Appendix G
Biological Reports

Appendix G-1

USFWS Biological Assessment

SEQUOIA
Ecological Consulting, Inc.

Biological Assessment
Proposed Shiloh Resort and Casino Project
Sonoma County, California

November 2022, updated April 2024

Prepared for:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

Prepared on behalf of:

Acorn Environmental
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762

Prepared by:

Sequoia Ecological Consulting, Inc.
1342 Creekside Drive
Walnut Creek, CA 94596

CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

Sequoia Ecological Consulting, Inc. (Sequoia) has prepared this Biological Assessment (BA) on behalf of Acorn Environmental for the proposed Shiloh Resort and Casino Project (hereafter "the Project") located in the Larkfield-Wikiup area of unincorporated Sonoma County, California. The Koi Nation, owner of the Project site and one of California's Federally recognized Native American tribes, has applied to the U.S. Bureau of Indian Affairs (BIA) for a fee-to-trust land acquisition. The BIA's Proposed Action is to place approximately 68 acres of land into Federal trust. This BA has been prepared to facilitate Section 7 consultation between the federal Action Agency and the U.S. Fish and Wildlife Service (USFWS) pursuant to the Section 7 of the Federal Endangered Species Act (FESA).

This BA discusses the physical impacts from construction of the proposed Project and the effects of these impacts on Federally listed species protected pursuant to the FESA and under jurisdiction of USFWS. Please note that species within National Marines Fisheries Service (NMFS) jurisdiction are addressed in a separate document prepared by Sequoia in July 2022 (Sequoia Ecological Consulting 2022), and updated in April 2024 to reflect project refinements as well as address comments following review of the 2022 document. Similarly, a prior version of this BA was prepared in 2022 and submitted to USFWS for review. USFWS concurred with the No Effects determinations for listed species in the 2022 BA but did not concur with the Not Likely to Adversely Affect determination for the Federally threatened California red-legged frog (*Rana draytonii*; CRLF), and indicated that the Project would have No Effect on CRLF after incorporating Avoidance and Minimization Measures. Additionally, since the 2022 BA was authored, the northwestern pond turtle (*Actinemys marmorata*; NWPT) was proposed for listing as threatened under FESA on October 3, 2023. The USFWS requested that the BA be updated to include NWPT and also indicated that the Project would have No Effect on NWPT after incorporating Avoidance and Minimization Measures.

In this BA, we provide: (1) a description of the habitats that occur on the Project site; (2) a list of the Federally listed species that have potential to occur on or near the Project site; (3) avoidance and minimization measures for potentially affected listed species that will be implemented to reduce impacts to these species to the greatest extent practicable; and (4) all other necessary information that the USFWS will need to complete FESA Section 7 consultation with federal Action Agency for the proposed Project.

The proposed Project includes the development of Shiloh Resort and Casino and is located on the northeastern edge of the Santa Rosa Plain (Figure 1). The Santa Rosa Plain, located in Sonoma County, California, is characterized by seasonal wetlands, primarily vernal pools, and associated upland grassland habitat. This area is known to support the Federally endangered Sonoma Distinct Population Segment (DPS) of California tiger salamander (*Ambystoma californiense*; CTS) and three Federally endangered plant species: Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*), all of which are included in in the Recovery Plan for

the Santa Rosa Plain (USFWS 2016). These plant species are found only in seasonal wetlands, while CTS use these wetlands during the winter-spring breeding season and surrounding uplands year-round (USFWS 2016). Although the Project site is within the Santa Rosa Plain, it does not occur within USFWS-designated critical habitat or Core and Management Areas outlined in the Recovery Plan for the Santa Rosa Plain (USFWS 2016) and is located within a Santa Rosa Plain Conservation Strategy designation of "presence of CTS is not likely and there are no listed plants in this area."

2.0 LOCATION AND SETTING

The Project is located at 222 East Shiloh Road (Assessor's Parcel Number 059-300-003) in the Larkfield-Wikiup area of unincorporated Sonoma County near Windsor, California (Figures 1 and 2). The Project site is located east of U.S. Highway 101 (US-101) and west of Shiloh Ranch Regional Park at Latitude 38.52389°, Longitude -122.77362° (Figure 1). The Project site is within the Healdsburg, CA U.S. Geological Survey (USGS) 7.5-minute quadrangle and is bordered by Shiloh Road on the north, existing vineyards on the east, scattered residences on the south, and Old Redwood Highway on the west. Pruitt Creek, a fourth-order tributary in the Russian River watershed, flows south/southwest through the center of the Project site (Figure 2). The Project site is surrounded by residential development, agricultural fields, and community centers such as a park and a church. Project activities will occur within the approximately 68-acre parcel.

This Project site is located within the Santa Rosa Plain, bordered on the north by the Russian River, on the east by Coast Range foothills, and on the south and west by the Laguna de Santa Rosa. The Santa Rosa Plain contains a combination of urban areas and rural land (USFWS 2016). The Project site is not located within USFWS-designated critical habitat or Core and Management Areas outlined in the Recovery Plan for the Santa Rosa Plain (USFWS 2016).

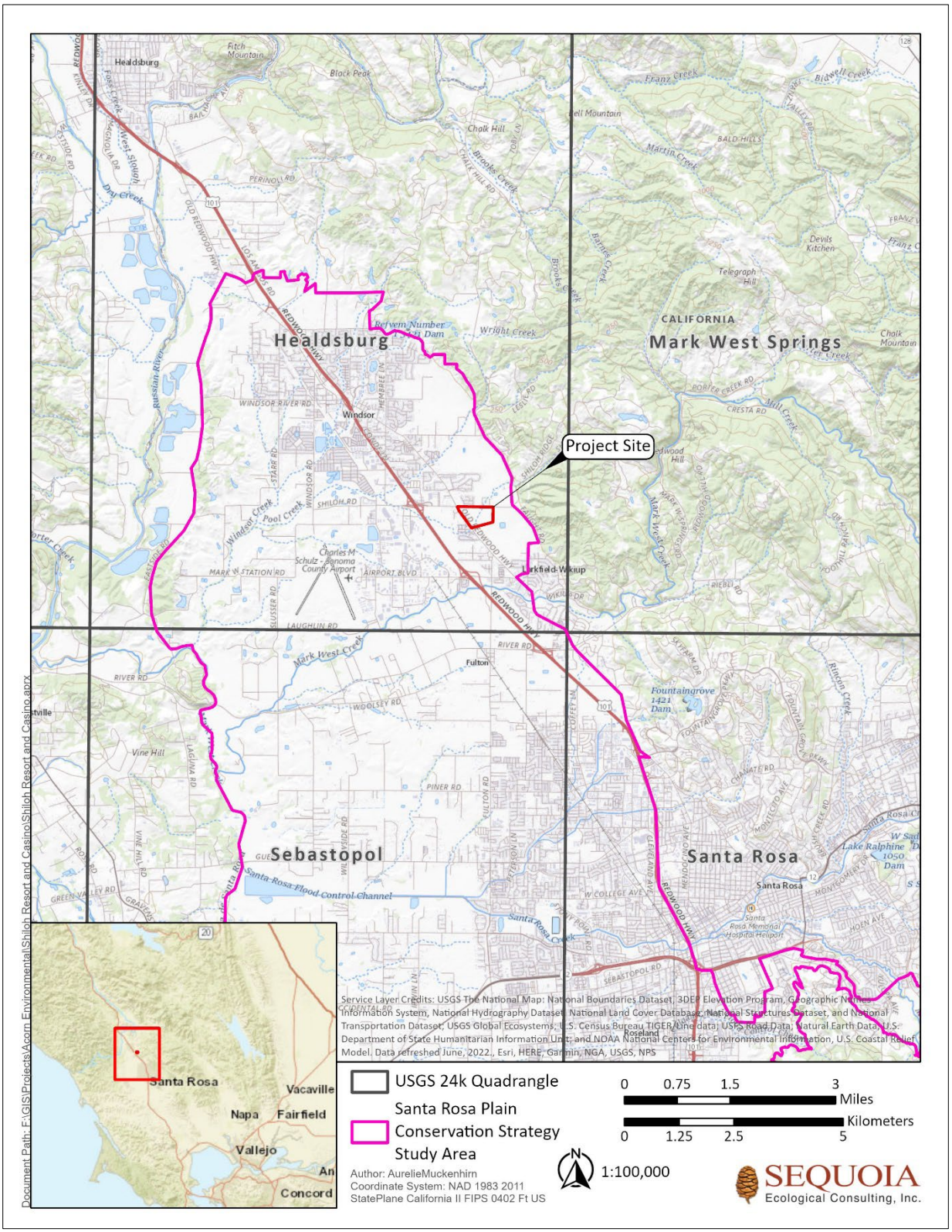


Figure 1. Regional Map of Proposed Shiloh Resort and Casino Project Site

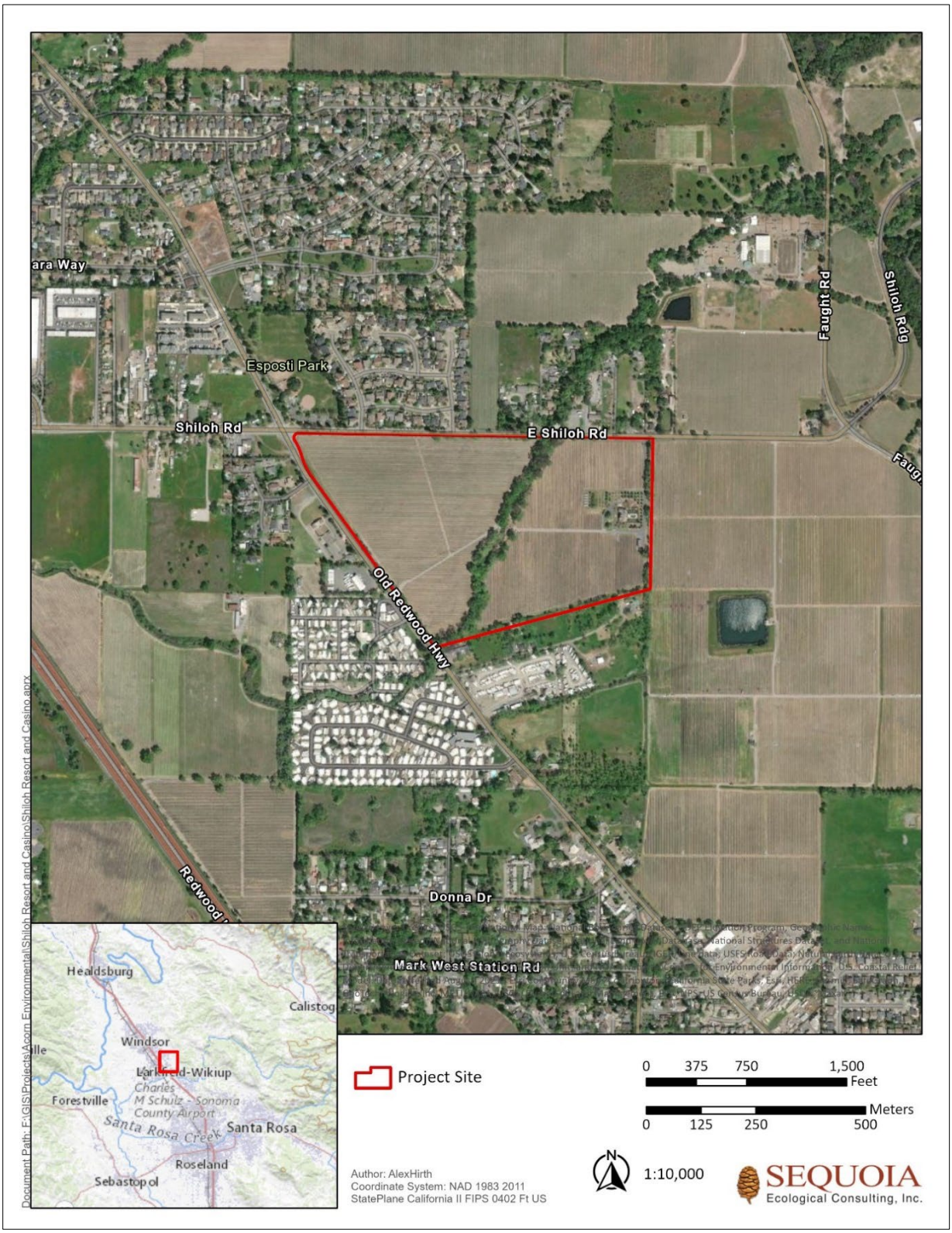


Figure 2. Location Map of Proposed Shiloh Resort and Casino Project Site

3.0 PROJECT DESCRIPTION

The Koi Nation purchased a 68-acre parcel at 222 East Shiloh Road in September 2021 and seeks approval from the BIA to take this land into trust. Development of this Project will occur at 222 East Shiloh Road and includes a Class III gaming facility, a five-story hotel, restaurants, a conference center, and a spa (Appendix A). The Koi Nation will build and operate the resort and casino under authority of the U.S. Indian Gaming Regulatory Act (IGRA).

