19–24, 26, and 27, Township 30 North, Range 5 West, Mount Diablo Meridian, as depicted on the Olinda, Ono, and Igo, California, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps (Figures 1 and 2).

1.2 *Project Description*

The proposed project involves the construction of a second-generation, very-high-bit-rate digital subscriber line (VDSL2) fiber-optic network capable of 25 Mbps/5 Mbps (download/upload) speeds. In total, approximately 24.6 km (15.3 miles) of new fiber-optic cable will be buried within protective conduit along existing roads in the project area. The buried line installation, which will consist of the telecommunications cable and its protective conduit, will be performed using plowing and trenching construction techniques, and a directional boring machine will be used to install the line at waterway and road crossings. Ancillary equipment to be installed includes seven new equipment cabinets, which will serve as connecting “nodes” for customers, splice boxes, and line markers. The equipment cabinets will be approximately 0.6 m by 1.0 m by 1.2 m (2.0 by 3.0 by 4.0 feet) in size and will be installed on top of buried concrete vaults within an approximately 6-m-square (20-foot-square) area. Splice boxes are small rectangular metal enclosures that will be installed between lengths of cable. Line markers, which will be installed at intervals of approximately 305 m (1,000 feet), are approximately 1.2 m (4.0 feet) tall and made of flexible fiberglass.

The line installation will be performed in two steps. First, a protective conduit for the fiber-optic cable will be installed by either plowing or directional boring construction methods. Second, the fiber-optic cable will be “blown” through the conduit using compressed air. Approximately 11,328 m (37,165 feet) of the proposed installations will be performed using plowing or trenching construction techniques; the remaining approximately 13,236 m (43,425 feet) of the installations will be performed using directional boring. The total combined ground disturbance associated with the project, including the plowed, trenched, and bored installations, would not exceed an area approximately 2.8 ha (6.8 acres) in size.

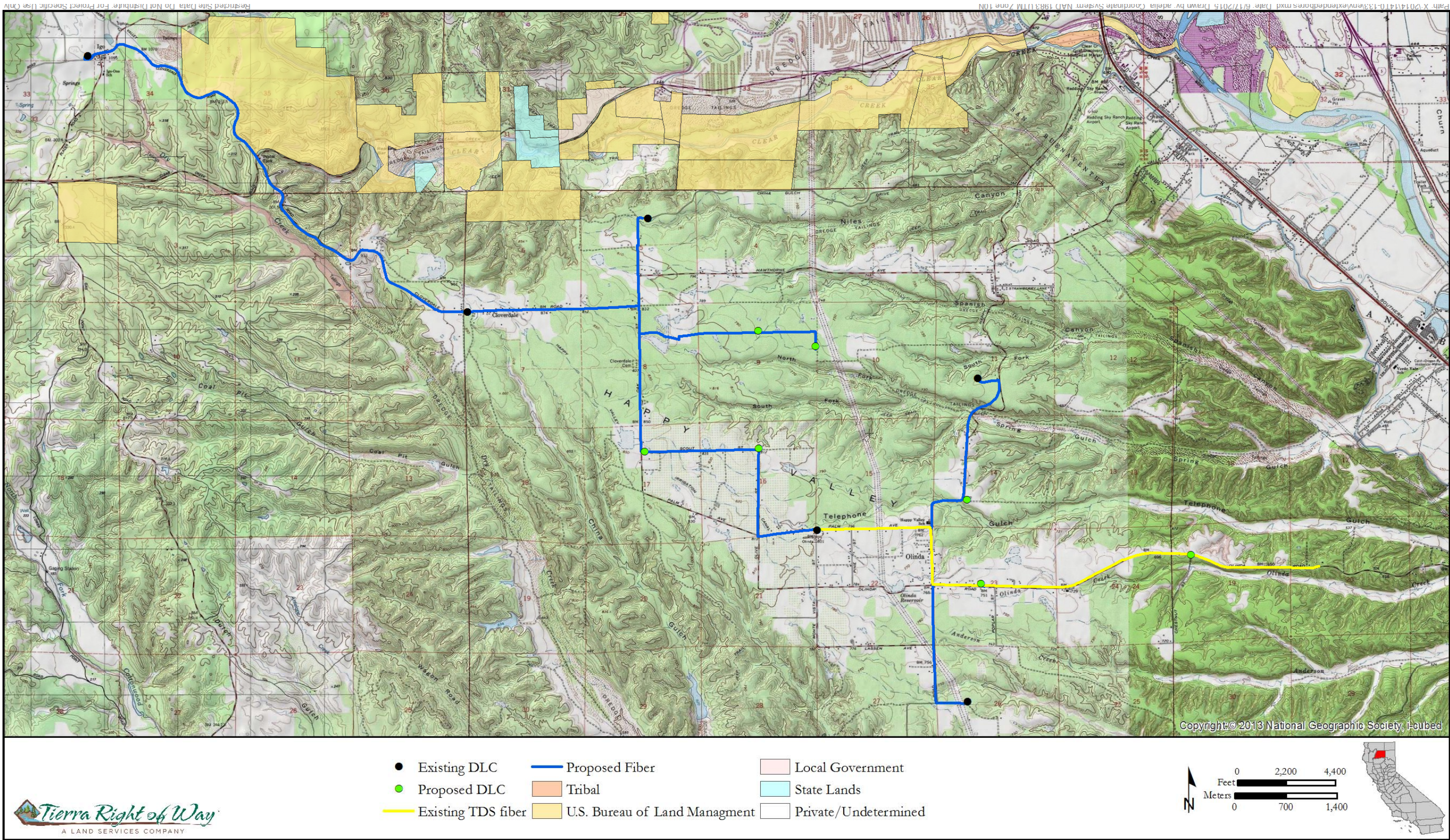
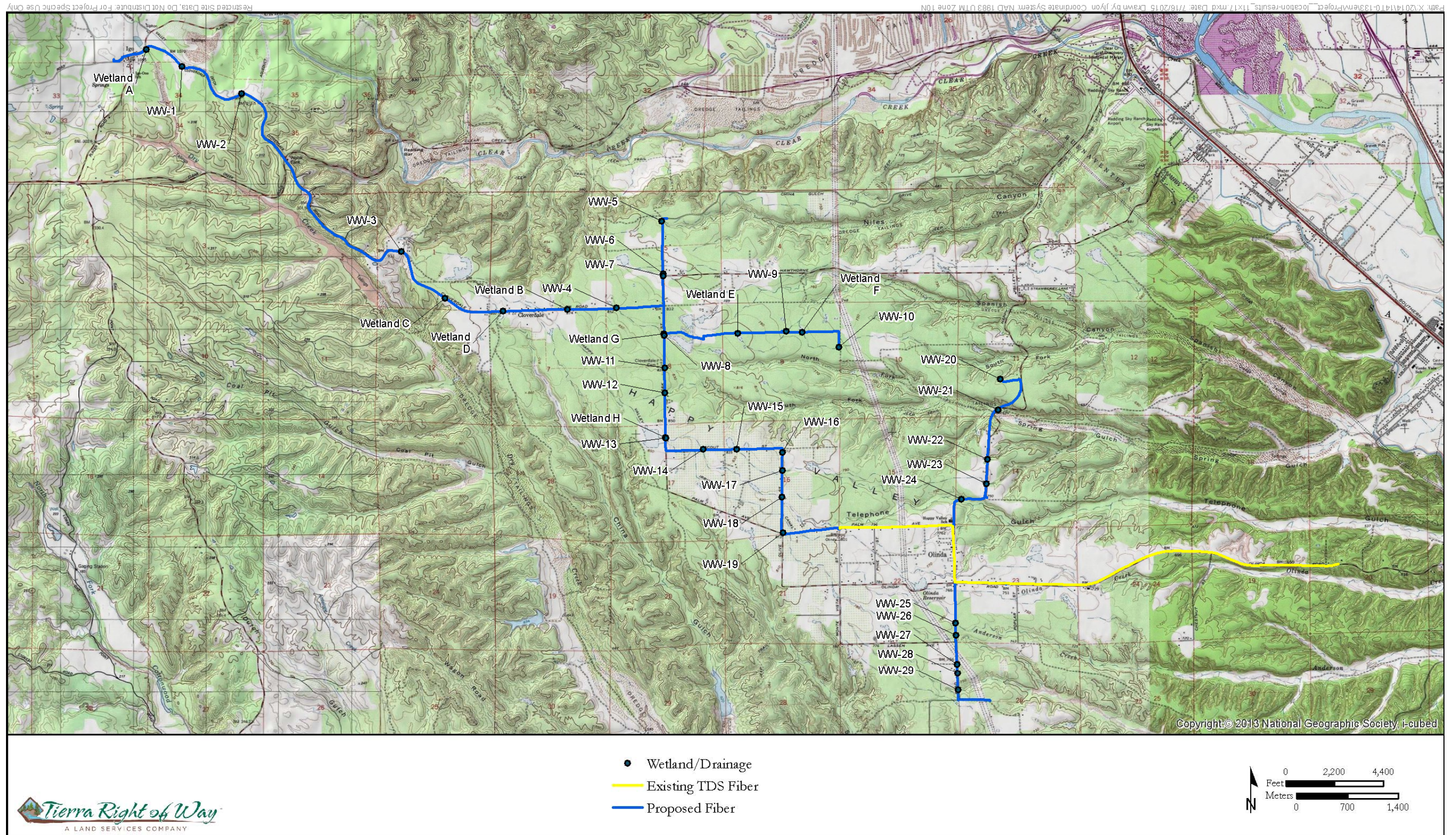


Figure 1. Project location.



1.2.1 Plowed Conduit Installation

Plowed conduit is installed using a machine equipped with a specialized single ripper that loosens the soil along the installation path. Conduit is fed either from the plow machine or from a separate truck-mounted reel through a plow chute attached to the ripper and laid directly at a nominal depth of 1 m (3 feet). A compaction machine follows directly behind the plow machine and restores the ground surface to its original contour. The installation path may be “pre-ripped,” if necessary, to loosen the soil in areas where subsurface rock or other buried obstructions may be present. Ground disturbance associated with the plowed installation will be limited to an approximately 2.4-m-wide (8.0-foot-wide) corridor.

1.2.2 Trenched Conduit Installation

In areas that are too narrow for plowing equipment to be used and directional boring is not required to avoid surface disturbance, trenching construction techniques will be used for the conduit installations. Typically, a backhoe would be used to dig the required trench, although a compact excavator may be used in areas that are exceedingly narrow. The nominal trench depth would be the same as for plowed installations, but the disturbance width would be less.

1.2.3 Bored Conduit Installation

Directional boring is a method used to install underground utilities without the need for trenching. Typically, it is used to install utility lines under waterways, roads, and other areas where the avoidance of surface disturbance is desirable (Figure 3).

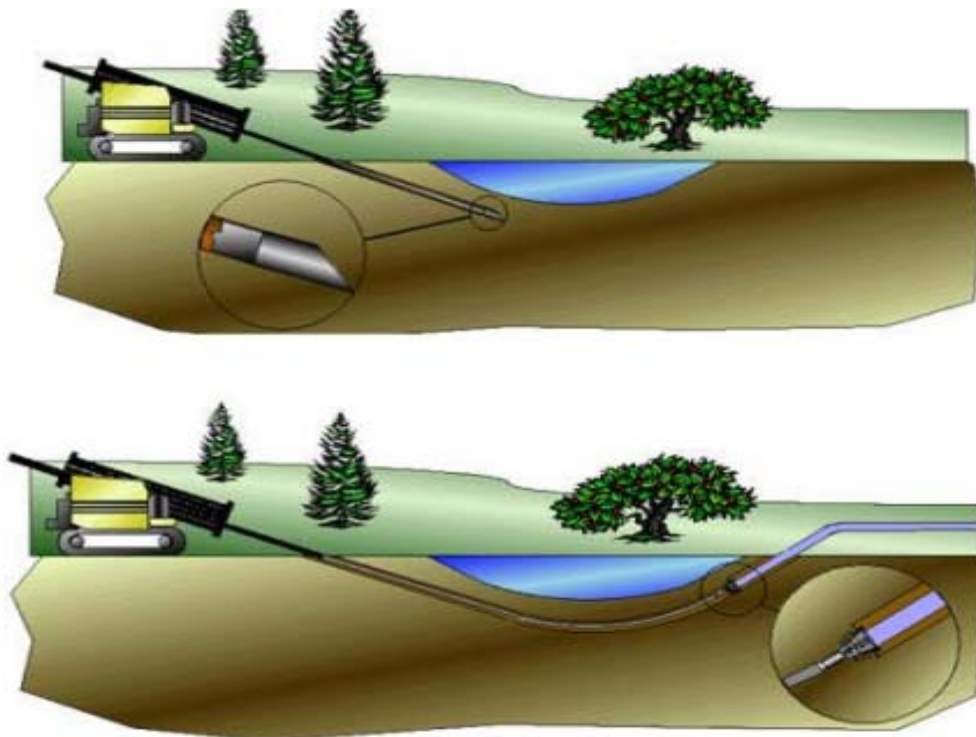


Figure 3. Example of a directional bore beneath a waterway.

Directional boring machines are essentially horizontal drilling rigs that have a steerable drill bit. The drill bit is guided by the operator as it progresses along the desired boring path. After boring, the drill pipe is pulled out and conduit is threaded through the bore. In “drill-and-leave” installations, the drill pipe is left in place and serves as the conduit.

Two boring pits for bore ingress and egress would be required for each bored installation, one on either side of the bore. These bore pits would be located at varying distances from the waterways and roads. The depth of the bore would be a minimum of 1.5 m (5.0 feet) below the bed of the waterway or surface of the road, and the bore lengths would be variable. The bores would be of sufficient diameter to accommodate the 5-cm (2-inch) conduit and would be drilled using drilling fluid “mud.” This mud is nontoxic, consisting of clay, bentonite, and water; it would be disposed of accordingly. Following the installation of the pipe within the bore, the bore pits will be filled in and compacted, and the ground surface will be restored to its original contour. Ground disturbance associated with the bored conduit installations will occur within the same 2.4-m-wide (8.0-foot-wide) corridor as the plowed installations.

1.2.4 Project Schedule

The anticipated start date for the proposed project is March of 2016, and the duration of construction would be approximately two months.

1.3 Applicable Environmental Regulations

1.3.1 Federal Requirements for Species Protection

Endangered Species Act—The U.S. Fish and Wildlife Service (FWS) and the National Oceanographic and Atmospheric Administration’s National Marine Fisheries Service (NMFS) enforce the provisions stipulated within the Endangered Species Act of 1973 (ESA) (16 USC Section 1531 et seq.). Threatened and Endangered species on the Federal list (50 CFR Section 17.11, and 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a Federal agency or a Biological Opinion with incidental take provisions is rendered to a Federal lead agency via a Section 7 consultation. Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any Federally listed species may be present in the project site and determine whether the proposed project will have a potentially significant impact upon such species. Under the ESA, habitat loss is considered to be an impact to a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under the ESA or to result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

Executive Order 13186: Migratory Bird Treaty Act—The Migratory Bird Treaty Act (MBTA) of 1918 (United States Code, Title 16, Chapter 7, Subchapter II) prohibits the “pursuit, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is

composed in whole or part, of any such bird or any part, nest, or egg thereof.” The ensuing Executive Order 13186, signed January 10, 2001, by President Clinton “directs executive departments and agencies to take certain actions to further implement the [MBTA].” Such actions include the responsibility that Federal agencies “taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations ... develop and implement, within two years, a Memorandum of Understanding with the Fish and Wildlife Service, that shall promote the conservation of migratory bird populations.”

Executive Order 11990: Protection of Wetlands—Executive Order 11990, signed May 24, 1997, directs Federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that Federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A project that encroaches on wetlands may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to construction, (2) the project includes all practicable measures to minimize harm to wetlands affected, and (3) the impact will be minor.

Executive Order 13112: Invasive Species Prevention—On February 3, 1999, Executive Order 13112 was signed establishing the National Invasive Species Council. Executive Order 13112 required that each Federal agency whose actions may affect the status of invasive species will, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species, (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner, (iii) monitor invasive species populations accurately and reliably, (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species, and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. In addition, it requires that Federal agencies will pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

1.3.2 State Requirements for Species Protection

California Endangered Species Act/California Environmental Quality Act—The California Endangered Species Act (CESA) of 1970 (Fish and Game Code Section 2050 et seq. and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5). Under CESA, State agencies are required to consult with the California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game [CDFG]) when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on State-listed species. During consultation, CDFW determines whether take would occur and identifies “reasonable and prudent alternatives” for the project and conservation of special status species. CDFW can authorize take of

a State-listed species under Sections 2080.1 and 2081(b) of CDFW code in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of Threatened and Endangered species designated under State law (CDFG Code 2070). CDFW also maintains lists of species of special concern, which serve as “watch lists.” Pursuant to the requirements of CESA, a State or local agency reviewing a proposed project within its jurisdiction must determine whether any State-listed species may be present in the project area and whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern and fully protected species would be considered significant under certain circumstances.

The California Environmental Quality Act (CEQA) of 1970 (Subsections 21000-21178) requires that CDFW be consulted during the CEQA review process regarding impacts of proposed projects on rare or Endangered species. These “special status” species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under the ESA and CESA, and species that are not currently protected by statute or regulation, but would be considered rare, Threatened, or Endangered under these criteria, or by the scientific community. Therefore, species that are considered rare or Endangered are addressed in this study regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity; plants on Lists 1A, 1B, and 2 are considered special status species under CEQA.

Although Threatened and Endangered species are protected by specific Federal and State statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the Federal or State list of protected species may be considered Rare or Endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the ESA and the section of the California Fish and Game Code dealing with Rare or Endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the FWS or CDFW (i.e., candidate species) would occur. Thus CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act—The California Native Plant Protection Act of 1977 (CDFG Code Section 1900-1913) requires all State agencies to use their authority to carry out programs to conserve Endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting Birds—California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are “Fully Protected” as those that may not be taken or possessed except under specific permit.

1.3.3 Protection of Wetlands, Waters of the United States, and Waters of the State

Any person, firm, or agency planning to alter or work in “Waters of the U.S.”, including the discharge of dredged or fill material, must first obtain authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from USACE (33 U.S.C. 403). The CDFW requires notification prior to commencement, and possibly a Streambed Alteration Agreement pursuant to California Fish and Game Code Subsection 1601-1603, 5650F, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board (RWQCB) may require State Water Quality Certification (CWA Section 401 permit) prior to the alteration of or discharge to Waters of the U.S. and the State.

Waters of the U.S. are defined as all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark (OHWM)—the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, and/or the presence of litter and debris. Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code Section 13050(e).”

Water quality in California is governed by the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (California Water Code § 13000 et. seq.). This act delegates responsibility to the State Water Resource Control Board (SWRCB) for water rights and water quality protection and directs the nine statewide RWQCBs to develop and enforce water quality standards within their jurisdiction. The Porter-Cologne Act requires any entity discharging waste or proposing to discharge waste within any region that could affect the quality of the “Waters of the State” to file a “report of waste discharge” with the appropriate RWQCB. The appropriate RWQCB then must issue a permit, referred to as a Waste Discharge Requirement (WDR). WDRs implement water quality control plans and take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisances (California Water Code Section 13263).

1.3.4 Shasta County General Plan

The Shasta County General Plan (GP), which applies to all public and private projects in unincorporated Shasta County, consists of three groups of State-mandated Elements entitled the Public Safety Group, the Resources Group, and the Community Development Group. The Fish and Wildlife Element in the Resources Group outlines objectives and policies that address the need to preserve important aquatic, fish, and wildlife habitats and plant communities for their biological and ecological values, as well as for their direct and indirect benefits to the citizens of Shasta County.

2.0 METHODOLOGY

Tierra biologists Theresa Knoblock and Tim Jordan conducted reconnaissance surveys of the project area from February 10–14, 2015, and returned to the project area on May 20, 2015, to perform a species-specific survey for the CNPS-listed Big-scale Balsamroot (*Balsamorhiza macrolepis*) during its blooming season (Table 2.1). Special status species (listed in Appendix A) were assessed for their potential to occur in the project area based on the existing characteristics that were observed. In addition to special status species and their habitats, the project corridors were assessed for general wildlife species, migratory birds, plant species and noxious weeds, sensitive natural communities, and the presence or absence of waterways. For the purposes of this report, the entire area assessed during the reconnaissance and species-specific surveys includes the project corridor centerlines with an approximately 15.2-m (50.0-foot) buffer to either side, which is comprehensively referred to as the “study area.” All areas within the study area were visually assessed during the surveys.

Table 2.1. Field Survey Schedule

Date/Weather Conditions	Surveyors	Survey Time/Purpose
2/10/2015, 75° F, calm, 20% clouds	Theresa Knoblock, Tim Jordan	1500–1700, general biological
2/11/2015, 43–74° F, calm, variable clouds		0800–1445, general biological, wetland delineation
2/12/2015, 47–75° F, calm, slight haze		0800–1345, general biological, wetland delineation
2/13/2015, 54–65° F, breezy, slight haze		0815–1430, wetland and drainage delineation
2/14/2015, 45–80° F, breezy, slight haze		0800–1100, general biological
5/20/2015, 68–75° F, slight breeze, hazy		0800–1200, species-specific

Prior to conducting the reconnaissance surveys, a comprehensive list of regionally-occurring special status species and sensitive natural communities was compiled from the list of reported occurrences in the CDFW’s California Natural Diversity Database (CNDDDB) for the Cottonwood, Olinda, Ono, Igo, Hooker, Enterprise, Mitchell Gulch, Rosewood, and Redding, California, 7.5 minute USGS topographic quadrangles (CNDDDB 2014) (Figure 4) and the list of Federal Endangered and Threatened species that occur in or may be affected by projects in the Cottonwood, Olinda, Ono, and Igo quadrangles obtained from the FWS Sacramento Fish and Wildlife Office. CNDDDB occurrence records include those that are mapped (meaning that occurrence data has been verified by CDFW) and unprocessed records that have not been verified. The CNDDDB and FWS lists are included in Appendix A. Habitats present in the study area were compared to the habitat requirements of these regionally occurring special status species and used to determine which of these species had the potential to occur in the study area. Those species with a potential to occur within the study area and/or be adversely affected by the proposed project are addressed in Section 4.3. Species whose range (geographic or elevation) does not include the study area or for which the study area does not provide suitable habitat were excluded from further consideration. This analysis is included in Appendix B.

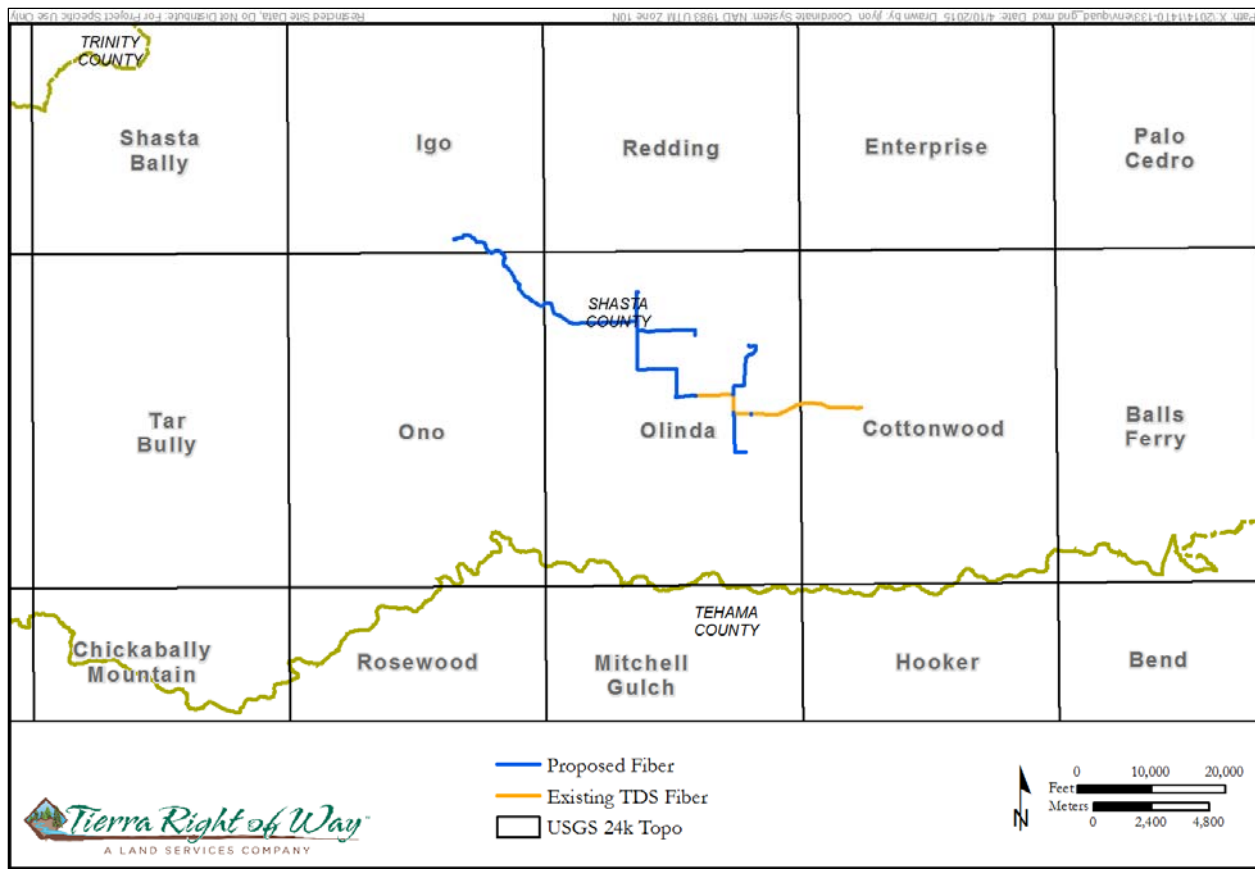


Figure 4. USGS topographic quadrangles in CNDDDB search.

3.0 BIOLOGICAL RESOURCES IN THE PROJECT AREA

3.1 Environmental Setting

The project area is located in north-central California within the northern portion of the Sacramento Valley, where the Valley meets the Cascade Range. The topography in the central portion of the project area is relatively flat, and the western and northern portions are hilly. Land use in most of the project area is rural residential, with denser development present in the vicinity of Olinda located at the intersection of Happy Valley and Palm Roads. Olive orchards are present in the central portion of the project area along Scout and Olive Streets, and relatively open woodland areas are present in the vicinity of Happy Valley Road at Spring Creek and along the western portion of Cloverdale Road to the western end of the study area located in the community of Igo. Elevations in the project area range from approximately 198–335 m (650–1,100 feet) above mean sea level (AMSL).

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1986–2013 at the Redding Municipal Airport, located approximately 13 km (8 miles) east of the project area (WRCC 2014). These data include average maximum temperature, average minimum temperature, average total precipitation, and average snowfall. The average annual maximum temperature within the project area is 75.5° F (24.2° C), with the hottest month of the year being July with an average maximum temperature of 98.7° F (37.1° C). The average annual minimum temperature within the project area is 49.4° F (9.7° C), with December having the coldest average temperature of 36.1° F

(2.3° C). The project area receives an average of 85.5 cm (33.7 inches) of precipitation annually, with January having the highest average precipitation at 16.1 cm (6.3 inches). The project area receives snowfall of 10.2 cm (4.0 inches) in the average year.

3.2 *Habitat Types*

3.2.1 Terrestrial Habitat

The dominant type of terrestrial habitat present in the study area, as classified in *A Manual of California Vegetation* (Sawyer 2009), is Blue Oak-Digger Pine Woodland. Other terrestrial habitats present in the study area include ruderal habitat, located in the more developed central portions of the study area, and a small amount of Northern Yellow Pine Forest located in the extreme northwestern portion of the study area in the vicinity of Igo. Complete lists of plants and wildlife species identified in the study area at the time of the surveys can be found in Appendices C and D.