The parcel is approximately 12 miles from the Koi Nation tribal headquarters located in Santa Rosa, California. Development of this Project will promote the general welfare of the Koi Nation and raise governmental revenues. The Project will create jobs for members of the Koi Nation and the greater Sonoma County community.

3.1 Project Footprint

Development activities are restricted to the 68-acre property boundary. As currently designed, the proposed Project will result in ground disturbance between approximately 42 and 53 acres of vineyards (depending on seasonal storage for treated effluent) with the riparian corridor of Pruitt Creek and large portions of existing vineyard left undeveloped/unimpacted. Riparian impacts are limited to two clear-span creek crossings and outfall structure improvements (Appendix A).

3.2 Site Preparation and Building

To prepare the Project site for development, staging areas will be designated and appropriate best management practices (BMPs) installed for avoidance and minimization of Project-related impacts to sensitive resources (e.g., Pruitt Creek). The property will then be cleared, grubbed, and graded.

Project construction will include installation of underground utilities and vertical construction of a five-story hotel and casino and a four-story parking garage, as well as the construction of concrete access roads, additional parking lots, and a swimming pool (Appendix A). Bioswales will be created to treat stormwater, including along Pruitt Creek near the south end of the Project site. Landscaping and riparian planting will occur once construction is complete.

3.3 Wastewater Treatment

The regulatory, technical, and engineering issues associated with supplying water and handling wastewater have been evaluated for four different buildout alternatives.

An on-site Wastewater Treatment Plant (WWTP) would treat wastewater from the resort and casino to a tertiary level, as defined by Title 22 of the California Code of Regulations. It would comply with the effluent quality requirements of the National Pollution Discharge Elimination System (NPDES) discharge permit issued by the U.S. Environmental Protection Agency (USEPA). Wastewater from the resort facilities would flow through sewer lines by gravity to a lift station. The gravity sewer main would be laid along planned roadways within the Project Site to facilitate access and maintenance. The gravity sewer main would be installed either beneath Pruitt Creek by horizontal directional drilling or other trenchless construction methods or over Pruitt Creek by attaching it to either the proposed pedestrian or vehicle bridge to avoid

impacts to the creek and riparian corridor. Wastewater would then be pumped from the lift station wet well through a sewer pipeline to the headworks of the WWTP. The lift station wet well would also be used to collect surface water runoff from the treatment site. The WWTP would include a course screening facility, headworks, immersed membrane bioreactor (MBR) system, ultraviolet (UV) disinfection, chlorine disinfection, effluent pump station, equalization tank, emergency storage tank, and associated operations and storage buildings. Any water discharged to surface waters would be non-chlorinated or fully de-chlorinated prior to discharge.

Effluent from the system would be disposed directly into Pruitt Creek and permitted by the EPA National Pollutant Discharge Elimination System (NPDES). The water quality of the discharge will follow the requirements of the NPDES permit, the California Regional Water Quality Control Board's Water Quality Control Plan for the North Coast Region (Basin Plan; NCRWQCB 2018), and State Water Resources Control Board's Title 22 of California's Code of Regulations Related to Recycled Water (Title 22; SWRCB 2018). The EPA issued NPDES for the proposed Project would follow Clean Water Act (CWA) standards and comply with the effluent limitations adopted for the receiving water. The Receiving Water standards are based on the requirements per the NCRWQCB Basin Plan.

Recycled water from the on-site WWTP would be utilized for toilet/urinal flushing, landscape irrigation, vineyard irrigation, cooling tower make-up and other approved non-potable uses consistent with EPA and California Title 22 regulations. Additionally, recycled water could be utilized to supply water for fire protection, such as the sprinkler systems and fire hydrants. Water would be pumped from the recycled water storage tank to the recycled water distribution system and seasonal storage reservoir/tank. The on-site recycled water reuse facilities would be designed to comply with California State Water Resources Control Board standards including, but not limited to, marking irrigation facilities in a purple color and installing recycled water pipelines in separate trenches away from other water pipelines. Recycled water would be pumped out of the seasonal storage ponds/tanks to the irrigated areas for re-use. These pumps would operate seasonally, typically between April and October, and would be sized to convey the entire volume of recycled water stored in the seasonal storage ponds/tanks plus a portion of the daily summertime wastewater flows.

Discharge to Pruitt Creek during the wet season (approximately October 1 to May 14) would be subject to the requirements of an NPDES discharge permit issued by the USEPA, which would allow discharges to surface water in accordance with the federal Clean Water Act (CWA) and applicable provisions of the Water Quality Control Plan for the North Coast Region (Basin Plan). Facilities associated with the seasonal surface water discharge would include a new discharge pipeline and outfall structure. The outfall structure would be designed to prevent erosion of the natural creek banks and erosion downstream. The outfall pipe outlet would include a duckbill check valve or similar component to protect against settlement/silting inside the pipe or nesting of small animals or rodents. The area around the outfall pipe would be covered with riprap or similar material to prevent natural erosion around the pipe from occurring and to protect the banks during periods of discharge. The pipe material would be suitable for permanent exposure to sunlight and creek water quality conditions.

Seasonal storage ponds or tanks would be used to seasonally store treated effluent until it can be reused on-site or discharged to Pruitt Creek. The size of the storage facilities would vary depending on the availability of recycled water use areas. Seasonal storage pond(s) would be constructed using semi-buried

ponds and berms and would be lined with an impermeable material, such as clay or concrete, to minimize percolation into the groundwater. Seasonal storage ponds would be located outside of the 100-year and 500-year floodplain and downgradient from any water supply well used for the proposed Project. Seasonal storage ponds would be sized according to the volume of disposal via irrigation and surface water discharge, as well as the remaining carry-over volume required from month to month.

3.4 Regulatory Setting

Regulatory authority over biological resources is shared by Federal, state, and local agencies under a variety of laws, ordinances, regulations, and statutes. The Project is unique in that it will be developed on the Koi Nation sovereign land base, pending Federal approval. Land held for trust on behalf of tribes is subject to Federal and tribal law exclusively; therefore, this Project does not fall under State or local jurisdictions. This BA is in support of National Environmental Policy Act (NEPA) compliance documentation for this Project, as well as consultation between the federal Action Agency and USFWS under Section 7 of FESA.

3.4.1 Recovery Plan for the Santa Rosa Plain

The Recovery Plan for Santa Rosa Plain was developed by the USFWS to describe the ecosystem and threats to native habitats, identify listed species covered under the Recovery Plan, and outline the elements of the recovery program. The Recovery Plan addresses the following federally-listed species endemic to the region: *Blennosperma bakeri, Lasthenia burkei, Limnanthes vinculans*, and the Sonoma County California tiger salamander, and incudes data on the distribution, abundance, habitat, reproduction and ecology, and critical habitat for plan species. This plan focuses on protecting these species from habitat loss and degradation by preserving high quality habitat. High quality habitat includes areas that are essential for connectivity, reduce fragmentation, and sufficiently buffer against encroaching development. This program has established core areas and management areas within Sonoma County. Core areas are defined as “the heart of a species historical (and current) range and represent central blocks of contiguously occupied habitat that function to allow for dispersal, genetic interchange between populations, and metapopulation dynamics” (USFWS 2016). Management areas are defined as “occupied habitat peripheral to species’ core range.”

4.0 ANALYSIS METHODS

4.1 Background Research

Prior to preparation of this BA, Sequoia researched the USFWS’ Information for Planning and Conservation (IPaC) database (USFWS 2022a, 2024), USFWS Designated Critical Habitat (USFWS 2022a), Recovery Plan for the Santa Rosa Plain (USFWS 2016), the California Department of Fish and Wildlife’s (CDFW) California Natural Diversity Database (CNDDB 2022a and 2022b), for all recorded occurrences of Federally listed species known from the region of the proposed Project. The IPaC report used in this analysis is provided as Appendix B. The potential for species occurrence was determined based on the results of literature reviews, field-based habitat assessments, and GIS-based remote sensing. All records of Federally listed species under USFWS jurisdiction are compiled and discussed in Table 1 and 2.

Sequoia examined all known recorded locations to determine if USFWS-jurisdictional listed species could occur on the Project site or within an area of affect.

4.2 Site Assessment

Sequoia biologists Ari Rogers and Claire Buchanan conducted surveys on the Project site on February 23 and 24, 2022, to record biological resources and to assess the limits of areas potentially regulated by resource agencies. Surveys involved searching all habitats on the site and recording all plant and wildlife species observed. Sequoia cross-referenced the habitats occurring on the Project site with the habitat requirements of regional special-status species to determine if the proposed Project could directly or indirectly impact these species. Any special-status species or suitable habitat was documented.

Tables 1 and 2 present the potential for occurrence of Federally listed plant and animal species known to occur in the vicinity of the Project site, along with their habitat requirements, potential to occur on the Project site, and basis for occurrence classification. Tables 3 and 4 at the end of this BA provide plant and wildlife species observed on the Project site.

5.0 EXISTING CONDITIONS

5.1 Project Site Topography and Hydrology

The Project site is located within the Santa Rosa Plain, and as such the topography is fairly uniform with elevation ranging from 135 feet above mean sea level (MSL) along the western property boundary to 160 feet MSL in the northeast corner of the property. Pruitt Creek flows southwesterly through the Project site and is a fourth order tributary to the Russian River. Pruitt Creek terminates at Pool Creek which flows into Windsor Creek, then into Mark West Creek, and finally into the Russian River. At the time of the February 2022 site visit, Pruitt Creek was wetted throughout. Flow was minimal (less than 1 ft^3/sec), with an average depth of eight inches and indicators of a high flow event (leaf litter and riparian vegetation scattered throughout). Water temperature was 52°F. Water temperature was measured at 1000 hours at a depth of approximately 5 inches in the shade. Comparing the observations from the Draft Constraints Report (ESA 2021) and observations from Sequoia's February 2022 survey, it is likely that Pruitt Creek is an intermittent stream that flows from late fall to spring and begins to dry up by early summer and remains dry through the fall.

5.2 Plant Communities and Wildlife Habitats

On February 23 and 24, 2022, Sequoia staff conducted a survey of the Project site and characterized vegetation present (Figure 3). During the survey, Sequoia biologists also documented plant and wildlife species observed on the Project site (Tables 3 and 4). Nomenclature used for plant names follows *The Jepson Manual, Second Edition* (Baldwin et al., eds. 2012), while nomenclature used for wildlife follows CDFW's Complete List of Amphibian, Reptile, Bird, and Mammal Species in California (2016). Three plant communities occur on the Project site (Sawyer, Keeler-Wolf, and Evens 2009) and are further described below.

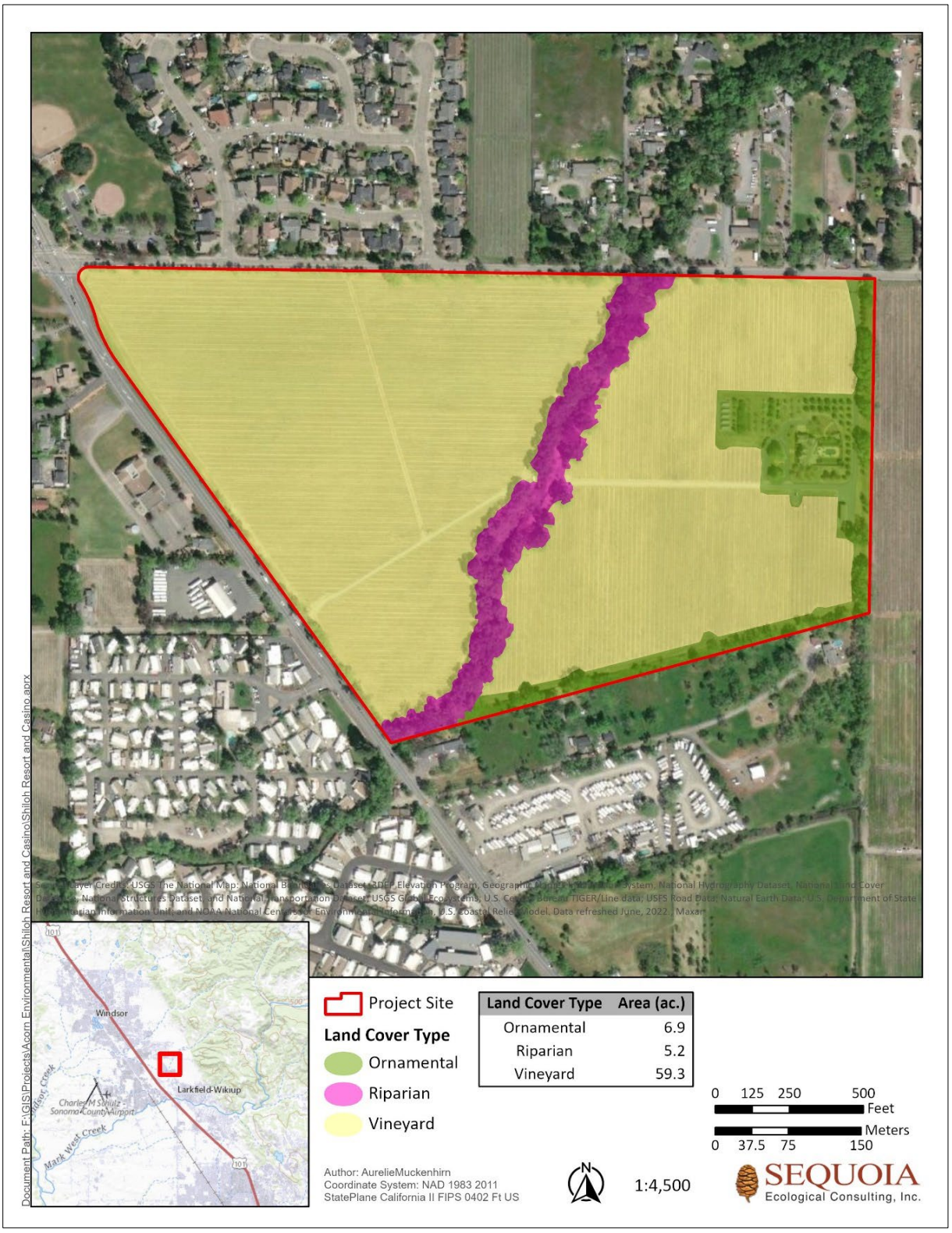


Figure 3. Land Cover Types within Proposed Shiloh Resort and Casino Project Site

5.2.1 Vineyards

The Project site is predominately an active vineyard with ruderal (weedy) vegetation growing in between the grape rows. Vineyard infrastructure is also present including dirt roads, piping, propane tanks, wash station, and electrical power poles. While the grape rows themselves are weeded and maintained, ruderal and annual vegetation grows between rows and around the vineyard perimeter; ruderal species are adapted to endure intense and/or long-term disturbance.

The vineyard land cover type occupies approximately 59.3 acres within the Project site (Figure 3).

5.2.2 Ornamental/Landscaping

Landscaped vegetation consisting of ornamental trees and shrubs surround the private residence and other structures on the Project site. There are olive trees and a variety of fruit trees on the north side of the private residence. Ruderal species occur between the landscape and orchard plantings. Large trees, primarily valley oaks (*Quercus lobata*), line the property boundary.

The ornamental land cover type occupies approximately 6.9 acres within the Project site (Figure 3).

5.2.3 Aquatic Features

A routine-level aquatic resource delineation was conducted on the Project site on February 23 and 24, 2022. A jurisdictional delineation report has been submitted to the U.S. Army Corps of Engineers (USACE) and is awaiting verification. The Project site was field-checked for indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. During the aquatic resource delineation, six sample points (three pairs) were taken on the Project site and recorded on USACE data forms provided in the *Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (Arid West Manual; USACE 2008a). The draft aquatic resources jurisdictional delineation map has been provided as Appendix C of this BA.

This aquatic resource delineation was conducted in accordance with the *Arid West Manual* (Environmental Laboratory 2008) and the *Corps of Engineers Wetlands Delineation Manual* (USACE Manual; Environmental Laboratory 1987). Based on the presence or absence of field indicators (including vegetation, hydrology, and soils), the limits of potential jurisdictional wetlands and other waters of the United States were determined. Potential jurisdictional wetlands and other waters were mapped with a Trimble GPS unit (sub-meter accuracy) and overlain on a digital orthophoto using ArcGIS mapping software (Appendix C).

Seasonal wetlands are habitats that dry down in the summer and fall months, but generally in the rainy, winter months become saturated and inundated for several weeks to months. Seasonal wetlands often hold water due to soil permeability and/or the presence of topographically low, depressional areas. Soils with a high clay content or within depressional areas, or soils that have been compacted by human activities, often hold and trap seasonal rainfall over short to long durations of the winter and spring. These areas often become dominated by hydrophytic plant species that are reliant and/or dependent on

regular saturation or inundation. Roadside drainage ditches are man-made features that catch sheet flow or convey stormwater flows.

Four areas were delineated on the study area that have positive indicators of all three wetland parameters and seasonal hydrology (Appendix C). Seasonal Wetlands primarily occur on hillside seeps and adjacent swales, channels, and ditches that appear to receive hydrologic input from direct precipitation, groundwater discharge, and/or surface runoff from the adjacent slope or contributing drainages.

One Intermittent Drainage (i.e., Pruitt Creek) was delineated on the Project site (Appendix C). Intermittent Drainages are natural tributaries to downstream TNWs (either through direct discharge or culvert/storm drain networks) and support a bed, bank, and OHWM, but lack one or more wetland parameters. Pruitt Creek is mapped as "Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC)" and "Palustrine, Forested, Emergent, Persistent, Seasonally Flooded (PFO/EM1C) Freshwater Forested/Shrub Wetland" in the National Wetlands Inventory (NWI; USFWS 2022b). The NWI layer indicates a freshwater emergent wetland is present in the central northern portion of the Project site (Figure 4). Sequoia staff did not detect any wetted habitat or indications of wetland presence in that portion of the Project site while surveying for CESA-listed species

Two Roadside Drainage Ditches were delineated on the western edge of the Project site, along Old Redwood Highway (Appendix C). The roadside drainage ditches that flow along Old Redwood Highway is characterized by a mix of hydrophytic species, such as tall flatsedge (FACW), curly dock (FAC), and bog rush (FACW), and ruderal and non-native annual species consistent with the adjacent uplands, such as wild oat, ripgut brome, and common vetch.

5.2.4 Riparian Corridor

There is a narrow buffer of non-native annual grassland between the riparian corridor and the vineyards. Valley oaks dominate the riparian corridor with some smaller eucalyptus (*Eucalyptus* sp.) trees also present. Understory vegetation is composed of both native and non-native species of grasses and shrubs. The understory communities observed had distinct segments heavily dominated by native species alternating with areas dominated by non-native species. Some native species observed include California buckeye (*Aesculus californica*), California bay laurel (*Umbellularia californica*), willow (*Salix* sp.), poison oak (*Toxicodendron diversilobum*), valley oak, and coast live oak (*Quercus agrifolia*). Non-native species observed include Himalayan blackberry (*Rubus armeniacus*), eucalyptus, and black mustard (*Brassica nigra*), among others.

The riparian land cover type occupies approximately 5.2 acres within the Project site (Figure 3).

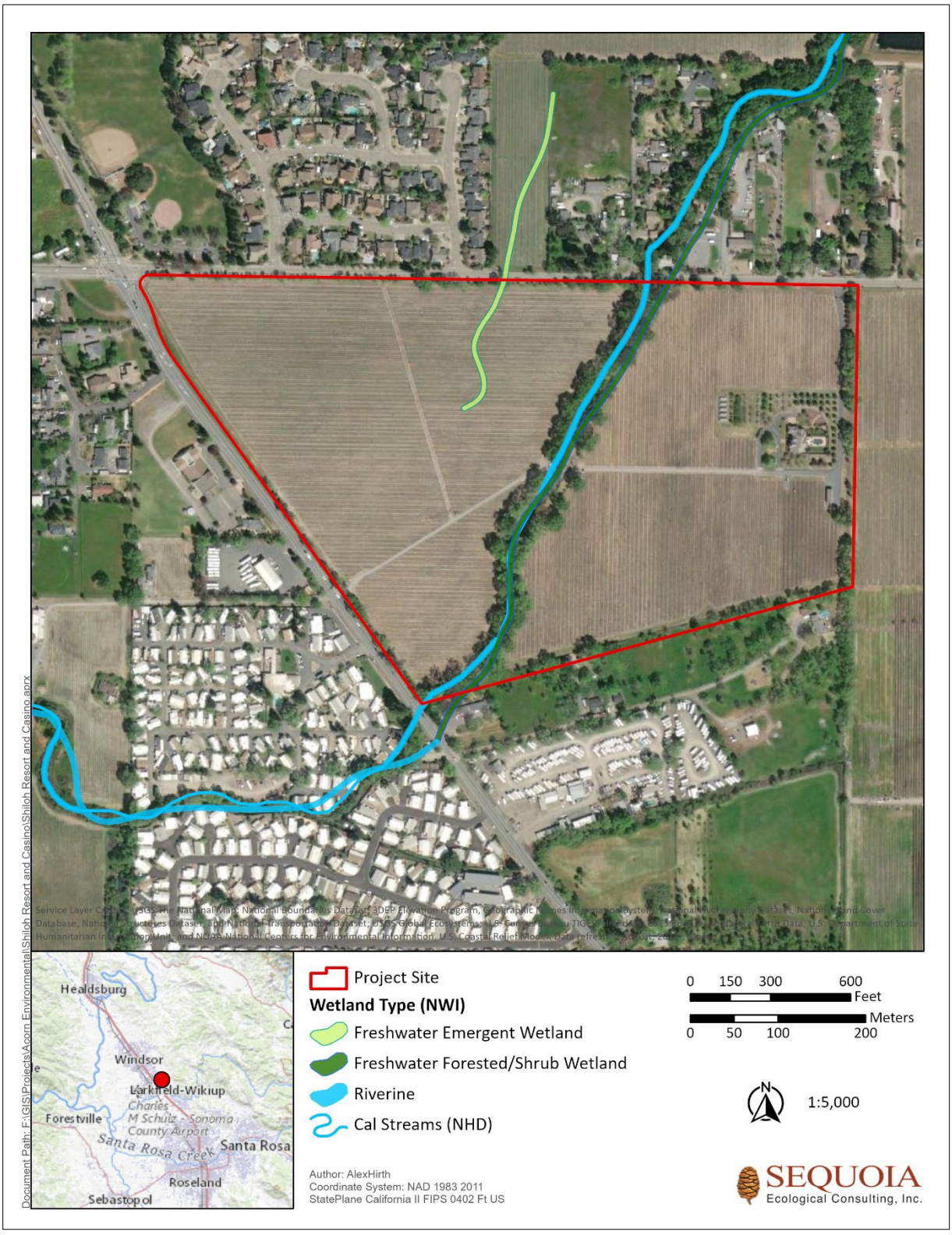


Figure 4. National Wetlands Inventory Map for the Proposed Shiloh Resort and Casino Project site

6.0 EVALUATION OF EFFECTS ON FEDERALLY LISTED SPECIES

The results of Sequoia's record search for Federally listed species occurrences within 3 miles of the Project site are discussed in the sections below. A graphical representation of the known records of Federally listed plant and wildlife species within 3 miles of the Project site is provided in Figures 5 and 6. USFWS-designated critical habitat within the vicinity of the Project site is shown in Figure 7.