3.2.2 Aquatic Habitat

The only perennial aquatic habitat in the study area is located at Dry Creek just east of Igo on Placer Road. A palustrine emergent wetland is also located at the road crossing. The remainder of the waterways and wetlands identified in the study area are ephemeral and seasonal, respectively. There are no ponds within the study area.

3.2.3 Sensitive Natural Communities

The CNNDDB search indicates that sensitive natural communities, as defined by CDFW, including Great Valley Cottonwood Riparian Forest, Valley Oak Riparian Forest, and Willow Scrub, occur on one or more of the USGS quadrangles in the vicinity of the study area. None of these three sensitive communities is present in the study area itself; however, sparse riparian vegetation and wetlands are present in a few locations.

3.2.4 Riparian Areas

Sparse riparian vegetation, consisting of White Alder (*Alnus rhombifolia*) and willows (*Salix* spp.), is located in the vicinity of Spring Creek at the Happy Valley Road crossing. This vegetation is mostly in the understory and is not structurally complex, and the overstory includes upland species such as California Foothill Pine (*Pinus sabiniana*) and oak (*Quercus* spp.).

3.2.5 Wetlands

Palustrine emergent and riverine wetlands, both seasonal and perennial, are present in the study area that will be crossed by the proposed installations. TDS will be boring beneath all wetlands crossed by the line installations and establishing sufficient set-backs from any associated vegetation, thus avoiding any potential impacts to wetlands.

3.3 *Special Status Species*

Based on the assessment methodology outlined in Section 2.0, 14 special status wildlife species and two special status plant species are either known to occur or have the potential to occur in the study area (Table 2).

3.3.1 Special Status Wildlife and Plant Species

Table 3.1. Special Status Species with the Potential to Occur in the Study Area

Scientific Name	Common Name	Status (FWS/State/CNPS)
<i>Amphibians</i>		
<i>Rana boylei</i>	Foothill Yellow-legged Frog	-/SSC/-
<i>Rana draytonii</i>	California Red-legged Frog	T/-/-
<i>Spea hammondi</i>	Western Spadefoot	-/SSC/-
<i>Birds</i>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	-/E,FP/-
<i>Fish</i>		
<i>Aspenser medirostris</i>	Green Sturgeon	T/-/-
<i>Oncorhynchus mykiss</i>	Central Valley Steelhead	T/-/-
<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	T ^a , E ^b /T ^a , E ^b /-
<i>Invertebrates</i>		
<i>Branchinecta conservatio</i>	Conservancy Fairy Shrimp	E/-/-
<i>Branchinecta lynchi</i>	Vernal Pool Fairy Shrimp	T/-/-
<i>Lepidurus packardii</i>	Vernal Pool Tadpole Shrimp	E/-/-
<i>Mammals</i>		
<i>Antrozous pallidus</i>	Pallid Bat	-/SSC/-
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	-/CT, SSC/-
<i>Lasiurus blossevillei</i>	Western Red Bat	-/SSC/-
<i>Plants</i>		
<i>Balsamorhiza macrolepis</i>	Big-scale Balsamroot	-/-/1B.2
<i>Potamogeton epiphydrus</i>	Nuttall's Ribbon-leaved Pondweed	-/-/2B.2
<i>Reptiles</i>		
<i>Emys marmorata</i>	Western Pond Turtle	-/SSC/-

^a Central Valley Spring Run Evolutionarily Significant Unit.

^b Sacramento River Winter Run Evolutionarily Significant Unit.

Key: SSC = Species of Special Concern; C = Candidate; T = Threatened; 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere; 2B = Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere; .2 = Moderately Threatened in California.

3.3.1.1 Foothill Yellow-legged Frog (*Rana boylei*)

Federal Status: None

State/CDFW Status: Species of Special Concern

Habitat/Biology: In California, Foothill Yellow-legged Frog occurs in the Coast Ranges south to the Transverse Mountains in Los Angeles County, in most of northern California west of the Cascade crest, and along the western flank of the Sierras south to Kern County at elevations ranging from near sea level to 1,940 m (6,300 feet) AMSL. This species can be found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has mapped and unprocessed occurrences on the Igo USGS quadrangle.

Potential to Occur within the Study Area: No Foothill Yellow-legged Frog individuals were identified during the biological survey. This species has a low potential to occur in the study area along Spring Creek because while it does contain suitable rocky stream habitat for this species, the creek is ephemeral. It would be unlikely for this species to occur along the other streams in the study area because they lack the rocky substrates favored by this species.

3.3.1.2 California Red-legged Frog (*Rana draytonii*)

Federal Status: Threatened

State/CDFW Status: None

Habitat/Biology: The California Red-legged Frog is endemic to California and Baja California, Mexico, and can be found at elevations ranging from sea level up to approximately 1,500 m (5,000 feet) AMSL. Records of this species in California are known from Riverside County north to Mendocino County along the Coast Range and from Calaveras County north to Butte County in the Sierra Nevada. California Red-legged Frogs are still locally abundant within portions of the San Francisco Bay area, including Marin County, and the central coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse ranges (FWS 2015a).

The California Red-legged Frog occupies a distinct habitat that combines both specific aquatic and riparian components. Adults require dense, shrubby, or emergent riparian vegetation closely associated with deep, still, or slowly moving water. The largest densities of this species are associated with deepwater pools with dense overhanging willows and an intermixed fringe of cattails. Well-vegetated terrestrial areas within riparian corridors may provide important sheltering habitat during winter. This species estivates in small mammal burrows and moist leaf litter, and they have been found up to 30 m (100 feet) from water in adjacent dense riparian vegetation. California Red-legged Frogs breed from November to March, sometimes earlier in southern localities, and are known to use upland areas for dispersal (FWS 2015a).

Critical Habitat Designation: There is no designated critical habitat for this species in the vicinity of the project area.

CNDDDB Records: This species has no mapped occurrences on the USGS quadrangles used in the nine-quadrangle search.

Potential to Occur Within the Study Area: No California Red-legged Frog individuals were identified during the biological survey. While the study area is within the historic range of California Red-legged Frog, based on CNDDDB records from 1926 at Clear Creek and from 1911 at Redding, it would be unlikely for this species to occur because the only relatively recent CNDDDB record (1986) was from Tehama County to the south. This indicates that the study area is outside the current range of this species.

3.3.1.3 Western Spadefoot (*Spea hammondi*)

Federal Status: None

State/CDFW Status: Species of Special Concern

Habitat/Biology: The Western Spadefoot can be found throughout the Central Valley of California and adjacent foothills. In the Coast Ranges, it is found from Point Conception in Santa Barbara County south to the Mexican border. Elevations of occurrence extend from near sea level to approximately 1,363 m (4460 feet) in the southern Sierra foothills. This species occurs primarily in grasslands, but occasional populations can be found in valley-foothill hardwood woodlands. Some populations persist for a few years in orchard or vineyard habitats (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has a mapped occurrence on the Hooker USGS quadrangle.

Potential to Occur Within the Study Area: No Western Spadefoot individuals were identified during the biological survey. Western Spadefoot has a moderate potential to occur in the study area, particularly in the orchards present in the central portion of the study area along Scout and Olive Streets.

3.3.1.4 Bald Eagle (*Haliaeetus leucocephalus*)

Federal Status: None

State/CDFW Status: Endangered, Fully Protected

Habitat/Biology: Migratory Bald Eagles from nesting areas in northwestern states and provinces spend the winter in California, arriving during fall and early winter. These wintering birds may remain until February or March, or even into April. In late winter, some adult bald eagles in California have already started nesting, while other eagles have not yet returned to their nesting territories to the north or northeast. Wintering Bald Eagles may be found throughout most of California at lakes, reservoirs, rivers, and some rangelands and coastal wetlands. The State's breeding habitats are mainly found in mountain and foothill forests and woodlands near reservoirs, lakes, and rivers. Most breeding territories are located in northern California, but the eagles also nest in scattered locations in the central and southern Sierra Nevada mountains and foothills, in several locations from the central coast range to inland southern California, and on Santa Catalina Island (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has a mapped occurrence on the Enterprise USGS quadrangle. It also has unprocessed and mapped occurrences on the Hooker, Cottonwood, and Igo quadrangles.

Potential to Occur within the Study Area: A single Bald Eagle was observed in flight over the study area during the February 2015 survey on Cloverdale Road east of Igo. This eagle was possibly nesting in the vicinity of Whiskeytown Lake, a 1,295-ha (3,200-acre) human-made lake located approximately 11 km (7 miles) north of the location where it was observed. Bald Eagle has a low potential to nest in the study area itself due to the lack of sufficiently large trees and large bodies of water.

3.3.1.5 Anadromous Fish Species: Green Sturgeon (*Acipenser medirostris*), Central Valley Steelhead (*Oncorhynchus mykiss*), and Chinook Salmon (*Oncorhynchus tshawytscha*)

Federal Status: Threatened (Green Sturgeon, Central Valley Steelhead, and Chinook Salmon Central Valley Spring Run Evolutionarily Significant Unit [ESU]) and Endangered (Chinook Salmon Sacramento River Winter Run ESU)

State/CDFW Status: Threatened (Central Valley Steelhead and Chinook Salmon Central Valley Spring Run ESU) and Endangered (Chinook Sacramento River Winter Run ESU)

Habitat/Biology: Green Sturgeon, Central Valley Steelhead, and Chinook Salmon are anadromous fish species that spend their adult lives in the open ocean and return to the freshwater lakes, rivers, and streams where they hatched to spawn. In the vicinity of the study area, Steelhead and the Chinook Salmon Spring Run ESU currently spawn in the mainstem of the Sacramento River as well as its tributaries, including Cottonwood Creek located south of the project area and Clear Creek to the north. Green Sturgeon and the Chinook Salmon Fall Run ESU spawns exclusively in the mainstem of the Sacramento River (NOAA 2014, NMFS 2015a).

Green Sturgeon are believed to spend the majority of their lives in near-shore oceanic waters, bays, and estuaries. Younger sturgeon reside in freshwater, with adults returning to freshwater to spawn when they are about 15 years of age and more than 1.3 m (4.0 feet) in size. Spawning is believed to occur every two to five years. Adults typically migrate into fresh water beginning in late February, and spawning occurs from March through July, with peak activity from April to June. This species spawns in deep pools or “holes” in the large, turbulent, freshwater mainstems of the Rogue River, Klamath River Basin, and the Sacramento River (NMFS 2015a).

Juvenile Chinook Salmon may spend from three months to two years in freshwater before migrating to estuarine areas as smolts and then into the ocean to feed and mature. Chinook Salmon remain at sea for one to six years (more commonly two to four years), with the exception of a small proportion of yearling males (called “jack” salmon) which mature in freshwater or return after two or three months in saltwater.

There are different seasonal (i.e., spring, summer, fall, late-fall or winter) “runs” in the migration of Chinook Salmon from the ocean to freshwater, even within a single river system. These runs have been identified based on when adult Chinook salmon enter freshwater to begin their spawning migration. However, distinct runs also differ in the degree of maturation at the time of river entry, the temperature and flow characteristics of their spawning site, and their actual time of spawning. Freshwater entry and spawning timing are believed to be related to local temperature and water flow regimes (NMFS 2015b).

Central Valley Steelhead can be divided into two basic reproductive types, stream-maturing or ocean-maturing, based on the state of sexual maturity at the time of river entry and duration of spawning migration. The stream-maturing type (summer-run steelhead in the Pacific Northwest and northern California) enters freshwater in a sexually immature condition between May and October and requires several months to mature and spawn. Steelhead individuals that remain in freshwater for all of their lives are called Rainbow Trout. The ocean-maturing type (winter-run Steelhead in the Pacific Northwest and northern California) enters freshwater between November and April, with well-developed gonads, and spawns shortly thereafter. Coastal streams are dominated by winter-run

Steelhead, whereas inland Steelhead of the Columbia River basin are almost exclusively summer-run (NMFS 2015c).

Critical Habitat Designation: There is no designated critical habitat for Green Sturgeon, Chinook Salmon, or Central Valley Steelhead in the study area; however, some of the waterways in the project area are tributaries to the Sacramento River and Cottonwood Creek, both of which are designated as critical habitat for Chinook Salmon and Central Valley Steelhead.

CNDDDB Records: Central Valley Steelhead has mapped occurrences on all USGS quadrangles used in the nine-quadrangle search. Chinook Salmon Central Valley Spring Run ESU has mapped and unprocessed occurrences on the Olinda and Redding quadrangles, an unprocessed occurrence on the Igo quadrangle, and a mapped occurrence on the Enterprise quadrangle. Chinook Salmon Sacramento River Winter Run ESU has mapped occurrences on the Cottonwood, Redding, and Enterprise quadrangles.

Potential to Occur Within the Study Area: Waterways in the project area, particularly Anderson, Dry, and Spring Creeks, may have historically provided suitable spawning habitat for anadromous fish species. However, the likelihood of spawning taking place now would be low due to habitat degradation from past placer mining activities and the placement of impoundments that serve to restrict the movement of migrating fish from the Sacramento River to tributaries in the study area. In addition, all of these waterways, with the possible exception of Dry Creek, are ephemeral and flow only during periods of high rainfall, which would limit their usefulness as spawning habitat for anadromous fish species.

3.3.1.6 Vernal Pool Invertebrates: Conservancy Fairy Shrimp (*Branchinecta conservatio*), Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), and Vernal Pool Tadpole Shrimp (*Lepidurus packardii*)

Federal Status: Endangered (Conservancy Fairy Shrimp and Vernal Pool Tadpole Shrimp) and Threatened (Vernal Pool Fairy Shrimp)

State/CDFW Status: None

Habitat/Biology: Conservancy Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp are small crustaceans that inhabit seasonal wetlands. The former two species are in the *Branchinectidae* family, while the latter is in the *Triopsidae* family. Fairy shrimp have delicate elongated bodies ranging from approximately 1.3–2.5 cm (0.5–1.0 inch) in length, large stalked compound eyes, no carapaces, and eleven pairs of swimming legs. They swim upside down by beating their legs in a wavelike motion that passes from front to back. The Vernal Pool Tadpole shrimp is much larger than the fairy shrimp, reaching a length of approximately 5 cm (2 inches). They have compound eyes like the fairy shrimp, more legs (about 35 pair), and a large shield-like carapace (FWS 2015b).

The life history of these three species is linked to the seasonal cycles of vernal pools. When the pools fill following periods of rain, dormant eggs, or cysts, present in the sediments on the floor of the pool will hatch. As the pools slowly dry, the fairy shrimp and tadpole shrimp mate and produce eggs carried in brood sacs. The eggs either are dropped to the pool bottom or remain in the brood sac until the mother dies and sinks. When the pool dries out, so do the eggs, which can withstand heat, cold, and prolonged periods of desiccation (FWS 2015b).

Conservancy and Vernal Pool Fairy Shrimp are known to occur in the Northwestern Sacramento Valley Vernal Pool Region, which occupies the northwestern portion of the Sacramento Valley and ranges from the Redding area south and west to the Inner Coast Range foothills west of Williams in Colusa County (CDFG 1998). Vernal Pool Tadpole Shrimp occur in a patchy distribution across the Central Valley of California from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties (FWS 2007c).

Critical Habitat Designation: There is no designated critical habitat for these three species in the vicinity of the project area.

CNDDB Records: Conservancy Fairy Shrimp has no mapped occurrences on the USGS quadrangles used in the nine-quadrangle search. Vernal Pool Fairy Shrimp has mapped occurrences on the Cottonwood and Enterprise USGS quadrangles and an unprocessed occurrence on the Olinda quadrangle. Vernal Pool Tadpole Shrimp has a mapped occurrence on the Cottonwood USGS quadrangle and mapped and unprocessed occurrences on the Enterprise quadrangle.

Potential to Occur Within the Study Area: No vernal pools or vernal pool invertebrates were identified during the biological survey. However, the seasonal emergent wetlands identified in the study area may provide marginally suitable habitat for these species, particularly if the wetlands experience seasonal drying in a manner similar to vernal pools, but vernal pool invertebrates have a low potential to occur in the study area. Because Wetland A is perennial and aquatic predatory species such as fish, crayfish, frogs, and toads may be present, vernal pool invertebrates have a negligible potential to occur at this location.

3.3.1.7 Pallid Bat (*Antrozus pallidus*)

Federal Status: None

State/CDFW Status: Species of Special Concern

Habitat/Biology: In California, the Pallid Bat is a locally common species found at lower elevations. It occurs throughout the State, except for the high Sierra Nevada from Shasta to Kern Counties and the northwestern corner of California from Del Norte and western Siskiyou Counties to northern Mendocino County. A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. This species is most common in open, dry habitats with rocky areas for roosting and is a yearlong resident in most of its range.

Pallid Bat day roosts are found in caves, crevices, mines, and occasionally in hollow trees and buildings. Roosts must protect bats from high temperatures, and individuals move deeper into cover if temperatures rise. Night roosts may be found in more open sites, such as porches and open buildings. Few hibernation sites are known, but this species is likely to use rock crevices. This slow-flying, maneuverable species is adapted to feed on large, hard-shelled prey insects on the ground or in foliage (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDB Records: This species has mapped occurrences on the Igo and Olinda USGS quadrangles.

Potential to Occur Within the Study Area: No Pallid Bat individuals or potential roosting sites were identified in the study area during the biological survey. This species has a moderate potential to occur in the study area while foraging because the vegetation in and adjacent to the study area may provide suitable foraging habitat.

3.3.1.8 Townsend's Big-eared Bat (*Corynorhinus townsendii*)

Federal Status: None

State/CDFW Status: Candidate Threatened, Species of Special Concern

Habitat/Biology: Townsend's Big-eared Bat is found throughout California, but the details of its distribution are not well known. This species is found in all but subalpine and alpine habitats and may be found at any season throughout its range. Once considered common, Townsend's Big-eared Bat is now considered uncommon in California. It is most abundant in mesic habitats. This species requires caves, mines, tunnels, buildings, or other human-made structures for roosting. It may use separate sites for night, day, hibernation, or maternity roosts. Hibernation roosts are cold, but not below freezing, and individuals may move within the hibernacula to find suitable temperatures. Maternity roosts are warmer than hibernation roosts.

Small moths are the principal food source for Townsend's Big-eared Bat, although beetles and a variety of soft-bodied insects are also consumed. This species captures prey in flight using echolocation or by gleaning from foliage. Flight is slow and maneuverable, and this bat is capable of hovering (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has mapped occurrences on the Igo and Redding USGS quadrangles.

Potential to Occur Within the Study Area: No Townsend's Big-eared Bat individuals or potential roosting sites were identified in the study area during the biological survey. Townsend's Big-eared Bat has a moderate potential to occur in the study area while foraging because the vegetation in and adjacent to the study area may provide suitable foraging habitat.

3.3.1.9 Western Red Bat (*Lasiurus blossevillei*)

Federal Status: None

State/CDFW Status: Species of Special Concern

Habitat/Biology: Western Red Bat is locally common in some areas of California, occurring from Shasta County south to the Mexican border and west of the Sierra Nevada/Cascade crest and deserts. The winter range includes western lowlands and coastal regions south of San Francisco Bay. Migration occurs between summer and winter ranges, and migrants may be found outside the normal range of this species. This species roosts primarily in trees, less often in shrubs, in forests and woodlands from sea level up through mixed conifer forests. Western Red Bat forages for insects over a wide variety of habitats, including grasslands, shrublands, open woodlands and forests, and croplands. This species is not found in desert areas, and during warm months sexes occupy different portions of the range (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has mapped occurrences on the Cottonwood and Igo USGS quadrangles.

Potential to Occur Within the Study Area: No Western Red Bat individuals were identified in the study area during the biological survey. Townsend's Big-eared Bat has a moderate potential to occur in the study area while foraging because the vegetation in and adjacent to the study area may provide suitable foraging habitat. In addition, this species may roost in trees and shrubs in and adjacent to the study area.

3.3.1.10 Big-scale Balsamroot (*Balsamorhiza macrolepis*)

Federal Status: None

State/CDFW Status: 1B.2

Habitat/Biology: In California, Big-scale Balsamroot is found in the western foothills of the central Sierra Nevada Mountains and in the eastern San Francisco Bay area. Suitable habitat is found in chaparral, cismontane woodland, and valley and foothill grassland on open, dry or moist, grassy or rocky slopes at elevations ranging from 90–1,400 m (300–4,600 feet) AMSL. This species flowers from March through June (CNPS 2015; eFloras 2013).

Big-scale Balsamroot is a taprooted perennial herb in the Asteraceae family. The leaves, which can be up to 50 cm (20 inches) in length, are lance-shaped, lobed, and covered in fine hairs. The inflorescence is yellow (eFloras 2013).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has a mapped occurrence on the Rosewood USGS quadrangle.

Potential to Occur Within the Study Area: Potentially suitable habitat for Big-scale Balsamroot, represented by dry, rocky areas in open grassy woodland in relatively good condition, was identified along the western portion of Cloverdale Road between Clear Creek and Placer Roads during Tierra's February 2015 survey, and it was determined that this species had a moderate potential to occur in this area. In order to maximize the chances of detecting individuals of this species, if present, a second survey was conducted in May of 2015, during the flowering period for this species. No Big-scale Balsamroot individuals were identified within the approximately 2.9-km-long (1.8-mile-long) corridor containing potentially suitable habitat. For the remainder of the study area, Big-scale Balsamroot has a negligible potential to occur due to the lack of suitable habitat.

3.3.1.11 Nuttall's Ribbon-leaved Pondweed (*Potamogeton epihydrus*)

Federal Status: None

State/CDFW Status: 2B.2

Habitat/Biology: In California, Nuttall's Ribbon-leaved Pondweed is found in Shasta County at the northern end of the Sacramento Valley, Mendocino County, Modoc County, and the foothills of the Sierra Mountains in Plumas, Placer, El Dorado, Tuolumne, Mariposa, and Madera Counties (Calflora 2015).

This perennial and rhizomatous pondweed is a wetland obligate species with oval floating leaves and long, narrow, underwater leaves. The ribbon-like underwater leaves have a broad light green central stripe, and the floating leaves are often oppositely arranged (WDE 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has a mapped occurrence on the Igo USGS quadrangle.

Potential to Occur Within the Study Area: No Nuttall's Ribbon-leaved Pondweed individuals were identified during the biological survey. This species has a moderate potential to occur in the study area at Wetland A and a low potential to occur in the remaining wetlands in the study area because they are seasonal.

3.3.1.12 Western Pond Turtle (*Emys marmorata*)

Federal Status: None

State/CDFW Status: Species of Special Concern

Habitat/Biology: The Western Pond Turtle is uncommon to common in suitable aquatic habitat throughout California west of the Sierra-Cascade crest, and it is absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. This species is associated with permanent or nearly permanent water in a wide variety of habitat types at elevations ranging from near sea level up to 1,430 m (4,690 feet) AMSL (CDFW 2015).

Critical Habitat Designation: Not applicable.

CNDDDB Records: This species has mapped occurrences on the Igo and Enterprise USGS quadrangles and mapped and unprocessed occurrences on the Olinda, Redding, and Ono quadrangles.

Potential to Occur Within the Study Area: No Western Pond Turtle individuals were identified during the biological survey. This species has a moderate potential to occur in the study area at Wetland A near Igo, the only perennial wetland in the study area, and a low potential elsewhere because all other wetlands identified during the surveys are seasonal.

3.3.2 Migratory Birds

No bird nests were observed in the study area at the time of the surveys; however, areas adjacent to the project corridors and the study area contain trees and other vegetation that may be utilized by migratory birds. A list of bird species appearing on the 2008 FWS Birds of Conservation Concern (BCC) list for Bird Conservation Region (BCR) 32, Coastal California, can be found in Table 3.2.

Table 3.2. Bird Conservation Region 32 Migratory Bird List

Black-footed Albatross	Spotted Owl
Pink-footed Shearwater	Black Swift
Black-vented Shearwater	Costa's Hummingbird
Ashy Storm Petrel	Allen's Hummingbird
Bald Eagle	Lewis's Woodpecker
Peregrine Falcon	Nuttall's Woodpecker
Yellow Rail	White-headed Woodpecker
Black Rail	Loggerhead Shrike
Snowy Plover	Island Scrubjay
Mountain Plover	Yellow-billed Magpie
Black Oystercatcher	Oak Titmouse
Whimbrel	Cactus Wren
Long-billed Curlew	LeConte's Thrasher
Marbled Godwit	Yellow Warbler
Red Knot	Common Yellowthroat
Short-billed Dowitcher	Spotted Towhee
Gulf-billed Tern	Black-chinned Sparrow
Black Skimmer	Song Sparrow (<i>graminea</i> ssp.)
Xantus's Murrelet	Song Sparrow (<i>maxillaris</i> ssp.)
Cassin's Auklet	Song Sparrow (<i>pusillula</i> ssp.)
Yellow-billed Cuckoo	Song Sparrow (<i>samuelis</i> ssp.)
Flammulated Owl	Tricolored Blackbird
Burrowing Owl	Lawrence's Goldfinch

3.4 Invasive Species

Twenty-four invasive plant species appearing on the California Department of Food and Agriculture (CDFA) Noxious Weed Species List and/or the California Invasive Plant Council (CIPC) Invasive Plant Inventory list were identified in the study area (Table 3.3). The CIPC rating system is as follows:

- **High**—These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate**—These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

- **Limited**—These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Table 3.3. Invasive Species and their Location in the Study Area

Scientific Name	Common Name	Rating		Location in Study Area
		CDFA	CalIPC	
<i>Arundo donax</i>	Giant Reed	listed	high	Spring Creek
<i>Avena fatua</i>	Wild Oats		moderate	central
<i>Brassica nigra</i>	Black Mustard		moderate	central
<i>Briza maxima</i>	Big Quaking Grass		limited	scattered throughout
<i>Bromus diandrus</i>	Ripgut Brome		moderate	central
<i>Centaurea solstitialis</i>	Star Thistle		high	scattered throughout
<i>Cirsium arvense</i>	Canada Thistle	listed	moderate	edge of Cloverdale near Wetland D
<i>Cynodon dactylon</i>	Bermuda Grass		moderate	scattered throughout
<i>Erodium cicutarium</i>	Redstem Storksbill		limited	scattered throughout
<i>Ficus carica</i>	Fig		moderate	near Dry Creek (Wetland A)
<i>Geranium dissectum</i>	Cut-leaved Geranium		limited	scattered throughout
<i>Hordeum murinum</i>	Hare Barley		moderate	scattered throughout
<i>Hypochoeris radicata</i>	False Dandelion		moderate	scattered throughout
<i>Mentha pulegium</i>	Pennyroyal		moderate	near Spring Creek
<i>Olea europaea</i>	Olive		limited	central orchards
<i>Picris echioides</i>	Bristly Oxtongue		limited	central and eastern
<i>Plantago lanceolata</i>	Broadleaf Plantain		limited	scattered throughout
<i>Polypogon monspeliensis</i>	Annual Rabbitsfoot Grass		limited	margins of wetter areas throughout
<i>Rumex crispus</i>	Curly Dock		limited	wetter areas throughout
<i>Silybum marianum</i>	Milk Thistle		limited	Northern Happy Valley Road
<i>Sorghum jaltense</i>	Johnson Grass	listed		scattered throughout
<i>Spartium junceum</i>	Spanish Broom	listed	high	Central Laverne, Happy Valley Road north of Palm, Olive Street
<i>Trifolium hirtum</i>	Rose Clover		moderate	scattered throughout
<i>Vinca major</i>	Big Periwinkle		moderate	east end of Laverne

3.5 Jurisdictional Waters

Twenty-nine drainages, two with emergent wetland vegetation (Map Nos. 4 and 5), and eight wetlands are present within the study area that will be crossed by the proposed installations. The USACE and/or CDFW jurisdictional status of these drainages and wetlands in the project area was not determined conclusively because all would be avoided during the proposed telecommunications line installations (see the *Waterway Delineation and Assessment Report*, under separate cover). No dredge-and-fill operations will occur within these potentially jurisdictional Waters of the U.S. and no subsequent loss will take place because all will be bored beneath during the proposed installations. Likewise, a stream alteration permit from CDFW is unnecessary for the proposed installations because the potential Waters of the U.S. (and Waters of the State) and any potential wildlife habitat, either in the drainages themselves or riparian habitat along their margins, will be avoided. A summary of the drainage crossings identified in the study area, including the names of the drainages, their flow regimes and locations, and corresponding identification numbers as indicated on Figure 2, can be found in Table 3.4.