6.1 Federally Listed Plants

Sequoia has determined that there are 4 Federally listed plant species known from the vicinity of the Project site based on a review of IPaC (USFWS 2022a). These four species have documented occurrences within 3 miles of the Project site (Figure 5): Burke's goldfields, Sebastopol meadowfoam, Sonoma sunshine, and many-flowered navarretia. All these species occur in specialized habitats, namely marshes and vernal pools, microhabitats, and or substrates (i.e., sand) which do not occur on or adjacent to the Project site; therefore, these 4 plants were dismissed from further consideration. Accordingly, the proposed Project will not affect Federally listed plants. Table 1 presents Federally listed plant species within the vicinity of the Project site, their legal status, habitat requirements, and probability of occurring on the Project site.

6.2 Federally Listed Wildlife

Sequoia determined that there are five Federally listed, proposed, or candidate wildlife species that are known from the vicinity of the Project site (USFWS 2024, Appendix B). Three of these species occur in specialized habitats such as mixed forests, coastal beaches, tropical waters, and perennial waterways, which do not occur on or adjacent to the Project site; therefore, green sea turtle, monarch butterfly, and northern spotted owl were dismissed from further consideration. The two remaining Federally listed or proposed species are discussed further below: northwestern pond turtle and California red-legged frog. The 2022 IPaC report included California tiger salamander as a listed species (USFWS 2022a); however, the 2024 IPaC report does not include California tiger salamander as a species with potential to occur in the project area (USFWS 2024). The Project site provides potentially suitable habitat for California red-legged frog and while no suitable habitat for California tiger salamander exists onsite, this species is still included in this analysis due to the Project site's location and the relative prevalence of California tiger salamander within the Santa Rosa Plain, as well as for purposes of consistency with prior submittals and the environmental documentation. Table 2 presents these Federally listed wildlife species, their legal status, habitat requirements, and probability of occurring on the Project site and Figure 6 shows CNDDB occurrences of special-status wildlife within 3 miles of the Project site.

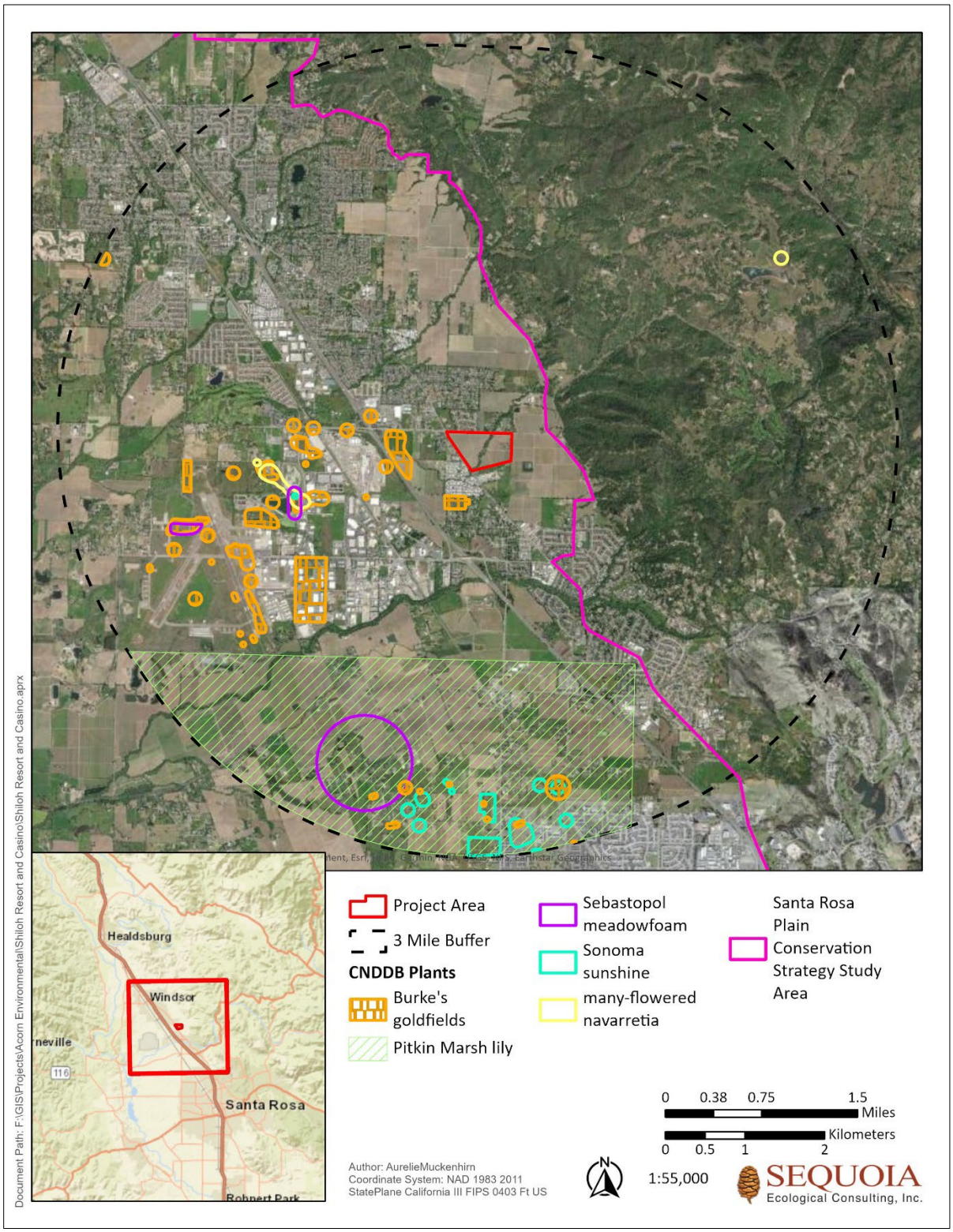


Figure 5. Closest Known Occurrences of Federally Listed Plant Species within 3 Miles of Proposed Shiloh Resort and Casino Project Site

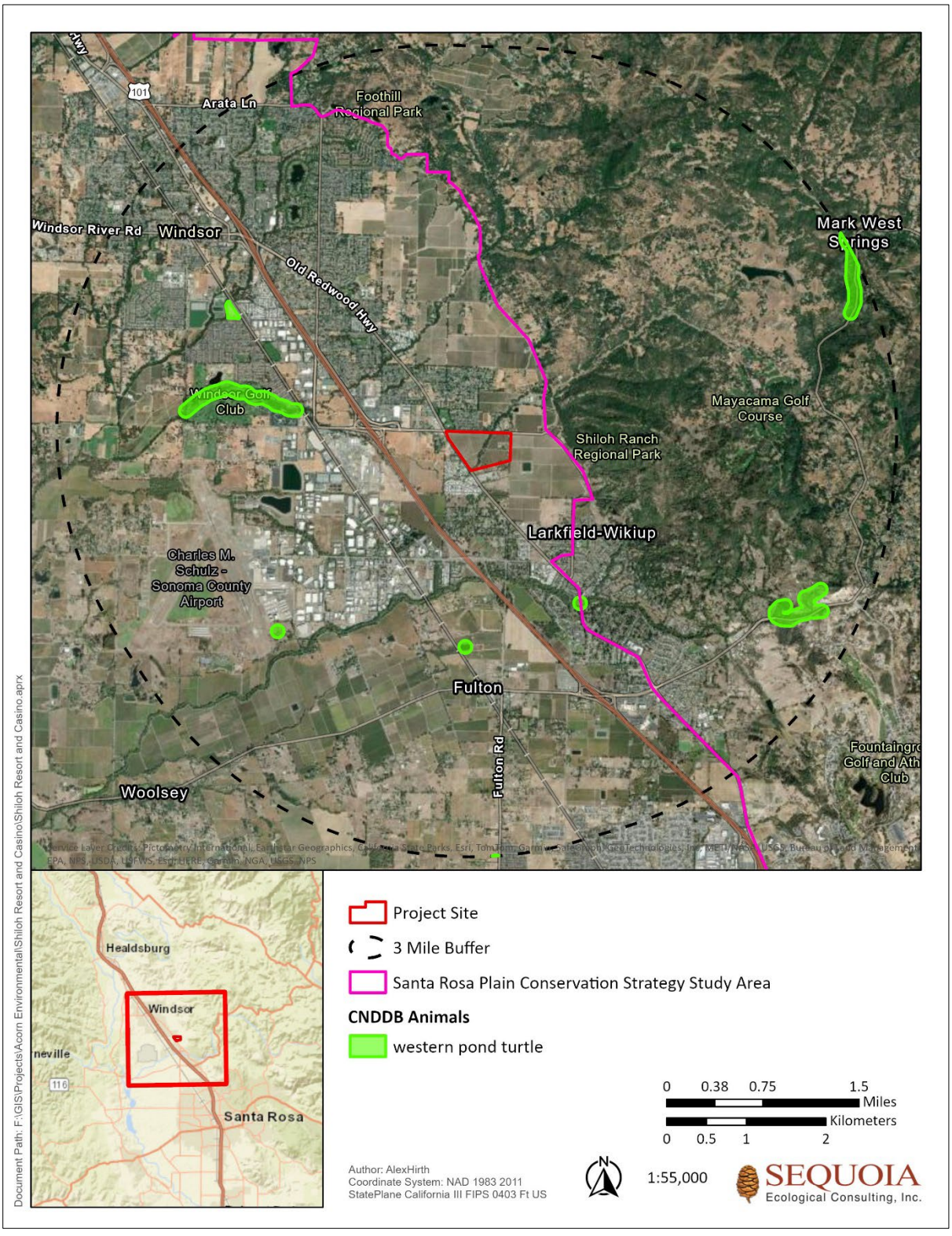


Figure 6. Closest Known Occurrences of Federally Listed Wildlife Species within 3 Miles of Proposed Shiloh Resort and Casino Project Site.