Table 3.4. Drainage Crossings in the Study Area

Map No.	Drainage Name	Regime	Location
-	Dry Creek (Wetland A)	perennial	Placer Road east of Igo
1	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
2	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
3	Happy Valley Ditch	ephemeral ditch	Cloverdale Road
4	unnamed tributary to N. Fork Spring Gulch	ephemeral/seasonal riverine emergent	Cloverdale Road
5	unnamed tributary to Niles Canyon	ephemeral/seasonal riverine emergent	Oak Street
6	unnamed tributary to Spanish Canyon	ephemeral	Oak Street
7	unnamed tributary to Spanish Canyon	ephemeral	Oak Street
8	unnamed tributary to N. Fork Spring Gulch	ephemeral	Oak Street
9	unnamed tributary to Spanish Canyon	ephemeral	Laverne Lane
10	unnamed tributary to S. Fork Spanish Canyon	ephemeral	Serendipity Lane
11	unnamed tributary to S. Fork Spring Gulch	ephemeral	Oak Street
12	unnamed tributary to S. Fork Spring Gulch	ephemeral	Oak Street
13	Happy Valley Irrigation Canal	ephemeral canal	Oak Street
14	unnamed tributary to Telephone Gulch	ephemeral	Scout Street
15	unnamed tributary to Telephone Gulch	ephemeral	Scout Street
16	unnamed tributary to Telephone Gulch	ephemeral	Olive Street
17	unnamed tributary to Telephone Gulch	ephemeral	Olive Street

Map No.	Drainage Name	Regime	Location
18	unnamed tributary to Telephone Gulch	ephemeral	Olive Street
19	Happy Valley Irrigation Canal	ephemeral	Olive Street and Palm Avenue
20	unnamed tributary to S. Fork Spanish Canyon	ephemeral	Treat Avenue
21	Spring Gulch	ephemeral	Happy Valley Road
22	unnamed tributary to Spring Gulch	ephemeral	Happy Valley Road
23	Telephone Gulch	ephemeral	Happy Valley Road
24	Anderson Creek	ephemeral	Happy Valley Road
25	unnamed	ephemeral	Happy Valley Road
26	unnamed	ephemeral	Happy Valley Road
27	unnamed	ephemeral	Happy Valley Road
28	unnamed	ephemeral	Happy Valley Road
29	unnamed tributary to Spring Gulch	ephemeral	Happy Valley Road

All of the wetlands identified in the study area, with the exception of Wetland A, are seasonal. This was determined because at the time of the February surveys, all of the wetlands identified were inundated due to heavy rainfall over the previous two weeks. When the second survey was conducted the following May, Wetlands B—H were all dry and the only one that remained inundated was Wetland A.

All three of the USACE wetland indicators, wetland hydrology, wetland vegetation, and hydric soils, were determined to be present at each of the eight wetlands during the February 2015 surveys (see the *Waterway Delineation and Assessment Report*, under separate cover). Formal delineation data sheets were not completed at the time of the surveys because in addition to the planned avoidance during construction, it was obvious that wetland hydrology was present because each wetland was inundated. Because either wetland obligate or facultative wetland plant species were the dominant vegetation found at each wetland, it was assumed that hydric soils were present. A summary of the wetland crossings identified in the study area, their delineated size, type, and location can be found in Table 3.5.

Table 3.5. Wetland Crossings in the Study Area

Wetland ID	Delineated Size (Acres)	Type	Location	Associated Bore Length
A	0.403	palustrine emergent	Placer Road east of Igo	46 m (150 feet)
B	0.020	seasonal palustrine emergent	Cloverdale Road	552 m (1,812 feet)
C	0.054		Cloverdale Road	214 m (702 feet)
D	0.012		Cloverdale Road	230 m (755 feet)
E	0.062		Laverne Lane	195 m (640 feet)

Wetland ID	Delineated Size (Acres)	Type	Location	Associated Bore Length
F	0.035	seasonal palustrine emergent	Laverne Lane	188 m (617 feet)
G	0.038		Oak Street	189 m (620 feet)
H	0.016		Oak Street	168 m (551 feet)

4.0 IMPACTS OF THE PROPOSED PROJECT

4.1 *Significance Criteria*

Per the regulatory requirements outlined in Section 1.3, including CEQA and NEPA statutes and guidelines, the proposed project will have a significant adverse impact on biological resources if it will:

- Have a substantial adverse effect, either directly through “take” or indirectly through habitat modifications, on any species identified as Threatened, Endangered, Candidate, or proposed for candidacy by FWS, or as Sensitive or as a special status species in local or regional plans, policies, or regulations, or by FWS, CDFW, or CNPS;
- Have a substantial adverse effect on a species’ critical habitat as designated by FWS;
- Result in the introduction or spread of an invasive species;
- Have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, regulations, or by the FWS or CDFW;
- Have a substantial adverse effect on Federally protected wetlands or other waters of the U.S. as defined by Sections 10 and 404 of the CWA, including special aquatic sites such as wetlands, through direct removal, filling, hydrologic disruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources;
- Have a substantial adverse effect on habitat for commercially or recreationally important fisheries;
- Have a substantial adverse effect on waterfowl breeding or wintering habitat by reducing acreage or quality, or have a substantial adverse effect on the acreage or quality of migrant or wintering shorebird habitat; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

4.2 *Effects of the Proposed Project*

The proposed project will involve the installation of a buried telecommunications line in the road shoulders of existing roads. Following line installation, the only surface-level ancillary equipment that will be visible will be line markers, splice boxes, and seven equipment cabinets. The majority of the ground disturbance associated with the installation would be temporary and would occur during plowing operations and at the bore pit locations used for the bored installations. The only permanent ground disturbance would occur at the new equipment cabinet locations.

Impacts to wildlife and wildlife habitat from the proposed project would be temporary. Equipment noise and the presence of work crews may disturb wildlife in the areas surrounding the project corridors. Because the installations would occur along existing roads that carry regular vehicular traffic, any increases in noise and activity levels during construction would be minimal.

4.3 Impact Assessment and Recommended Avoidance and Minimization Measures

The following impact assessment is based on the criteria summarized in Section 4.1. For each impact identified, recommended avoidance, minimization, or mitigation measures are identified.

4.3.1 Special Status Species

Potential Impact #1: Construction of the proposed project has the potential to impact Foothill Yellow-legged Frog and Western Spadefoot.

Foothill Yellow-legged Frog has the potential to occur along Spring Creek, and Western Spadefoot has the potential to occur in the orchards along Olive and Scout Streets. Implementation of the proposed project has the potential to impact these two species if individuals come into contact with construction equipment or personnel or individuals attempt to flee the construction area and are subject to increased chances of predation or other harm. With the implementation of avoidance and minimization measures listed below, impacts are expected to be reduced to a less-than-significant level.

Recommended Avoidance and Minimization Measures for Impact #1:

- All waterways in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the waterway bank or the maximum extent of any vegetation present along the waterway's margin.
- All orchards will be avoided during construction.

Potential Impact #2: Construction of the proposed project has the potential to impact anadromous fish species (Green Sturgeon, Steelhead, and Chinook Salmon).

Anadromous fish species have a low potential to occur in the waterways in the study area due to the waterways' flow regimes, past disturbance, and the presence of impoundments that restrict the movement of fish from the Sacramento River to the study area. Implementation of the proposed project has the potential to indirectly impact anadromous fish because ground disturbance associated with construction increases the risk of sediment transport through tributary waterways that could reach occupied anadromous fish habitat in the Sacramento River. With the implementation of avoidance and minimization measures listed below, impacts are expected to be reduced to a less-than-significant level.

Recommended Avoidance and Minimization Measures for Impact #2:

- All waterways in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the waterway bank or the maximum extent of any vegetation present along the waterway's margin.

-
- A Stormwater Pollution Prevention Plan (SWPPP) will be developed and will include Best Management Practices (BMPs) that will be implemented during construction to minimize or eliminate sediment transport from areas subject to ground disturbance.

Potential Impact #3: Construction of the proposed project has the potential to impact vernal pool invertebrates (Conservancy Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp), Nuttall's Ribbon-leaved Pondweed, and Western Pond Turtle.

Vernal pool invertebrates have a low potential to occur in the seasonal wetlands in the study area and Nuttall's Ribbon-leaved Pondweed and Western Pond Turtle have a moderate potential to occur in the perennial Wetland A located near Igo. Implementation of the proposed project has the potential to impact vernal pool invertebrates if seasonal wetlands are disturbed, either directly or indirectly, during construction and it has the potential to impact Nuttall's Ribbon-leaved Pondweed if Wetland A is disturbed. The proposed project has the potential to impact Western Pond Turtle if individuals come into contact with construction equipment or personnel or individuals attempt to flee the construction area and are subject to increased chances of predation or other harm.

Vernal pool invertebrates, if individuals or cysts are present in the seasonal wetlands in the study area, have the potential to be directly impacted if fills associated with construction of the proposed project were to occur within the wetlands. These species may be indirectly impacted if the hydrology regime of the seasonal wetlands were changed by proposed project. For example, the plowed installations would involve subsurface ripping which could diminish the amount and quality of water available to perched water tables that may be beneath the wetlands. In addition, ground disturbance and subsequent erosion associated with the proposed installations has the potential to increase the risk of sediment transport, which could contaminate the wetlands if it were to reach them. With the implementation of avoidance and minimization measures listed below, impacts are expected to be reduced to a less-than-significant level.

Recommended Avoidance and Minimization Measures for Impact #3:

- All wetlands in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 76 m (250 feet) beyond either the edge of the seasonal wetlands or the maximum extent of any vegetation present along the wetlands' margins.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond the delineated boundary of Wetland A.
- A SWPPP will be developed and will include BMPs that will be implemented during construction to minimize or eliminate sediment transport from areas subject to ground disturbance.

Potential Impact #4: Construction of the proposed project has the potential to impact Pallid Bat, Townsend's Big-eared Bat, and Western Red Bat.

All three of these bat species have a moderate potential to occur in the study area while foraging, and Western Red Bat has the potential to roost in trees adjacent to and within the study area. With the implementation of avoidance and minimization measures listed below, impacts are expected to be reduced to a less-than-significant level.

Recommended Avoidance and Minimization Measures for Impact #3:

- If any trimming of vegetation is required during construction, it will be limited to the minimum amount necessary.
- No trees will be removed during construction.

4.3.2 Invasive Species

Potential Impact #5: Construction of the proposed project has the potential to result in the spread of invasive plant species.

Due to the presence of invasive plant species in the study area, implementation of the proposed project has the potential to result in the further spread of existing noxious weeds. Invasive species could also be introduced into the study area by construction equipment, vehicles, personnel, or imported fill or other material. Further introduction of invasive plant species could adversely impact the waterways in the project area and their associated riparian areas, where present. However, with the implementation of the avoidance and minimization measures listed below, impacts are expected to be reduced to a less-than-significant level.

Recommended Avoidance and Minimization Measures for Impact #5:

- All waterways in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the waterway bank or the maximum extent of any vegetation present along the waterway's margin.
- All equipment and vehicles will be thoroughly cleaned to remove dirt and weed seeds prior to being transported or driven to or from the study area.

5.0 SUMMARY

This BRE has been prepared for the Olinda Last Mile Underserved Broadband Project in order to evaluate the potential for the proposed project to impact sensitive biological resources. Based on the results of the analysis conducted in preparation of this report, the proposed project has the potential to impact special status species and result in the introduction or spread of invasive species. With the implementation of the proposed avoidance and minimization measures, all potential adverse impacts are expected to be reduced to a less-than-significant level.

6.0 REPORT PREPARERS AND CERTIFICATION

Tierra Right of Way Services, Ltd., believes that the proposed project would not violate any of the regulatory requirements outlined in Section 1.3, provided that all recommended avoidance and minimization measures indicated in Section 4.3 are implemented during construction. Results and conclusions contained in this report are based on actual field reconnaissance and represent my best professional judgment, based on information provided by the project proponent, applicable agencies, and other sources.

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7.0 REFERENCES

Calflora

- 2015 Nuttall's Ribbon-leaved Pondweed species account. Available at: http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Potamogeton+epiphydrus. Accessed on May 20, 2015.

California Department of Fish and Game (CDFG)

- 1998 California Vernal Pool Assessment Preliminary Report. Available at: http://www.dfg.ca.gov/biogeodata/other_products.asp. Accessed on May 20, 2015.

California Department of Fish and Wildlife (CDFW)

- 2015 California Wildlife Habitat Relationships (CWHR) System Life History Accounts and Range Maps. Available at: <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>. Accessed on May 20, 2015.

California Native Plant Society (CNPS)

- 2015 Big-scale Balsamroot Species Information. Available at: <http://www.rareplants.cnps.org/detail/350.html>. Accessed on May 20, 2015.

California Natural Diversity Database (CNDDB)

- 2014 Biogeographic Information and Observation System (BIOS). Available at <http://map.dfg.ca.gov/bios/>. Accessed on November 11, 2014.

eFloras

- 2013 Jepson Flora Project (eds.) 2013. Available at: <http://ucjeps.berkeley.edu/IJM.html>. Accessed on May 13, 2015.

National Oceanic and Atmospheric Administration (NOAA)

- 2014 Recovery Plan for Sacramento River Winter Run Chinook Salmon, Central Valley Spring Run Chinook Salmon, and Central Valley Steelhead. Available at: http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/california_central_valley/california_central_valley_recovery_plan_documents.html. Accessed on June 3, 2015.

National Marine Fisheries Service (NMFS)

- 2015a Green Sturgeon Species Account. Available at: <http://www.fisheries.noaa.gov/pr/species/fish/green-sturgeon.html>. Accessed on June 3, 2015.
- 2015b Chinook Salmon Species Account. Available at: <http://www.fisheries.noaa.gov/pr/species/fish/chinook-salmon.html>. Accessed on June 3, 2015.
- 2015c Steelhead Trout Species Account. Available at: <http://www.fisheries.noaa.gov/pr/species/fish/steelhead-trout.html>. Accessed on June 3, 2015.

Sawyer, John O., and Todd Keeler-Wolf

2009 *A Manual of California Vegetation*. California Native Plant Society, Sacramento.

U.S. Fish and Wildlife Service (FWS)

2015a California Red-legged Frog Species Account. Sacramento Fish and Wildlife Office. Available at: http://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/es_ca-red-legged-frog.htm. Accessed on May 20, 2015.

2015b Invertebrate Species Accounts. Sacramento Fish and Wildlife Office. Available at: http://www.fws.gov/sacramento/es_species/Accounts/Invertebrates/es_species-accounts_invertebrates.htm. Accessed on May 20, 2015.

Washington State Department of Ecology (WDE)

2015 Floating Leaved Rooted Plants species account. Available at: <http://www.ecy.wa.gov/programs/wq/plants/plantid2/descriptions/potepi.html>. Accessed on May 20, 2015.

Western Regional Climate Center (WRCC)

2014 Redding WSO, California—Climate Summary. Available at: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7304>. Accessed on November 13, 2014. Accessed on May 20, 2015.

APPENDIX A. REGIONALLY OCCURRING SPECIAL STATUS SPECIES LISTS

Table A.1. California Natural Diversity Database (CNDDDB) Search Results

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals—Amphibians	<i>Rana boylei</i>	Foothill Yellow-Legged Frog	AAABH01050	None	None	SSC	-	4012255	Igo	Mapped and Unprocessed	Animals—Amphibians—Ranidae— <i>Rana boylei</i>
Animals—Amphibians	<i>Spea hammondi</i>	Western Spadefoot	AAABF02020	None	None	SSC	-	4012233	Hooker	Mapped	Animals—Amphibians—Scaphiopodidae— <i>Spea hammondi</i>
Animals—Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	ABNKC10010	Delisted	Endangered	FP	-	4012233	Hooker	Mapped and Unprocessed	Animals—Birds—Accipitridae— <i>Haliaeetus leucocephalus</i>
Animals—Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	ABNKC10010	Delisted	Endangered	FP	-	4012243	Cottonwood	Mapped and Unprocessed	Animals—Birds—Accipitridae— <i>Haliaeetus leucocephalus</i>
Animals—Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	ABNKC10010	Delisted	Endangered	FP	-	4012253	Enterprise	Mapped	Animals—Birds—Accipitridae— <i>Haliaeetus leucocephalus</i>
Animals—Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	ABNKC10010	Delisted	Endangered	FP	-	4012255	Igo	Mapped and Unprocessed	Animals—Birds—Accipitridae— <i>Haliaeetus leucocephalus</i>
Animals—Birds	<i>Pandion haliaetus</i>	Osprey	ABNKC01010	None	None	WL	-	4012233	Hooker	Mapped	Animals—Birds—Accipitridae— <i>Pandion haliaetus</i>
Animals—Birds	<i>Pandion haliaetus</i>	Osprey	ABNKC01010	None	None	WL	-	4012243	Cottonwood	Mapped and Unprocessed	Animals—Birds—Accipitridae— <i>Pandion haliaetus</i>
Animals—Birds	<i>Riparia riparia</i>	Bank Swallow	ABPAU08010	None	Threatened	-	-	4012243	Cottonwood	Mapped and Unprocessed	Animals—Birds—Hirundinidae— <i>Riparia riparia</i>
Animals—Birds	<i>Riparia riparia</i>	Bank Swallow	ABPAU08010	None	Threatened	-	-	4012253	Enterprise	Mapped	Animals—Birds—Hirundinidae— <i>Riparia riparia</i>
Animals—Birds	<i>Agelaius tricolor</i>	Tricolored Blackbird	ABPBXB0020	None	None	SSC	-	4012243	Cottonwood	Mapped	Animals—Birds—Icteridae— <i>Agelaius tricolor</i>
Animals—Crustaceans	<i>Branchinecta lynchi</i>	Vernal Pool Fairy Shrimp	ICBRA03030	Threatened	None	-	-	4012243	Cottonwood	Mapped	Animals—Crustaceans—Branchinectidae— <i>Branchinecta lynchi</i>
Animals—Crustaceans	<i>Branchinecta lynchi</i>	Vernal Pool Fairy Shrimp	ICBRA03030	Threatened	None	-	-	4012253	Enterprise	Mapped	Animals—Crustaceans—Branchinectidae— <i>Branchinecta lynchi</i>
Animals—Crustaceans	<i>Branchinecta lynchi</i>	Vernal Pool Fairy Shrimp	ICBRA03030	Threatened	None	-	-	4012244	Olinda	Unprocessed	Animals—Crustaceans—Branchinectidae— <i>Branchinecta lynchi</i>
Animals—Crustaceans	<i>Linderiella occidentalis</i>	California Linderiella	ICBRA06010	None	None	-	-	4012253	Enterprise	Mapped	Animals—Crustaceans—Linderiellidae— <i>Linderiella occidentalis</i>
Animals—Crustaceans	<i>Linderiella occidentalis</i>	California Linderiella	ICBRA06010	None	None	-	-	4012243	Cottonwood	Mapped and Unprocessed	Animals—Crustaceans—Linderiellidae— <i>Linderiella occidentalis</i>
Animals—Crustaceans	<i>Linderiella occidentalis</i>	California Linderiella	ICBRA06010	None	None	-	-	4012233	Hooker	Unprocessed	Animals—Crustaceans—Linderiellidae— <i>Linderiella occidentalis</i>
Animals—Crustaceans	<i>Lepidurus packardii</i>	Vernal Pool Tadpole Shrimp	ICBRA10010	Endangered	None	-	-	4012243	Cottonwood	Mapped	Animals—Crustaceans—Triopsidae— <i>Lepidurus packardii</i>
Animals—Crustaceans	<i>Lepidurus packardii</i>	Vernal Pool Tadpole Shrimp	ICBRA10010	Endangered	None	-	-	4012253	Enterprise	Mapped and Unprocessed	Animals—Crustaceans—Triopsidae— <i>Lepidurus packardii</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012253	Enterprise	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012245	Ono	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012244	Olinda	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012243	Cottonwood	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012233	Hooker	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012234	Mitchell Gulch	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012235	Rosewood	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012254	Redding	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus mykiss irideus</i>	Steelhead—Central Valley DPS	AFCHA0209K	Threatened	None	-	-	4012255	Igo	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus mykiss irideus</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Central Valley Spring-Run ESU	AFCHA0205A	Threatened	Threatened	-	-	4012254	Redding	Mapped and Unprocessed	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Sacramento River Winter-Run ESU	AFCHA0205B	Endangered	Endangered	-	-	4012254	Redding	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Central Valley Spring-Run ESU	AFCHA0205A	Threatened	Threatened	-	-	4012255	Igo	Unprocessed	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Sacramento River Winter-Run ESU	AFCHA0205B	Endangered	Endangered	-	-	4012243	Cottonwood	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Central Valley Spring-Run ESU	AFCHA0205A	Threatened	Threatened	-	-	4012244	Olinda	Mapped and Unprocessed	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Central Valley Spring-Run ESU	AFCHA0205A	Threatened	Threatened	-	-	4012253	Enterprise	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Fish	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon—Sacramento River Winter-Run ESU	AFCHA0205B	Endangered	Endangered	-	-	4012253	Enterprise	Mapped	Animals—Fish—Salmonidae— <i>Oncorhynchus tshawytscha</i>
Animals—Insects	<i>Desmocerus californicus dimorphus</i>	Valley Elderberry Longhorn Beetle	IICOL48011	Threatened	None	-	-	4012253	Enterprise	Mapped	Animals—Insects—Cerambycidae— <i>Desmocerus californicus dimorphus</i>
Animals—Insects	<i>Desmocerus californicus dimorphus</i>	Valley Elderberry Longhorn Beetle	IICOL48011	Threatened	None	-	-	4012243	Cottonwood	Mapped and Unprocessed	Animals—Insects—Cerambycidae— <i>Desmocerus californicus dimorphus</i>
Animals—Insects	<i>Desmocerus californicus dimorphus</i>	Valley Elderberry Longhorn Beetle	IICOL48011	Threatened	None	-	-	4012233	Hooker	Unprocessed	Animals—Insects—Cerambycidae— <i>Desmocerus californicus dimorphus</i>
Animals—Mammals	<i>Pekania pennanti</i>	Fisher—West Coast DPS	AMAJF01021	Candidate	Candidate Threatened	SSC	-	4012255	Igo	Mapped and Unprocessed	Animals—Mammals—Mustelidae— <i>Pekania pennanti</i>
Animals—Mammals	<i>Antrozous pallidus</i>	Pallid Bat	AMACC10010	None	None	SSC	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Antrozous pallidus</i>
Animals—Mammals	<i>Antrozous pallidus</i>	Pallid Bat	AMACC10010	None	None	SSC	-	4012244	Olinda	Mapped	Animals—Mammals—Vespertilionidae— <i>Antrozous pallidus</i>
Animals—Mammals	<i>Corynorhinus townsendii</i>	Townsend’s Big-Eared Bat	AMACC08010	None	Candidate Threatened	SSC	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Corynorhinus townsendii</i>
Animals—Mammals	<i>Corynorhinus townsendii</i>	Townsend’s Big-Eared Bat	AMACC08010	None	Candidate Threatened	SSC	-	4012254	Redding	Mapped	Animals—Mammals—Vespertilionidae— <i>Corynorhinus townsendii</i>
Animals—Mammals	<i>Lasionycteris noctivagans</i>	Silver-Haired Bat	AMACC02010	None	None	-	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasionycteris noctivagans</i>
Animals—Mammals	<i>Lasionycteris noctivagans</i>	Silver-Haired Bat	AMACC02010	None	None	-	-	4012253	Enterprise	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasionycteris noctivagans</i>
Animals—Mammals	<i>Lasionycteris noctivagans</i>	Silver-Haired Bat	AMACC02010	None	None	-	-	4012243	Cottonwood	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasionycteris noctivagans</i>
Animals—Mammals	<i>Lasiurus blossevillei</i>	Western Red Bat	AMACC05060	None	None	SSC	-	4012243	Cottonwood	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasiurus blossevillei</i>
Animals—Mammals	<i>Lasiurus blossevillei</i>	Western Red Bat	AMACC05060	None	None	SSC	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasiurus blossevillei</i>

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals—Mammals	<i>Lasiurus cinereus</i>	Hoary Bat	AMACC05030	None	None	-	-	4012243	Cottonwood	Mapped	Animals—Mammals—Vespertilionidae— <i>Lasiurus cinereus</i>
Animals—Mammals	<i>Myotis evotis</i>	Long-Eared Myotis	AMACC01070	None	None	-	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Myotis evotis</i>
Animals—Mammals	<i>Myotis yumanensis</i>	Yuma Myotis	AMACC01020	None	None	-	-	4012255	Igo	Mapped	Animals—Mammals—Vespertilionidae— <i>Myotis yumanensis</i>
Animals—Mammals	<i>Myotis yumanensis</i>	Yuma Myotis	AMACC01020	None	None	-	-	4012243	Cottonwood	Mapped	Animals—Mammals—Vespertilionidae— <i>Myotis yumanensis</i>
Animals—Mollusks	<i>Helminthoglypta bertleini</i>	Oregon Shoulderband	IMGASC2280	None	None	-	-	4012254	Redding	Mapped	Animals—Mollusks—Helminthoglyptidae— <i>Helminthoglypta bertleini</i>
Animals—Mollusks	<i>Lanx patelloides</i>	Kneecap Lanx	IMGASL7030	None	None	-	-	4012254	Redding	Mapped	Animals—Mollusks—Lymnaeidae— <i>Lanx patelloides</i>
Animals—Mollusks	<i>Margaritifera falcata</i>	Western Pearlshell	IMBIV27020	None	None	-	-	4012254	Redding	Mapped	Animals—Mollusks—Margaritiferidae— <i>Margaritifera falcata</i>
Animals—Mollusks	<i>Margaritifera falcata</i>	Western Pearlshell	IMBIV27020	None	None	-	-	4012253	Enterprise	Mapped	Animals—Mollusks—Margaritiferidae— <i>Margaritifera falcata</i>
Animals—Mollusks	<i>Trilobopsis roperi</i>	Shasta Chaparral	IMGASA2030	None	None	-	-	4012253	Enterprise	Mapped	Animals—Mollusks—Polygyridae— <i>Trilobopsis roperi</i>
Animals—Mollusks	<i>Trilobopsis roperi</i>	Shasta Chaparral	IMGASA2030	None	None	-	-	4012254	Redding	Mapped	Animals—Mollusks—Polygyridae— <i>Trilobopsis roperi</i>
Animals—Reptiles	<i>Emys marmorata</i>	Western Pond Turtle	ARAAD02030	None	None	SSC	-	4012254	Redding	Mapped and Unprocessed	Animals—Reptiles—Emydidae— <i>Emys marmorata</i>
Animals—Reptiles	<i>Emys marmorata</i>	Western Pond Turtle	ARAAD02030	None	None	SSC	-	4012255	Igo	Mapped	Animals—Reptiles—Emydidae— <i>Emys marmorata</i>
Animals—Reptiles	<i>Emys marmorata</i>	Western Pond Turtle	ARAAD02030	None	None	SSC	-	4012253	Enterprise	Mapped	Animals—Reptiles—Emydidae— <i>Emys marmorata</i>
Animals—Reptiles	<i>Emys marmorata</i>	Western Pond Turtle	ARAAD02030	None	None	SSC	-	4012244	Olinda	Mapped and Unprocessed	Animals—Reptiles—Emydidae— <i>Emys marmorata</i>
Animals—Reptiles	<i>Emys marmorata</i>	Western Pond Turtle	ARAAD02030	None	None	SSC	-	4012245	Ono	Unprocessed	Animals—Reptiles—Emydidae— <i>Emys marmorata</i>
Community—Terrestrial	<i>Great Valley Cottonwood Riparian Forest</i>	Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	-	-	4012243	Cottonwood	Mapped	Community—Terrestrial—Great Valley Cottonwood Riparian Forest
Community—Terrestrial	<i>Great Valley Cottonwood Riparian Forest</i>	Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	-	-	4012253	Enterprise	Mapped	Community—Terrestrial—Great Valley Cottonwood Riparian Forest
Community—Terrestrial	<i>Great Valley Cottonwood Riparian Forest</i>	Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	-	-	4012254	Redding	Mapped	Community—Terrestrial—Great Valley Cottonwood Riparian Forest
Community—Terrestrial	<i>Great Valley Valley Oak Riparian Forest</i>	Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	-	-	4012253	Enterprise	Mapped	Community—Terrestrial—Great Valley Valley Oak Riparian Forest
Community—Terrestrial	<i>Great Valley Valley Oak Riparian Forest</i>	Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	-	-	4012243	Cottonwood	Mapped	Community—Terrestrial—Great Valley Valley Oak Riparian Forest
Community—Terrestrial	<i>Great Valley Willow Scrub</i>	Great Valley Willow Scrub	CTT63410CA	None	None	-	-	4012243	Cottonwood	Mapped	Community—Terrestrial—Great Valley Willow Scrub
Community—Terrestrial	<i>Great Valley Willow Scrub</i>	Great Valley Willow Scrub	CTT63410CA	None	None	-	-	4012253	Enterprise	Mapped	Community—Terrestrial—Great Valley Willow Scrub
Plants—Vascular	<i>Agrostis hendersonii</i>	Henderson’s Bent Grass	PMPOA040K0	None	None	-	3.2	4012253	Enterprise	Mapped	Plants—Vascular—Poaceae— <i>Agrostis hendersonii</i>
Plants—Vascular	<i>Allium sanbornii</i> var. <i>sanbornii</i>	Sanborn’s Onion	PMLJL02212	None	None	-	4.2	4012255	Igo	Unprocessed	Plants—Vascular—Alliaceae— <i>Allium sanbornii</i> var. <i>sanbornii</i>
Plants—Bryophytes	<i>Anomobryum julaceum</i>	Slender Silver Moss	NBMUS80010	None	None	-	4.2	4012255	Igo	Mapped and Unprocessed	Plants—Bryophytes—Bryaceae— <i>Anomobryum julaceum</i>