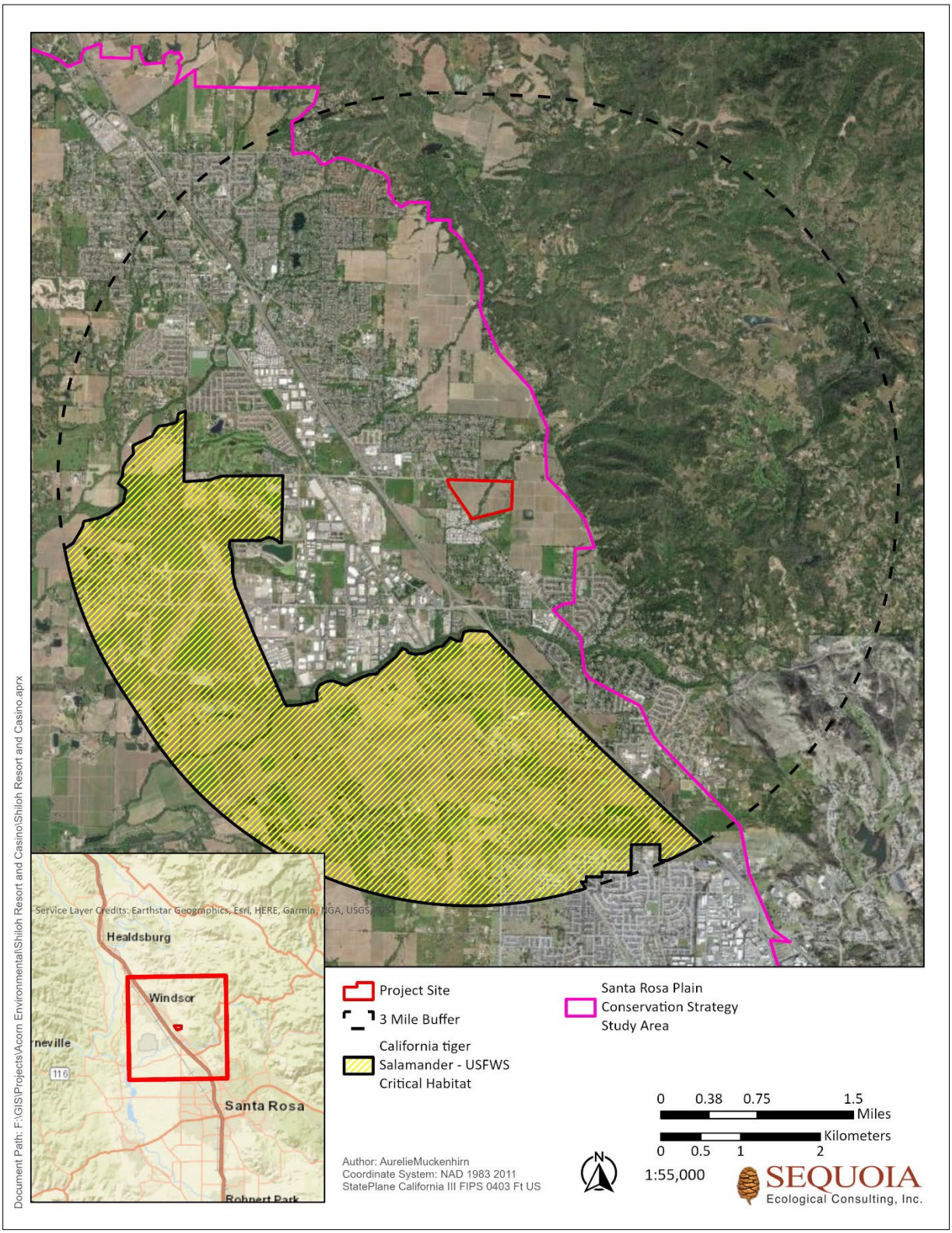


Figure 7. USFWS Critical Habitat in the Vicinity of Proposed Shiloh Resort and Casino Project Site.

6.2.1 Northwestern Pond Turtle

The western pond turtle was proposed as a Federally threatened species on September 29, 2023 (89 FR 23534) and is designated as a California Species of Special Concern (CNDDB 2022b). The comment period on the proposed rule that published October 3, 2023 (88 FR 68370) was reopened as of the writing of this document and will close May 6, 2024. No recovery plan or critical habitat has been designated for this species.

The western pond turtle is the only freshwater turtle native to greater California. It is distributed along much of the western coast from the Puget Sound in Washington south to the Baja Peninsula of Mexico (Storer 1930). The literature describes two subspecies of western pond turtle: the northwestern pond turtle (*Actinemys marmorata*) and the southwestern pond turtle (*Actinemys pallida*). Western pond turtle is vulnerable to disease, upland and aquatic habitat alterations and destruction, and the introduction of predators. The biggest threats to the species are bullfrog and introduced warm freshwater fish (e.g., bass), which prey on small juvenile turtles.

Overall, western pond turtles are habitat generalists, and have been observed in slow-moving rivers and streams (e.g., oxbows), lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants. They prefer aquatic habitat with refugia such as undercut banks and submerged vegetation (Holland 1994), and require emergent basking sites such as mud banks, rocks, logs, and root wads to thermoregulate their body temperature (Holland 1994; Bash 1999). Pond turtles are omnivorous and feed on a variety of aquatic and terrestrial invertebrates, fish, amphibians, and aquatic plants.

Western pond turtles regularly utilize upland terrestrial habitats, most often during the summer and winter, especially for oviposition (females), overwintering, seasonal terrestrial habitat use, and overland dispersal (Reese 1996, Holland 1994). Females have been reported ranging as far as 500 meters from a watercourse to find suitable nesting habitat (Reese and Welsh 1997), however they typically remain within 200 meters (Zargoza et al., 2015). Nest sites are most often situated on south- or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed dry silt or clay soils (Holland 1994; Rathbun et al. 1992; Holte 1998; Reese and Welsh 1997). Western pond turtles exhibit high site fidelity, returning in sequential years to the same terrestrial site to nest or overwinter (Reese 1996).

In Southern and central California, females lay their clutch as early as late April to late July, although they predominantly lay in June and July. In the early morning or late afternoon, gravid females leave the water and move upland to nest (Holland 1994). Natural incubation times vary, ranging from 80-100+ days in California. In Northern California and Oregon, hatchlings remain in the nest after hatching and overwinter, emerging in the spring. In Southern and central California, those that do not overwinter emerge from the nest in the early fall (Holland 1994).

6.2.1.1 Potential to Occur on the Project Site

As described in Section 5.1 above, Sequoia has confirmed that Pruitt Creek is an intermittent stream that likely flows from late fall to spring and begins to dry up by early summer and remains dry through the fall. Pruitt Creek does not provide suitable aquatic features to support NWPT, as Pruitt Creek is wet and flowing during the aestivation season of NWPT and largely dry during NWPT active season. Although Pruitt Creek does not hold water year-round it contains small-scale habitat features that could provide potential oviposition and overwintering habitat in the riparian corridor. Though Pruitt Creek and adjacent riparian areas have some potential to be used by NWPT as nesting and overwintering habitat, the likelihood is diminished due to lack of connectivity to suitable aquatic habitat NWPTs use during the active season. Upland habitat within the Project site is limited to developed habitat such as vineyards and ornamental landscaping that lack ground squirrel burrows, and no burrows were observed during the reconnaissance survey. In addition, no suitable aquatic habitat occurs within 500 meters of the Project site from which NWPT would disperse through uplands.

Pruitt Creek is an intermittent stream that connects to other waterways via the large box culverts on the north and south ends. These connections could provide migration/riparian dispersal habitat for NWPT to and from other waterways. Accordingly, the Project site could provide riparian dispersal habitat. The Project site is in a developed area and residential and commercial developments likely serve as upland dispersal barriers to NWPT. Furthermore, human- and traffic-related disturbance along associated roadways likely preclude NWPT from dispersing onto the site within upland habitat. Given that NWPT typically disperses no more than 200 meters from perennial water, and the site is more than 200 meters from perennial aquatic feature, the Project site has low potential to provide suitable dispersal habitat.

There are seven recorded occurrences of western pond turtle in CNDDB within 3 miles of the Project site (Figure 6). The closest CNDDB occurrence 454 is less than one mile west of the Project site, in Mark West Creek, however the record is dated 1996. A 2008 CNDDB occurrence 431 dated 2008 is approximately four miles west of the Project site in the Russian River. The most recent CNDDB occurrence 1363 dated 2017 is approximately 1.75 miles south of the Project site in a perennial irrigation pond. Review of the aerial imagery in Figure 6 demonstrates a high degree of habitat fragmentation between the project site and mapped occurrences, as well as the association between NWPT and aquatic (perennial) habitat.

Due to the absence of suitable aquatic and upland NWPT habitat on and/or adjacent to the Project site and the extent of regular disturbance associated with the development that make up the proposed Project, this species has low potential occur on the Project site in an upland oviposition or overwintering capacity. Pruitt Creek is an intermittent aquatic feature that connects to other waterways and contains microhabitats suitable for foraging, cover, and dispersal consistent; however, there are no recent (within 5 years) documented occurrences of NWPT within the vicinity or the Project site. Therefore, the creek has low potential to be used aquatic habitat during wet years, and it has low potential to be used for dispersal, oviposition, and overwintering; northwestern pond turtle is not expected to occur within the Project site overall.

Accordingly, Sequoia has determined that the proposed project is not likely to adversely affect northwestern pond turtle and its habitat. Impacts to aquatic resources will be reduced to no effect by implementing Avoidance and Minimization Measures (AMMs) provided below.

6.2.2 California Red-Legged Frog

The California red-legged frog was listed as a Federally threatened species on May 23, 1996 (61 FR 25813) and is designated as a California Species of Special Concern (CNDDB 2022b). A recovery plan was published for the California red-legged frog (USFWS 2002), and critical habitat was designated for this species on April 13, 2006 (71 FR 19244), and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816). Designated critical habitat for this species is defined as areas containing Primary Constituent Elements (PCEs) including breeding aquatic habitat, non-breeding aquatic habitat, upland habitat, and dispersal habitat. The Project site is located *outside* of USFWS-designated critical habitat for California red-legged frog (Figure 7).

The California red-legged frog is distributed throughout 26 counties in California but is most abundant in the San Francisco Bay Area (USFWS 2002). Populations have become isolated in the Sierra Nevada, northern coast, and northern Transverse Ranges (Thomson, Wright, and Shaffer 2016; Stebbins and McGinnis 2012). The species is believed to be extirpated from most locations in the southern Transverse and Peninsular Ranges but is still present in Baja California, Mexico (USFWS 2002). Preliminary reintroduction of the species recently occurred in 2020 and 2021 at two locations in Southern California, one at the Santa Rosa Plateau Ecological Reserve in Riverside County and one at the Wheatley Ranch in Mesa Grande, San Diego County (Heil 2021). California red-legged frogs predominantly inhabit permanent water sources such as streams, lakes, marshes, natural and man-made ponds, and ephemeral drainages in valley bottoms and foothills up to 4,900 feet in elevation (Thomson, Wright, and Shaffer 2016; Bulger, Scott, and Seymour 2003; Stebbins and McGinnis 2012). Adults breed in a variety of aquatic habitats, while larvae and metamorphs use streams, deep pools, backwaters of streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons. Stock ponds are frequently used for breeding when they provide a suitable hydroperiod, pond structure, vegetative cover, and are managed to control non-native predators such as bullfrogs and exotic fish. Breeding occurs between November and April within still or slow-moving water with light to dense, riparian or emergent vegetation, such as cattails (*Typha* spp.), tules (*Scirpus* spp.) or overhanging willows (*Salix* spp.) (Hayes and Jennings 1988). Egg masses are attached to vegetation below the surface and hatch after 6 to 14 days (Storer 1925; Thomson, Wright, and Shaffer 2016). Larvae undergo metamorphosis 3.5 to 7 months following hatching and reach sexual maturity at 2 to 3 years of age (Thomson, Wright, and Shaffer 2016). During the dry season, California red-legged frogs may use refugia in upland habitat, such as small mammal burrows or adjacent moist vegetation (USFWS 2002).

Tatarian (2008) noted that 57 percent of frogs fitted with radio transmitters in the Round Valley of eastern Contra Costa County stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. This study reported a peak of seasonal terrestrial movement in the fall months corresponding to 0.2 inch of precipitation that tapered off into spring. Upland

movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia, including ground squirrel burrows at the bases of trees or rocks, logs, grass thatch, crevices, cow hoof prints, and a downed barn door; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1 to 4 days; however, one female was reported to remain in upland habitat for 50 days (Tatarian 2008). Uplands closer to aquatic sites were more often used and were more commonly associated with areas exhibiting higher object cover (e.g., small woody debris, rocks, and vegetative cover).

Most frogs move away from breeding ponds to upland areas. The distance moved is site dependent, though one recent study shows that only a few frogs move farther than the nearest suitable non-breeding habitat (Fellers and Kleeman 2007). In this Marin County study, the furthest distance traveled was 0.87 mile and most dispersing frogs moved through grazed pastures to reach the nearest riparian habitat (Fellers and Kleeman 2007). Bulger, Scott, and Seymour (2003) did not observe habitat preferences among frogs moving between ponds. They did note that when breeding ponds dry, California red-legged frogs use moist microhabitats of dense shrubs and herbaceous vegetation within approximately 330 feet of ponds.

6.2.2.1 Primary Constituent Elements (PCEs)

As part of the process for designating critical habitat for CRLF, USFWS developed and defined primary constituent elements (PCEs) consisting of four components: aquatic breeding habitat (PCE 1), non-breeding aquatic habitat (PCE 2), upland habitat (PCE 3), and dispersal habitat (PCE 4) (50 CFR 17.95(d)(2)). These PCEs are found within USFWS designated critical habitat and are used in this analysis to assess the suitability of the Project site for CRLF, as defined below.