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Plants—Vascular	<i>Antirrhinum subcordatum</i>	Dimorphic Snapdragon	PDSCR2S070	None	None	-	4.3	4012234	Mitchell Gulch	Mapped	Plants—Vascular—Plantaginaceae— <i>Antirrhinum subcordatum</i>
Plants—Vascular	<i>Antirrhinum subcordatum</i>	Dimorphic Snapdragon	PDSCR2S070	None	None	-	4.3	4012235	Rosewood	Mapped	Plants—Vascular—Plantaginaceae— <i>Antirrhinum subcordatum</i>
Plants—Vascular	<i>Arnica venosa</i>	Shasta County Arnica	PDAST0Q0Q0	None	None	-	4.2	4012255	Igo	Unprocessed	Plants—Vascular—Asteraceae— <i>Arnica venosa</i>
Plants—Vascular	<i>Balsamorhiza macrolepis</i>	Big-Scale Balsamroot	PDAST11061	None	None	-	1B.2	4012235	Rosewood	Mapped	Plants—Vascular—Asteraceae— <i>Balsamorhiza macrolepis</i>
Plants—Vascular	<i>Brodiaea matsonii</i>	Sulphur Creek Brodiaea	PMLIL0C0H0	None	None	-	1B.1	4012254	Redding	Mapped	Plants—Vascular—Themidaceae— <i>Brodiaea matsonii</i>
Plants—Vascular	<i>Carex scoparia</i> var. <i>scoparia</i>	Pointed Broom Sedge	PMCYP03C91	None	None	-	2B.2	4012243	Cottonwood	Mapped	Plants—Vascular—Cyperaceae— <i>Carex scoparia</i> var. <i>scoparia</i>
Plants—Vascular	<i>Castilleja rubicundula</i> var. <i>rubicundula</i>	Pink Creamsacs	PDSCR0D482	None	None	-	1B.2	4012244	Olinda	Mapped	Plants—Vascular—Orobanchaceae— <i>Castilleja rubicundula</i> var. <i>rubicundula</i>
Plants—Vascular	<i>Cryptantha crinita</i>	Silky Cryptantha	PDBOR0A0Q0	None	None	-	1B.2	4012233	Hooker	Mapped	Plants—Vascular—Boraginaceae— <i>Cryptantha crinita</i>
Plants—Vascular	<i>Cryptantha crinita</i>	Silky Cryptantha	PDBOR0A0Q0	None	None	-	1B.2	4012243	Cottonwood	Mapped and Unprocessed	Plants—Vascular—Boraginaceae— <i>Cryptantha crinita</i>
Plants—Vascular	<i>Cryptantha crinita</i>	Silky Cryptantha	PDBOR0A0Q0	None	None	-	1B.2	4012253	Enterprise	Mapped	Plants—Vascular—Boraginaceae— <i>Cryptantha crinita</i>
Plants—Vascular	<i>Eriogonum tripodum</i>	Tripod Buckwheat	PDPGN085Y0	None	None	-	4.2	4012253	Enterprise	Unprocessed	Plants—Vascular—Polygonaceae— <i>Eriogonum tripodum</i>
Plants—Vascular	<i>Horkelia daucifolia</i> var. <i>indicta</i>	Jepson’s Horkelia	PDROS0W053	None	None	-	1B.1	4012235	Rosewood	Mapped	Plants—Vascular—Rosaceae— <i>Horkelia daucifolia</i> var. <i>indicta</i>
Plants—Vascular	<i>Juglans californica</i>	Southern California Black Walnut	PDJUG02020	None	None	-	4.2	4012243	Cottonwood	Unprocessed	Plants—Vascular—Juglandaceae— <i>Juglans californica</i>
Plants—Vascular	<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff Dwarf Rush	PMJUN011L2	None	None	-	1B.1	4012243	Cottonwood	Mapped	Plants—Vascular—Juncaceae— <i>Juncus leiospermus</i> var. <i>leiospermus</i>
Plants—Vascular	<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff Dwarf Rush	PMJUN011L2	None	None	-	1B.1	4012244	Olinda	Mapped	Plants—Vascular—Juncaceae— <i>Juncus leiospermus</i> var. <i>leiospermus</i>
Plants—Vascular	<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff Dwarf Rush	PMJUN011L2	None	None	-	1B.1	4012253	Enterprise	Mapped and Unprocessed	Plants—Vascular—Juncaceae— <i>Juncus leiospermus</i> var. <i>leiospermus</i>
Plants—Vascular	<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	Dubious Pea	PDFAB25101	None	None	-	3	4012253	Enterprise	Mapped	Plants—Vascular—Fabaceae— <i>Lathyrus sulphureus</i> var. <i>argillaceus</i>
Plants—Vascular	<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	Dubious Pea	PDFAB25101	None	None	-	3	4012235	Rosewood	Mapped	Plants—Vascular—Fabaceae— <i>Lathyrus sulphureus</i> var. <i>argillaceus</i>
Plants—Vascular	<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	Dubious Pea	PDFAB25101	None	None	-	3	4012254	Redding	Mapped	Plants—Vascular—Fabaceae— <i>Lathyrus sulphureus</i> var. <i>argillaceus</i>
Plants—Vascular	<i>Legenere limosa</i>	Legenere	PDCAM0C010	None	None	-	1B.1	4012253	Enterprise	Mapped	Plants—Vascular—Campanulaceae— <i>Legenere limosa</i>
Plants—Vascular	<i>Legenere limosa</i>	Legenere	PDCAM0C010	None	None	-	1B.1	4012243	Cottonwood	Mapped	Plants—Vascular—Campanulaceae— <i>Legenere limosa</i>
Plants—Vascular	<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	Woolly Meadowfoam	PDLIM02043	None	None	-	4.2	4012244	Olinda	Mapped	Plants—Vascular—Limnanthaceae— <i>Limnanthes floccosa</i> ssp. <i>floccosa</i>
Plants—Vascular	<i>Navarretia heterandra</i>	Tehama Navarretia	PDPLM0C0A0	None	None	-	4.3	4012233	Hooker	Unprocessed	Plants—Vascular—Polemoniaceae— <i>Navarretia heterandra</i>
Plants—Vascular	<i>Orcuttia tenuis</i>	Slender Orcutt Grass	PMPOA4G050	Threatened	Endangered	-	1B.1	4012253	Enterprise	Mapped	Plants—Vascular—Poaceae— <i>Orcuttia tenuis</i>
Plants—Vascular	<i>Orcuttia tenuis</i>	Slender Orcutt Grass	PMPOA4G050	Threatened	Endangered	-	1B.1	4012243	Cottonwood	Mapped	Plants—Vascular—Poaceae— <i>Orcuttia tenuis</i>
Plants—Vascular	<i>Potamogeton epiphydrus</i>	Nuttall’s Ribbon-Leaved Pondweed	PMPOT03080	None	None	-	2B.2	4012255	Igo	Mapped	Plants—Vascular—Potamogetonaceae— <i>Potamogeton epiphydrus</i>
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012244	Olinda	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012245	Ono	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012253	Enterprise	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012243	Cottonwood	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012235	Rosewood	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>
Plants—Vascular	<i>Sidalcea celata</i>	Redding Checkerbloom	PDMAL110FG	None	None	-	3	4012254	Redding	Unprocessed	Plants—Vascular—Malvaceae— <i>Sidalcea celata</i>

**APPENDIX B. LISTED, PROPOSED SPECIES, AND CRITICAL
HABITAT POTENTIALLY OCCURRING OR KNOWN TO OCCUR IN
THE PROJECT REGION EXCLUDED FROM FURTHER
CONSIDERATION**

Scientific Name	Common Name	Status (FWS/State/ CNPS)	Habitat ^a	Exclusion Justification
Birds				
<i>Agelaius tricolor</i>	Tri-colored Blackbird	-/SSC/-	Marshes with dense cattails or tules.	No suitable habitat present in study area.
<i>Coccyzus americanus occidentalis</i>	Western Yellow- billed Cuckoo	PT/E/-	Dense cottonwood /willow stands in areas of standing water.	No suitable riparian habitat present in study area.
<i>Pandion haliaetus</i>	Osprey	-/WL/-	Riparian areas near large, fish-bearing bodies of water.	No suitable riparian habitat near large bodies of water present in study area.
<i>Riparia riparia</i>	Bank Swallow	-/T/-	Riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soil for nesting sites	No suitable habitat present in study area.
<i>Strix occidentalis caurina</i>	Northern Spotted Owl	T/-/-	Dense, old-growth, multi- layered mixed conifer, redwood, and Douglas Fir habitats from sea level up to approximately 2,300 m (0–7,600 feet).	No suitable forest habitat present in study area.
Fish				
<i>Hypomesus transpacificus</i>	Delta Smelt	T/-/-	Tidally influenced backwater sloughs and channel edgewaters. Found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties. The historic range is thought to have extended from Suisun Bay upstream to at least the city of Sacramento on the Sacramento River.	Study area is outside the current range of this species.
Invertebrates				
<i>Desmocerus californicus dimorphus</i>	Valley Elderberry Longhorn Beetle	T/-/-	Associated with elderberry (<i>Sambucus</i> spp.) in riparian forests.	No elderberry present in study area.

Scientific Name	Common Name	Status (FWS/State/ CNPS)	Habitat ^a	Exclusion Justification
Mammals				
<i>Pekania pennanti</i>	Fisher (West Coast DPS)	C/CT/-	Intermediate to large-tree stages of coniferous forests and deciduous riparian habitats with a high percent canopy closure.	No suitable forest habitat present in study area.
Plants				
<i>Brodiaea matsonii</i>	Sulphur Creek Brodiaea	-/-/1B.1	Cismontane woodland, meadows, and seeps. All records in the vicinity of the study area are north of Redding and east of Lake Shasta.	Study area is outside the range of this species and no individuals of observed during surveys.
<i>Carex scoparia</i> v. <i>scoparia</i>	Pointed Broom Sedge	-/-/2B.2	Mesic Great Basin desertscrub.	No suitable habitat present in study area and no individuals of this species observed during surveys.
<i>Castilleja rubicundula</i> v. <i>rubicundula</i>	Pink Creamsacs	-/-/1B.2	Chaparral, cismontane woodland, meadows, and seeps. All records in the vicinity of the study area are to the south in Tehama County.	Study area is outside the range of this species and no individuals observed during surveys.
<i>Cryptantha crinita</i>	Silky Cryptantha	-/-/1B.2	Cismontane woodland, lower montane conifer forest, conifer forest, riparian forest and woodlands, and valley and foothill grassland. All records in the vicinity of the study area are east of Interstate 5.	Study area is outside the range of this species and no individuals observed during surveys.
<i>Horkelia dauciflora</i> v. <i>indicta</i>	Jepson's Horkelia	-/-/1B.1	Cismontane woodland, volcanic and clay substrates, and vernal pools. All records in the vicinity of the study area are in the mountains east of Redding.	Study area is outside the range of this species and no individuals observed during surveys.