PCE 1 – Aquatic Breeding Habitat

"Standing bodies of fresh water (with salinities less than 7.0 parts per thousand) including: natural and manmade (e.g., stock) ponds, slow moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years" (50 CFR 17.95(d)(2)(i)).

PCE 2 – Non-Breeding Aquatic Habitat

"Fresh water habitats as described above, that may or may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs" (50 CFR 17.95(d)(2)(ii)).

PCE 3 – Upland Habitat

"Upland areas within 200 ft (60 m) of the edge of the riparian vegetation or dripline surrounding aquatic and riparian habitat and comprised of various vegetational series such as grasslands, woodlands, and/or

wetland/riparian plant species that provides the frog shelter, forage, and predator avoidance" (50 CFR 17.95(d)(2)(iii)).

PCE 4 – Dispersal Habitat

"Accessible upland or riparian dispersal habitat within designated units and between occupied locations within 0.7 mi (1.2 km) of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which also do not contain barriers to dispersal" (50 CFR 17.95(d)(2)(iv)).

6.2.2.2 Potential to Occur on the Project Site

As described in Section 5.1 above, Sequoia has confirmed that Pruitt Creek is an intermittent stream that likely flows from late fall to spring and begins to dry up by early summer and remains dry through the fall. While Pruitt Creek contains plunge pools that meet the depth requirement in PCE 1, it does not hold water long enough to support California red-legged frog breeding. Therefore, the Project site does not contain water bodies that would provide CRLF breeding habitat as defined by PCE 1.

Although Pruitt Creek does not hold water year-round it contains small-scale habitat features that could provide potential shelter, foraging, and aquatic dispersal habitat. Therefore, Pruitt Creek has some potential to be used by California red-legged frogs as non-breeding aquatic habitat as defined by PCE 2. That said, the lack of nearby (i.e., within 3 miles) occurrences of CRLF suggests that this species is not prevalent or present within the vicinity of the Project site, and accordingly there is a low potential for it to occur on site in a non-breeding aquatic capacity.

Upland habitat within the Project site is limited to developed habitat such as vineyards and ornamental landscaping that lacks ground squirrel burrows or other refugia. The Project site is in a developed area and residential and commercial developments likely serve as upland dispersal barriers to California red-legged frog. Furthermore, human- and traffic-related disturbance along associated roadways likely preclude California red-legged frog from dispersing onto the site within upland habitat. In addition, no suitable breeding habitat occurs within 2 km of the Project site from which CRLF would disperse through uplands. Therefore, the Project site does not contain suitable upland habitat for CRLF consistent with PCE 3.

Pruitt Creek an intermittent stream that connects to other waterways via the large box culverts on the north and south ends. These connections could provide migration/riparian dispersal habitat for California red-legged frog to and from other waterways. Accordingly, the Project site could provide riparian dispersal habitat consistent with PCE 4; however, the lack of nearby CNDDB occurrences makes it unlikely that CRLF are present in the vicinity and this species has a low potential to occur on the Project site in a riparian dispersal capacity.

There are no recorded occurrences of the California red-legged frog in CNDDB within 3 miles of the Project site (Figure 6). Due to the absence of suitable breeding and upland California red-legged frog

habitat on and/or immediately adjacent to the Project site and the extent of regular disturbance associated with the development that make up the proposed Project, this species has little to no potential occur on the Project site in an aquatic breeding and upland capacity. Pruitt Creek is an intermittent aquatic feature that connects to other waterways and contains microhabitats suitable for foraging, cover, and dispersal consistent with PCE 2 and 4; however, there are no documented occurrences of CRLF within the vicinity or the Project site or within the known dispersal distance for CRLF. Therefore, the creek has a low potential to be used by CRLF as migration/dispersal habitat (PCE 4) and/or aquatic non-breeding habitat (PCE 2) and CRLF is not likely to occur within the Project site overall.

Accordingly, Sequoia has determined that the proposed project is not likely to adversely affect California red-legged frog and its habitat. Impacts to aquatic resources will be reduced to no effect by implementing Avoidance and Minimization Measures (AMMs) provided below.

6.2.3 California Tiger Salamander

The Project site is located within the known range of the Sonoma County "Distinct Population Segment" (DPS) of the California tiger salamander. Under FESA, the USFWS emergency listed the Sonoma County DPS as endangered on July 22, 2002 (67 FR 47726). The USFWS formalized the listing of the Sonoma County DPS of California tiger salamander as endangered on March 19, 2003 (68 FR 13497). Critical habitat for the Sonoma, Central Valley, and Santa Barbara distinct populations were designated for this species on August 31, 2011; August 23, 2005; and November 24, 2004, respectively. Recovery plans for these distinct populations were published on May 31, 2016; June 6, 2017; and December 12, 2016 (USFWS 2017). The Project site is located outside of USFWS-designated critical habitat for California tiger salamander (Figure 7).

The California tiger salamander is a large, terrestrial salamander distributed throughout the Central Valley and Central Coast ranges, from Colusa County south to San Luis Obispo and Kern Counties and is found from sea level to 3,500 feet in elevation. Two disjunct populations are located within Sonoma County and Santa Barbara County, which are geographically isolated from the Central Valley population. Shaffer et al. (2004) identified six distinct populations based on mitochondrial DNA and allozymes analysis: the Santa Rosa area of Sonoma County; the Bay Area (central and southern Alameda, Santa Clara, western Stanislaus, western Merced, and the majority of San Benito Counties); the Central Valley (Yolo, Sacramento, Solano, eastern Contra Costa, northeast Alameda, San Joaquin, Stanislaus, Merced, and northwestern Madera Counties); southern San Joaquin Valley (portions of Madera, central Fresno, and northern Tulare and Kings Counties); the Central Coast Range (southern Santa Cruz, Monterey, northern San Luis Obispo, and portions of western San Benito, Fresno, and Kern Counties); and Santa Barbara County.

California tiger salamanders inhabit lowland grasslands, oak savannah, and mixed woodland habitats, and require vernal pools, seasonal ponds, or semi-permanent calm waters that pond water for a minimum of 3 to 4 months in duration for breeding and larval maturation, and adjacent upland refugia

and foraging habitat with small mammal burrows (Storer 1925; Barry and Shaffer 1994; Stebbins and McGinnis 2012). Migration to breeding sites begins with the onset of autumn rains, typically in November. California tiger salamanders have been reported to travel distances up to 1 mile (Austin and Shaffer 1992), but Trenham and Shaffer (2005) estimate that optimal upland habitat is within approximately 2,000 feet of breeding ponds. Eggs are laid singly or in small clusters on the pond bottom or attached to individual strands of vegetation (Storer 1925; Twitty 1941; Barry and Shaffer 1994; Thomson, Wright, and Shaffer 2016). Metamorphosis requires a minimum of 10 weeks following hatching, and young migrate en masse when temporary pools begin to dry in late spring or early summer (Anderson 1968; Feaver 1971; Thomson, Wright, and Shaffer 2016; Stebbins and McGinnis 2012). Outside of the breeding season, juveniles and adults remain in subterranean habitat typically in small mammal burrows provided by California ground squirrels (*Otospermophilus beecheyi*) and pocket gophers (*Thomomys* spp.) (Shaffer, Fisher, and Stanley 1993; Barry and Shaffer 1994; Thomson, Wright, and Shaffer 2016; Stebbins and McGinnis 2012).

The California tiger salamander is the most vulnerable of the group of amphibians that breed in vernal pools due to its long developmental interval to metamorphosis, which restricts it to pools that are the longest lasting, and therefore often the largest in size. Loss and degradation of complexes of vernal pools pose a significant threat, as many of these areas are essential breeding habitat. California tiger salamanders are at risk due to loss of habitat from development of agriculture and grazing lands, habitat fragmentation, loss and degradation of complexes of vernal pools, and introduction of predatory exotic species such as mosquitofish (*Gambusia affinis*), American bullfrog (*Lithobates catesbeianus*), and Louisiana red swamp crayfish (*Procambarus clarkii*) as well as the poisoning of ground squirrels (Zeiner et al. 1988; Collins et al. 1988; Shaffer, Fisher, and Stanley 1993; Thomson, Wright, and Shaffer 2016). High mortality of California tiger salamanders crossing roads while migrating to and from breeding sites also adversely affects individuals and at-risk populations (Barry and Shaffer 1994).

6.2.3.1 Primary Constituent Elements (PCEs)

As part of the process for designating critical habitat for CTS, USFWS developed and defined PCEs consisting of four components: aquatic breeding habitat (PCE 1), adjacent upland habitat (PCE 2), upland dispersal habitat (PCE 3), and vernal pool complex habitat (PCE 4) (69 FR 48569). These PCEs are found within USFWS designated critical habitat and are used in this analysis to assess the suitability of the Project site for CTS, as defined below.

PCE 1

PCE 1 is defined as "standing bodies of fresh water, including natural and man-made (*e.g.*, stock) ponds, vernal pools, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a sufficient length of time necessary for the species to complete the aquatic portion of its life cycle." (69 CFR 48569).

PCE 2

PCE 2 is defined as "Barrier-free upland habitats adjacent to breeding ponds that contain small mammal burrows, including but not limited to burrows created by the California ground squirrel and valley pocket gopher" (69 FR 48569).

PCE 3

PCE 3 is defined as "upland areas between occupied locations (PCE 1) and areas with small mammal burrows (PCE 2) that allow for dispersal among such sites (69 FR 48569)."

PCE 4

PCE 4 is defined as "vernal pool complex habitat- geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands. These features contribute to the filling and drying of the vernal pool, maintain suitable periods of pool inundation for larval salamanders and their food sources, and provide breeding, feeding, and sheltering habitat for juvenile and adult salamanders and small mammals that create burrow systems essential for CTS estivation (69 FR 48569)."

6.2.3.2 Potential to Occur on the Project Site

There are no recorded occurrences of the California tiger salamanders in CNDDB within 3 miles of the Project site (Figure 6). The potential seasonal wetlands identified on site during the jurisdictional delineation (Appendix C) are small and shallow and do not hold water long enough to support the aquatic portion of the CTS life cycle, as described by PCE 1. Additionally, no ground squirrel or other small mammal burrows, surface soil cracks, or other upland refugia were observed on the Project site during the February 2022 survey. Accordingly, the Project site does not contain upland habitat suitable for CTS consistent with PCE 2. The Project site is in a developed area and residential and commercial developments serve as dispersal barriers to California tiger salamander. Furthermore, human- and traffic-related disturbance along associated roadways likely preclude California tiger salamander from dispersing; however, many roads in Sonoma County are known California tiger salamander crossing routes so the presence of a roadway does not discount the possibility of California tiger salamander dispersal (when in proximity to breeding habitat). That said, migration and dispersal of this species are temporally constrained activities that occur during the wet season; work activities within aquatic features on site will occur during dry conditions. Accordingly, during Project-related activities the Project site would not be expected to be used as dispersal habitat between locations occupied by the California tiger salamander. Thus, implementation of the proposed Project would not result in loss to upland dispersal habitat consistent with PCE 3.

California tiger salamander USFWS critical habitat is located within 3 miles of the Project site; however critical habitat is located across the 101 freeway and urban areas which prevent dispersal (Figure 7). Due to the lack of nearby CNDDB occurrences (Figure 6), absence of suitable California tiger salamander breeding, upland, and dispersal habitat on and/or immediately adjacent to the Project site, and the

extent of regular disturbance associated with the development that make up the proposed Project, the species is not expected to occur on the Project site.

Accordingly, Sequoia has determined that the proposed project will have no effect on California tiger salamander and its habitat. Impacts to aquatic resources will be reduced to a less than significant level by implementing Avoidance and Minimization Measures (AMMs) provided below.

6.3 Santa Rosa Plain Species

Federally listed plant and wildlife species found within the Santa Rosa Plain include CTS and three Federally endangered plant species: Sonoma sunshine, Burke's goldfields, and Sebastopol meadowfoam. These plant species are found only in vernal pools and seasonal wetlands, while CTS utilize these wetlands during breeding season and surrounding uplands year-round (USFWS 2016). Although the Project site is within the Santa Rosa Plain, it does not occur within USFWS-designated critical habitat or Core and Management Areas outlined in the Recovery Plan for the Santa Rosa Plain (USFWS 2016). Furthermore, the site is located within a Santa Rosa Plain Conservation Strategy designation of "presence of CTS is not likely and there are no listed plants in this area."

Table 1. Federally Listed Plant Species Known to Occur in the Vicinity of the Project Site

Scientific Name	Common Name	Listed Status*	Habitat Requirements	Potential for Occurrence
Blennosperma bakeri	Sonoma sunshine	FE, CE, 1B.1	Occurs in valley and foothill grassland (mesic) and vernal pools, at elevations from 30 to 360 ft.	No potential. No suitable habitat occurs on the Project site. Species not observed during February 2022 site visit.
Lasthenia burkei	Burke's goldfields	FE, CE, 1B.1	Occurs in meadows and seeps (mesic) and vernal pools, at elevations of 50 to 1,970 ft.	No potential. No suitable habitat occurs on the Project site, no wetlands or meadows are present. Species not observed during February 2022 site visit.
Limnanthes vinculans	Sebastopol meadowfoam	FE, CE, 1B.1	Occurs in meadows and seeps, valley and foothill grassland, and vernal pools, at elevations of 50 to 1,000 ft.	No potential. No suitable habitat occurs on the Project site. Species not observed during February 2022 site visit.
Navarretia leucocephala ssp. *plieantha*	Many-flowered navarretia	FE, CE, 1B.2	Occurs in vernal pools (volcanic ash flow) at elevations of 100 to 3,115 feet.	No potential. No suitable habitat occurs on the Project site. Species not observed during February 2022 site visit.

*Key to status:
FE – Federally listed as endangered, FT – Federally listed as threatened species
CE – California listed as endangered species, CR – California rare species, CT – California listed as threatened species
1A – CNPS Rare Plant Rank of plants presumed extirpated in California, rare or extinct elsewhere.
1B – CNPS Rare Plant Rank of plants rare, threatened, or endangered in California and elsewhere
2A – CNPS Rare Plant Rank of plants are presumed extirpated in California but common elsewhere.
3 – CNPS Rare Plant Rank of plants about which we need more information (a review list)
.1/.2/.3 – Seriously endangered in California/Fairly endangered in California/Not very endangered in California

Table 2. Federally Listed Wildlife Species Known to Occur in the Vicinity of the Project Site.

Scientific Name	Common Name	Listed Status*	Habitat Requirements	Potential for Occurrences
Amphibians/Reptiles				
Chelonia mydas	Green sea turtle	FT	Common in tropical and subtropical waters as well as coastal beaches. Forages in coastal areas with plentiful algae and sea grass.	No potential. No suitable habitat on the Project site.
Ambystoma californiense (Sonoma County DPS)	California tiger salamander	FE, CT, WL	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	No potential. No breeding or over-summering habitat occurs on the Project site and no ponds, lakes, or vernal pools in immediate vicinity. No CNDDB occurrences within 3 miles. See text.
Actinemys marmorata	Northwestern pond turtle	FC, SSC	Permanent streams, ponds, lakes, and permanent and ephemeral wetlands. Prefers habitats with abundant basking sites, underwater refugia, and standing or slow moving water. Requires terrestrial habitat for nesting. Nesting sites are on sandy banks and bars or in fields or sunny spots up to a few hundred meters from water.	Low potential. No suitable, permanent aquatic habitat within project area or surrounding vicinity. Project site isolated from nearby occupied sites by habitat fragmentation. See text.
Rana draytonii	California red-legged frog	FT, SSC	Occurs in semi-permanent or permanent water at least 2 feet deep, bordered by emergent or riparian vegetation, and upland grassland, forest, or scrub habitats for aestivation and dispersal.	Low potential. No breeding or upland habitat occurs on the Project site. The project site may provide dispersal or aquatic non-breeding habitat but no occurrences within vicinity. See text.
Birds				
Strix occidentalis caurina	Northern spotted owl	FT, CT	Older, mixed forests with moderate to high canopy closure and a high occurrence of large snags and cavities.	No potential. No suitable habitat on the Project site
Invertebrates				
Danaus plexippus	Monarch butterfly	FC	Tree clumps south-facing slopes, mixture of eucalyptus and Monterey pine trees during winter, milkweed (larval host plant) during summer.	No potential. No suitable habitat on the Project site

Table 2. Federally Listed Wildlife Species Known to Occur in the Vicinity of the Project Site.

Scientific Name	Common Name	Listed Status*	Habitat Requirements	Potential for Occurrences
Syncaris pacifica	California freshwater shrimp	FE, CE	Occurs in slow flowing waterways 1 to 3 ft deep, containing ample exposed roots, edge vegetation, and debris at elevations less than 380 ft.	No potential. No suitable habitat on the Project site.

*Key to status:
FE – Federally listed as endangered species, FT – Federally listed as threatened species, FC – Federally listed as a candidate species for listing
CE – California listed as endangered species, CT – California listed as threatened species
SSC – CDFW Species of Special Concern, WL – CDFW Watch List

7.0 EVALUATION OF IMPACTS TO FEDERALLY DESIGNATED CRITICAL HABITAT

7.1 Action Area

The action area is defined in 50 Code of Federal Regulations (CFR) § 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area for the proposed Project includes the 68-acre Project site (Appendix A).

7.2 Federally Listed Plants

The Project site does not fall within USFWS-designated critical habitat for any Federally listed plant species (Figure 7). Although the proposed Project is located within the *Santa Rosa Plain Conservation Strategy Study Area* (USFWS 2005), it is not located within any Santa Rosa Plain Rare Plant Core and Management Areas (USFWS 2016). That said, this Proposed Project is located within a *Conservation Strategy* designation with "no listed plants in this area" and the absence of specialized habitats and substrates precludes the establishment of Federally listed plant species onsite. No impacts will occur to Federally listed plants or suitable habitat, or USFWS designated critical habitat as a result of the proposed Project. The action will have no effect on federally listed plants.

7.3 Federally Listed Animals

No USFWS-designated critical habitats occur within the Project site. California tiger salamander USFWS critical habitat occurs within a 3-mile radius of the Project site (Figure 7). Accordingly, the action would not result in the destruction or adverse modification of critical habitat.

In addition, this evaluation includes an assessment of the presence of any PCEs, defined specifically as physical and biological features essential to the conservation of CRLF and the Sonoma County DPS of the California tiger salamander, which occur in the greater vicinity of the Project site (Sections 6.2.1 and 6.2.2). The action will have no effect on California red-legged frog and northwestern pond turtle after incorporating the AMMs provided in Section 8.0 (below).

As discussed above, the Project site is located within the *Santa Rosa Plain Conservation Strategy Study Area* (USFWS 2005); however, it is not located within any Santa Rosa Plain California tiger salamander Core and Management Areas (USFWS 2016) and is located within an area with an area designated by the *Conservation Strategy* where the "presence of CTS is not likely." (USFWS 2005). The action will have no effect on California tiger salamander Sonoma County DPS.

8.0 AVOIDANCE AND MINIMIZATION MEASURES

As stated in Sections 6 and 7 above, the proposed Project will have no effect on CRLF or NWPT after adopting AMMs, and will have no effect on CTS Sonoma County DPS and its designated critical habitat, or federally listed plants. This section provides avoidance and minimization measures (AMMs) that will protect and minimize impacts to aquatic resources and support no effects determinations for CRLF and NWPT. General pre-construction surveys and other avoidance measures will be implemented to avoid injury to individual animals that may be in the areas affected by the proposed Project. Although highly unlikely and not expected to occur, if listed species are identified onsite the Project proponent will reconsult with USFWS before proceeding with the proposed Project. No impacts to the listed species or their habitats are expected with the proper implementation of AMMs; therefore, compensatory mitigation is not required or proposed.

8.1 Plant and Wildlife Species

BMPs that will be incorporated into the proposed Project will include:

- Prior to construction, all construction workers will take part in an environmental awareness program conducted by an agency-approved biologist. Special-status species to be covered in the program include, but are not limited to: California red-legged frog, northwestern pond turtle, nesting migratory birds, western burrowing owl, Chinook salmon (CC ESU), coho salmon (CCC ESU), and steelhead (CCC DPS).
- This training shall include a description of the special-status species with the potential to occur in the work area, habitat needs, an explanation of the status of the species and protection under federal law, and a list of the measures being taken to avoid or reduce impacts to the species during project construction. The awareness program will be conducted at the start of construction and thereafter as required for new construction personnel. The training shall include a handout containing training information. The project manager shall use this handout to train any additional construction personnel that were not in attendance at the first meeting, prior to starting work on the project.
- At the end of each workday, all excavations (e.g., holes, construction pits, and trenches) of a depth of eight inches or greater will be covered with plywood or other hard material, and gaps around the cover will be filled with dirt, rocks, or other appropriate material to prevent entry by wildlife. If excavations cannot be covered, then they will include escape ramps constructed of either dirt fill, wood planking, or other appropriate material installed at a 3:1 grade (i.e., an angle no greater than 30 degrees) to allow wildlife that fall in a means to escape.
- If directional drilling is used, pipelines would be installed a minimum of 10 feet below the bottom of Pruitt Creek and during the dry season, to prevent hydrofracture (e.g., frac-out).

The following measures shall be implemented to avoid and/or reduce impacts to the Riparian Corridor:

A. Alterations to riparian vegetation shall be avoided to the maximum extent possible. The project footprint shall be established at the minimum size necessary to complete the work. Temporary setback areas shall be marked with fencing to protect the riparian zone and its function. Any

disturbed riparian areas shall be replanted with native trees and shrubs.

B. A qualified biologist shall delineate an Environmentally Sensitive Area along Pruitt Creek. The contractor shall install high-visibility fence to prevent accidental incursion on the Environmentally Sensitive Area.

C. Staging areas, access routes, and total area of activity shall be limited to the minimum area necessary to achieve Project goals. Routes and boundaries shall be clearly marked and outside of the riparian area and create a buffer zone wide enough to support sediment and nutrient control and bank stabilization function.

The following measures shall be implemented to minimize or avoid potential impacts to wetlands, Waters of the U.S., and special-status species:

D. Prior to the start of construction, wetlands and jurisdictional features shall be fenced, and excluded from activity. Fencing shall be located as far as feasible from the edge of wetlands and riparian habitats and installed prior to the dry season, after special-status species surveys have been conducted and prior to construction. The fencing shall remain in place until all construction activities on the site have been completed.

E. Ground disturbing activities, such as grading, clearing, and excavation, within 50 feet of any U.S. Army Corps of Engineers (USACE) jurisdictional features identified in the formal delineation process shall be conducted during the dry season (between June 15 and October 15) to minimize erosion. In the event of substantial, unseasonably high flow within Pruitt Creek on or after April 15, work shall be altered or stopped until flow ceases in the creek. Temporary stormwater Best Management Practices such as vegetative stabilization and linear sediment barriers shall be established between disturbed portions of the Project Site and Pruitt Creek to prevent sedimentation in the watercourse.

F. Staging areas shall be located away from the areas of aquatic habitat that are fenced off. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate facility. Stockpiles that are to remain on the site through the wet season shall be protected to prevent erosion (e.g. with tarps, silt fences, or straw bales).

G. Standard precautions shall be employed by the construction contractor to prevent the accidental release of fuel, oil, lubricant, or other hazardous materials associated with construction activities into jurisdictional features. A contaminant program shall be developed and implemented in the event of release of hazardous materials.

H. If impacts to Waters of the U.S. and wetland habitat are unavoidable, a 404 permit and 401 Certification under the Clean Water Act shall be obtained from the USACE and U.S. Environmental Protection Agency (USEPA). Mitigation measures may include creation or restoration of wetland

habitats either on site or at an appropriate off-site location, or the purchase of approved credits in a wetland mitigation bank approved by the USACE. Compensatory mitigation shall occur at a minimum of 1:1 ratio or as required by the USACE and USEPA.