Scientific Name	Common Name	Status (FWS/State/ CNPS)	Habitat ^a	Exclusion Justification
<i>Juncus leiospermus</i> v. <i>leiospermus</i>	Red Bluff Dwarf Rush	-/-/1B.1	Chaparral, cismontane woodland, vernal pools, meadows and seeps, and valley and foothill grassland. All records in the vicinity of the study area are east of Interstate 5.	Study area is outside the range of this species and no individuals observed during surveys.
<i>Legenere limosa</i>	Legenere	-/-/1B.1	Vernal pools in grassland and open woodland. All records in the vicinity of the study area are east of Interstate 5.	Study area is outside the range of this species and no individuals observed during surveys.
<i>Orcuttia tenuis</i>	Slender Orcutt Grass	T/E/1B.1	Vernal pools, often gravelly. All records in the vicinity of the study area are east of Interstate 5 and the Redding Airport.	Study area is outside the range of this species and no individuals observed during surveys.

^a Habitat descriptions from CDFW California Wildlife Habitat Relation System (CWHRS), CNPS Rare and Endangered Plant Inventory, and FWS Sacramento online species abstracts and FWS Environmental Conservation Online System (ECOS) species profiles. Plant location records from Cal Flora.

Key: FWS = U.S. Fish and Wildlife Service; CNPS = California Native Plant Society; E = Endangered; T = Threatened; C = Candidate; P = Proposed; SSC = Species of Special Concern; R = Rare; FP = Fully Protected; 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere; 2B = Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere; 4 = Plants of Limited Distribution – A Watch List; .1 = Seriously Threatened in California; .2 = Moderately Threatened in California; .3 = Not Very Threatened in California.

APPENDIX C. PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name	Noxious Rating	
			CDFA	CalIPC
Poaceae	<i>Agrostis capillaris</i>	Colonial Bentgrass		
Fabaceae	<i>Albizia julibrissin</i>	Silk Tree		
Betulaceae	<i>Alnus rhombifolia</i>	White Alder		
Apiaceae	<i>Anthriscus cancalis</i>	Bur Chervil		
Ericaceae	<i>Arctostaphylos viscida</i>	Whiteleaf Manzanita		
Poaceae	<i>Arundo donax</i>	Giant Reed	listed	high
Poaceae	<i>Avena fatua</i>	Wild Oats		moderate
Brassicaceae	<i>Brassica nigra</i>	Black Mustard		moderate
Poaceae	<i>Briža maxima</i>	Big Quaking Grass		limited
Poaceae	<i>Bromus diandrus</i>	Ripgut Brome		moderate
Liliaceae	<i>Calochortus superbus</i>	Superb Mariposa lily		
Convolvulaceae	<i>Calyptegia occidentalis</i>	Western Morning Glory		
Brassicaceae	<i>Capsella bursa-pastoris</i>	Shepherds Purse		
Rhamnaceae	<i>Ceanothus cuneatus</i>	Wedgeleaf Ceanothus		
Asteraceae	<i>Centaurea solstitialis</i>	Star Thistle		high
Asteraceae	<i>Centromadia fitchii</i>	Fitch's Spikeweed		
Rubiaceae	<i>Cephalanthus occidentalis californica</i>	Buttonwillow		
Rosaceae	<i>Chaenomeles sinensis</i>	Japenese Quince		
Liliaceae	<i>Chlorogalum pomeridianum</i>	Wavy-leafed Soap Plant		
Asteraceae	<i>Cirsium arvense</i>	Canada Thistle	listed	moderate
Portulacaceae	<i>Claytonia perfoliata</i>	Miner's Lettuce		
Asteraceae	<i>Conyza canadensis</i>	Canadian Horseweed		
Euphorbiaceae	<i>Croton setigerus</i>	Dove Weed		
Poaceae	<i>Cynodon dactylon</i>	Bermuda Grass		moderate
Cyperaceae	<i>Cyperus eragrostis</i>	Umbrella Sedge		
Liliaceae	<i>Dichelostemma capitum</i>	Blue Dicks		
Primulaceae	<i>Dodecatheon hendersonii</i>	Henderson's Shooting Star		
Poaceae	<i>Elymus caput-medusae</i>	Medusahead		
Poaceae	<i>Elymus glaucus</i>	Blue Wild Rye		
Hydrophyllaceae	<i>Eriodictyon californicum</i>	Yerba Santa		
Geraniaceae	<i>Erodium cicutarium</i>	Redstem Storksbill		limited
Geraniaceae	<i>Erodium moschatum</i>	Whitestem Storksbill		
Geraniaceae	<i>Erodium texanum</i>	Texas Storksbill		
Myrtaceae	<i>Eucalyptus</i> sp.	Eucalyptus		
Moraceae	<i>Ficus carica</i>	Fig		moderate
Rhamnaceae	<i>Frangula californica</i>	Coffeeberry		
Rubiaceae	<i>Galium aparine</i>	Common Bedstraw		
Geraniaceae	<i>Geranium dissectum</i>	Cut-leaved Geranium		limited
Asteraceae	<i>Grindelia camporum</i>	Curly Cup Gumweed		

Family	Scientific Name	Common Name	Noxious Rating	
			CDFA	CalIPC
<i>Asteraceae</i>	<i>Heterotheca grandiflora</i>	Telegraph Weed		
<i>Poaceae</i>	<i>Hordeum jubatum</i>	Foxtail Barley		
<i>Poaceae</i>	<i>Hordeum murinum</i>	Hare Barley		moderate
<i>Hypericaceae</i>	<i>Hypericum concinnum</i>	Gold Wire		
<i>Asteraceae</i>	<i>Hypochoeris radicata</i>	False Dandelion		moderate
<i>Juncaceae</i>	<i>Juncus acuminatus</i>	Sharp Fruited Rush		
<i>Juncaceae</i>	<i>Juncus effusus</i>	Common Rush		
<i>Lamiaceae</i>	<i>Lamium amplexicaule</i>	Henbit Dead-nettle		
<i>Lamiaceae</i>	<i>Lavandula stoechas</i>	Lavender		
<i>Lemnaceae</i>	<i>Lemna sp.</i>	Duckweed		
<i>Brassicaceae</i>	<i>Lepidium nitidum</i>	Peppergrass		
<i>Poaceae</i>	<i>Lolium perenne</i>	Perennial Ryegrass		
<i>Caprifoliaceae</i>	<i>Lonicera interrupta</i>	Chaparral Honeysuckle		
<i>Fabaceae</i>	<i>Lotus corniculatus</i>	Birdsfoot Lotus		
<i>Onagraceae</i>	<i>Ludwigia peploides</i>	Creeping Water-Primrose		
<i>Fabaceae</i>	<i>Lupinus bicolor</i>	Miniature Lupine		
<i>Lamiaceae</i>	<i>Mentha pulegium</i>	Pennyroyal		moderate
<i>Oleaceae</i>	<i>Olea europaea</i>	Olive		limited
<i>Cactaceae</i>	<i>Opuntia sp.</i>	prickly pear		
<i>Poaceae</i>	<i>Paspalum dilatatum</i>	Dallis Grass		
<i>Scrophulariaceae</i>	<i>Pedicularis densiflora</i>	Indian Warrior		
<i>Poaceae</i>	<i>Phyllostachys aurea</i>	Bamboo		
<i>Asteraceae</i>	<i>Picris echioides</i>	Bristly Oxtongue		limited
<i>Pinaceae</i>	<i>Pinus sabiniana</i>	California Foothill Pine		
<i>Plantaginaceae</i>	<i>Plantago lanceolata</i>	Broadleaf Plantain		limited
<i>Poaceae</i>	<i>Poa bulbosa</i>	Bulbous Bluegrass		
<i>Poaceae</i>	<i>Polypogon monspeliensis</i>	Annual Rabbitsfoot Grass		limited
<i>Polytrichaceae</i>	<i>Polytrichum juniperinum</i>	Juniper Moss		
<i>Rosaceae</i>	<i>Prunus sp.</i>	domestic fruit tree		
<i>Asteraceae</i>	<i>Pseudognaphalium beneolens</i>	Cudweed		
<i>Fagaceae</i>	<i>Quercus douglasii</i>	Blue Oak		
<i>Fagaceae</i>	<i>Quercus lobata</i>	Valley Oak		
<i>Fagaceae</i>	<i>Quercus wislizenii</i>	Interior Live Oak		
<i>Ranunculaceae</i>	<i>Ranunculus occidentalis</i>	Western Buttercup		
<i>Brassicaceae</i>	<i>Raphanus raphanistrum</i>	Wild Radish		
<i>Rosaceae</i>	<i>Rosa californica</i>	Wild Rose		
<i>Rosaceae</i>	<i>Rubus ursinus</i>	California Blackberry		
<i>Polygonaceae</i>	<i>Rumex crispus</i>	Curly Dock		limited
<i>Salicaceae</i>	<i>Salix exigua</i>	Narrowleaf Willow		

Family	Scientific Name	Common Name	Noxious Rating	
			CDFA	CalIPC
<i>Salicaceae</i>	<i>Salix lasiolepis</i>	Arrow Willow		
<i>Apiaceae</i>	<i>Sanicula bipinnatifida</i>	Purple Sanicle		
<i>Apiaceae</i>	<i>Scandix pecten-veneris</i>	Shepherd's Needle		
<i>Asteraceae</i>	<i>Senecio vulgaris</i>	Common Groundsel		
<i>Asteraceae</i>	<i>Silybum marianum</i>	Milk Thistle		limited
<i>Poaceae</i>	<i>Sorghum jalpense</i>	Johnson Grass	listed	
<i>Fabaceae</i>	<i>Spartium junceum</i>	Spanish Broom	listed	high
<i>Caryophyllaceae</i>	<i>Stellaria media</i>	Common Chickweed		
<i>Apiaceae</i>	<i>Tauschia hartwegii</i>	Hartweg's Umbrellawort		
<i>Anacardiaceae</i>	<i>Toxicodendron diversilobum</i>	Poison Oak		
<i>Fabaceae</i>	<i>Trifolium hirtum</i>	Rose Clover		moderate
<i>Fabaceae</i>	<i>Trifolium pratense</i>	Red Clover		
<i>Scrophulariaceae</i>	<i>Triphysaria eriantha</i>	Butter And Eggs		
<i>Typhaceae</i>	<i>Typha latifolia</i>	Common Cattail		
<i>Scrophulariaceae</i>	<i>Verbascum blattaria</i>	Moth Mullein		
<i>Scrophulariaceae</i>	<i>Veronica americana</i>	American Speedwell		
<i>Fabaceae</i>	<i>Vicia villosa</i>	Winter Vetch		
<i>Apocynaceae</i>	<i>Vinca major</i>	Big Periwinkle		moderate
<i>Vitaceae</i>	<i>Vitis californica</i>	California Wild Grape		
<i>Gentianaceae</i>	<i>Zeltnera venusta</i>	Charming Centaury		

Key: CIPC = California Invasive Plant Council, CDFA = California Department of Food and Agriculture.

APPENDIX D. WILDLIFE SPECIES OBSERVED

Scientific Name	Common Name
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Anas platyrhynchos</i>	Mallard
<i>Aphelocoma californica</i>	Western Scrubjay
<i>Baeolophus inornatus</i>	Oak Titmouse
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Callipepla gambelii</i>	Gambel's Quail
<i>Calypte anna</i>	Anna's Hummingbird
<i>Canis latrans</i>	Coyote
<i>Cathartes aura</i>	Turkey Vulture
<i>Charadrius vociferus</i>	Killdeer
<i>Circus cyaneus</i>	Northern Harrier
<i>Cistothorus palustris</i>	Marsh Wren
<i>Colaptes auratus</i>	Northern Flicker
<i>Columba livia</i>	Rock Dove
<i>Corvus corax</i>	Common Raven
<i>Cyanocitta stelleri</i>	Stellar Jay
<i>Haemorhous mexicanus</i>	House Finch
<i>Haliaeetus leucocephalus</i>	Bald Eagle
<i>Junco hyemalis</i>	Dark-eyed Junco
<i>Lithobates catesbeianus</i>	American bullfrog
<i>Melanerpes formicivorus</i>	Acorn Woodpecker
<i>Melospiza melodia</i>	Song Sparrow
<i>Melospiza crissalis</i>	California Towhee
<i>Mephitis mephitis</i>	Striped Skunk
<i>Microtus californicus</i>	California Vole
<i>Mimus polyglottos</i>	Northern Mockingbird
<i>Odocoileus hemionus</i>	Mule Deer
<i>Passer domesticus</i>	House Sparrow
<i>Phalacrocorax auritus</i>	Double-crested Cormorant
<i>Picoides pubescens</i>	Downy Woodpecker
<i>Pipilo maculatus</i>	Spotted Towhee
<i>Poecile gambelii</i>	Chickadee
<i>Psaltiriparus minimus</i>	Bushtit
<i>Pseudacris regilla</i>	Pacific Treefrog
<i>Sceloporus occidentalis</i>	Western Fence Lizard
<i>Sciurus griseus</i>	Western Gray Squirrel
<i>Sialia mexicana</i>	Western Bluebird
<i>Sturnella neglecta</i>	Western Meadowlark

Scientific Name	Common Name
<i>Sturnus vulgaris</i>	European Starling
<i>Thomomys bottae</i>	Botta's Pocket Gopher
<i>Turdus migratorius</i>	American Robin
<i>Tyrannus verticalis</i>	Western Kingbird
<i>Zenaida asiatica</i>	White-winged Dove
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow

APPENDIX E. REPRESENTATIVE SITE PHOTOGRAPHS



Photo 1. East end of Coyote Lane, view it west.



Photo 2. Coyote Lane and Happy Valley Road, view to north.



Photo 3. Happy Valley and Olinda Roads, view to south.



Photo 4. Palm Avenue and Happy Valley Road, view to north.



Photo 5. Treat Avenue and Happy Valley Road, view to south.



Photo 6. West end of Treat Avenue, view to east.



Photo 7. Palm Avenue and Monte Vista Road, view to west.



Photo 8. Palm Avenue and Olive Street, view to north.



Photo 9. Olive Street and Scout Avenue, view to west.



Photo 10. Street and Scout Avenue, view to north.



Photo 11. end of Oak Street, view to west-southwest



Photo 12. Oak Street and Craig Lane, view to east.



Photo 13. Oak Street and Cloverdale Road, view to west.



Photo 14. West end of Placer Road in Igo, view to east.