I. Consultation with the National Oceanic and Atmospheric Administration Fisheries for impacts to fish and essential fish habitat shall be conducted in accordance with Section 7 of the federal Endangered Species Act (FESA) and Magnuson-Stevens Act and any requirements resulting from that consultation shall be adhered to.

The following measures shall be implemented to avoid impacts to California red-legged frogs (CRLF):

J. A qualified biologist shall conduct a preconstruction habitat assessment survey for CRLF following Appendix D of the U.S. Fish and Wildlife Service [USFWS (2005)] Revised Guidance of Site Assessments and Field Surveys for the California Red-legged Frog. The survey shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the CRLF. The survey shall be conducted in all potential CRLF habitat on and within 200 feet of ground disturbance.

K. If CRLF is detected during pre-construction surveys or during construction, the USFWS shall be contacted immediately to determine the best course of action.

L. Should CRLF be identified during surveys, additional silt fencing shall be installed after surveys have been completed to further protect this species from construction impacts. The fencing shall remain in place until construction activities cease.

The following measures shall be implemented to avoid impacts to northwestern pond turtle (NWPT):

M. A qualified biologist shall conduct a preconstruction survey for NWPT along Pruitt Creek 24 hours prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the NWPT. The survey shall be conducted within 350 feet of the stretch of Pruitt Creek. If NWPT is detected within or immediately adjacent to the area of ground disturbance, the USFWS shall be contacted immediately to determine the best course of action.

N. Should NWPT be identified during surveys, additional silt fencing shall be installed after surveys have been completed to further protect this species from construction impacts. The fencing shall remain in place until construction activities cease.

The following measures shall be implemented to avoid and/or reduce impacts to potentially nesting migratory birds and other birds of prey in accordance with the federal Migratory Bird Treaty Act.

O. Removal of vegetation and trimming or removal of trees shall occur outside the bird nesting season (February 1 to August 30) to the extent feasible.

P. If removal or trimming of vegetation and trees cannot avoid the bird nesting season, a qualified wildlife biologist shall conduct a pre-construction nesting survey within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed for the Project Site and suitable habitat within 250 feet of the Project Site in order to detect any active passerine (perching bird) nests and within 500 feet of the Project Site to identify any active raptor (bird of prey) nests.

Q. If active nests are identified during the pre-construction bird nesting surveys, the wildlife biologist shall place species- and site-specific no-disturbance buffers around each nest. Buffer size would typically be between 50 and 250 feet for passerines and between 300 and 500 feet for raptors (birds of prey). These distances may be adjusted depending on the level of surrounding ambient activity (e.g., if the Project Site is adjacent to a road or community development) and if an obstruction, such as a building structure, is within line-of-sight between the nest and construction. For bird species that are federally- and/or State-listed sensitive species (i.e., fully protected, endangered, threatened, species of special concern), a Project representative, supported by the wildlife biologist, shall consult with the USFWS and/or the California Department of Fish and Wildlife (CDFW) regarding modifying nest buffers. The following measures shall be implemented based on their determination:

- If construction would occur outside of the no-disturbance buffer and is not likely to affect the active nest, the construction may proceed. However, the biologist shall be consulted to determine if changes in the location or magnitude of construction activities (e.g., blasting) could affect the nest. In this case, the following measure would apply:

- If construction may affect the active nest, the biologist and a Project representative shall consult with USFWS and/or CDFW, dependent on regulatory status, to develop alternative actions such as modifying construction, monitoring of the nest during construction, or removing or relocating active nests.

R. Any birds that begin nesting within the Project Site and survey buffers amid construction activities shall be assumed to be habituated to construction-related or similar noise and disturbance levels and minimum work exclusion zones of 25 feet shall be established around active nests in these cases.

S. A qualified wildlife biologist shall conduct pre-construction burrowing owl surveys within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed at known mammal burrows or areas with the potential for new mammal burrows, within 250 feet of the Project Site. Surveys shall be conducted between morning civil twilight and 10:00 AM or two hours before sunset until evening civil twilight to provide the highest detection probabilities.

T. If surveys identify evidence of western burrowing owls within 250 feet of the Project Site, the contractor shall:

- Establish a 250-foot exclusion zone around the occupied burrow or nest, as directed by the qualified biologist.
- Avoid the exclusion zone while the burrow is occupied.
- Not resume construction activities within the 250-foot zone until the Project representative provides written Notice to Proceed based on the recommendation of the qualified biologist.

U. If avoidance of occupied burrows is not feasible during the September 1 to January 31 non-breeding season, construction may occur within 250 feet of the overwintering burrows as long as the contractor's qualified biologist monitors the owls for at least 3 days prior to Project construction and during construction and finds no change in owl foraging behavior in response to construction activities. If there is any change in owl foraging behavior as a result of construction activities, activities shall cease within the 250-foot exclusion zone.

V. If destruction of occupied burrows is necessary, burrow exclusion can be conducted in accordance with the Staff Report on Burrowing Owl Mitigation.

8.2 Receiving Waters

The Project proponent or its contractor will develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that will specify BMPs to be installed prior to the commencement of construction to prevent construction sediments/pollutants from draining into on and off-site downstream receiving waters. The sedimentation control measures would include use of wildlife-friendly straw wattles (as described above), silt fencing, and other measures to keep de minimus fill from accidentally entering receiving waterways and storm drain systems. To ensure no impacts occur to aquatic resources and Federally listed fish species, construction BMPs will ensure that no sedimentation or pollution of downstream creeks/rivers occurs as a result of the proposed Project.

BMPs that will be incorporated into the proposed Project will include:

- The Tribe will apply for coverage under and comply with the NPDES General Construction Permit from the USEPA, for construction site runoff during the construction phase in compliance with the CWA. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared, implemented, and maintained throughout the construction phase of the development, consistent with the General Construction Permit requirements. The SWPPP prepared for the Project Site would include, but would not be limited to, the following BMPs to minimize storm water effects to water quality during construction.
    - Grading activities will be limited to the immediate area required for construction.

- Temporary erosion control measures (such as silt fences, fiber rolls, vegetated swales, a velocity dissipation structure, staked straw bales, temporary re-vegetation, rock bag dams, erosion control blankets, and sediment traps) will be employed for disturbed areas.
- Construction activities will be scheduled to minimize land disturbance during peak runoff periods.
- Disturbed areas will be paved or re-vegetated following construction activities.
- Construction area entrances and exits will be stabilized with large-diameter rock.
- A spill prevention and countermeasure plan will be developed that identifies proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used on site.
- Petroleum products will be stored, handled, used, and disposed of properly in accordance with provisions of the CWA (33 USC § 1251 to 1387).
- Construction materials, including topsoil and chemicals, will be stored, covered, and isolated to prevent runoff losses and contamination of surface and groundwater.
- Fuel and vehicle maintenance areas will be designed to control runoff.
- Sanitary facilities will be provided for construction workers.
- Disposal facilities will be provided for soil wastes, including excess asphalt during construction. Food-related trash will be stored in closed containers and removed from the site daily.
- Wheel wash or rumble strips and sweeping of paved surfaces will be used to remove any and all tracked soil.
- LID methods (e.g., bioswales) will be implemented that would help store, infiltrate, evaporate, and detain stormwater runoff.

- Should dewatering (the process of removing surface or ground water from a particular location) be needed during construction, extracted water would be treated in a proposed or temporary basin and/or be trucked out and disposed of consistent with stormwater regulations.
- During operation, internal roadways and parking areas will be subject to trash clean-up daily and swept weekly to prevent debris from entering the stormwater management system.

Implementation of these avoidance and minimization measures will ensure that the proposed Project does not adversely affect California red-legged frog, northwestern pond turtle and receiving waters.

9.0 CONCLUSION

This section provides a summary of potential project impacts to each species; see Section 6 and 7 above for a full discussion of potential impacts. Federally listed plant species that are known from the vicinity of the Project site require specialized habitats and substrates, such as wetlands, vernal pools, and mesic (i.e., wet, moist) grasslands, which do not occur on or immediately adjacent to the Project site. In addition, the Project site does not fall within USFWS-designated critical habitat for any Federally listed plant species (Figure 7). Accordingly, the proposed Project will not affect Federally listed plants. California tiger salamander has no potential to occur on the Project site due to the absence of suitable breeding, upland, and dispersal habitat, the lack of nearby occurrences, and the abundance of dispersal and migration barriers within and surrounding the site. Therefore, the proposed Project is anticipated to have no effect on CTS or its habitat, and USFWS designated critical habitat. The proposed project has been designed to avoid and minimize impacts to species and habitats within the Action Area.

Due to the absence of documented occurrences and suitable aquatic for northwestern pond turtle on and/or adjacent to the Project site, it is very unlikely this species would occur on the Project site; however, since Pruitt Creek could potentially be used as northwestern pond turtle dispersal or non-breeding aquatic habitat, the proposed Project could be regarded as a project that may affect, but is not likely to adversely affect northwestern pond turtle. As noted above, migration and dispersal of these species are typically limited to within 500 meters of suitable aquatic habitat. The proposed Project is more than 500 meters from permanent water. Adoption of AMMs as described above changes the determination to No Effect, in accordance communications with USFWS.

Due to the absence of documented occurrences and suitable breeding and upland habitat for California red-legged frog on and/or adjacent to the Project site, it is very unlikely this species would occur on the Project site; however, since Pruitt Creek could potentially be used as CRLF migration/dispersal or non-breeding aquatic habitat, the proposed Project could be regarded as a project that may affect, but is not likely to adversely affect California red-legged frog. Adoption of AMMs as described above changes the determination to No Effect, in accordance communications with USFWS after the 2022 BA.

All remaining Federally listed animal species known from the vicinity of the Project site require specialized habitats and substrates that do not occur on or immediately adjacent to the Project site.

10.0 REFERENCES

Austin, C.C., and H.B. Shaffer. 1992. Short-, Medium-, and Long-Term Repeatability of Locomotor Performance in the Tiger Salamander *Ambystoma californiense*. *Functional Ecology* 6: 145–153.

Baldwin, Bruce G., Douglas H. Goldman, David J. Keil, Robert W. Patterson, Thomas J. Rosatti, and Dieter H. Wilken, Eds. 2012. The Jepson Manual: Vascular Plants of California. Second Edition. Berkeley: University of California Press.

Bash, J. S. 1999. The Role of Wood in the Life Cycle of Western Pond Turtles (*Clemmys marmorata*). An unpublished report to ELWd Systems, a division of Forest Concepts LLC. 14pp.

Barry, S.J. and H.B. Shaffer. 1994. The Status of the California Tiger Salamander (*Ambystoma californiense*) at Lagunita: A 50-year Update. *Journal of Herpetology* 28(2): 159–164.

Bulger, John B., Norman J. Scott Jr., and Richard B. Seymour. 2003. Terrestrial Activity and Conservation of Adult California Red-Legged Frogs *Rana aurora draytonii* in Coastal Forests and Grasslands. Biological Conservation 110, no. 1 (March): 85–95. https://www.sciencedirect.com/science/article/abs/pii/S0006320702001799.

California Code of Regulations (CCR). 2022. Title 22, Social Security; Division 4, Environmental Health; Chapter 3, Water Recycling Criteria. Accessed September. https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I71B586C05B6111EC9451000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1.

California Department of Fish and Wildlife (CDFW). 2016. Complete List of Amphibian, Reptile, Bird and Mammal Species in California. May. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=87155.

California Natural Diversity Database (CNDDB). 2022a. Special Vascular Plants, Bryophytes, and Lichens List. Updated quarterly; July. State of California Natural Resources Agency, Department of Fish and Wildlife Biogeographic Data Branch. Sacramento, CA: California Department of Fish and Wildlife. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline.

California Natural Diversity Database (CNDDB). 2022b. Special Animals List. Updated quarterly; July. State of California Natural Resources Agency, Department of Fish and Wildlife Biogeographic Data Branch. Sacramento, CA: California Department of Fish and Wildlife. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline.

California Native Plant Society (CNPS). 2022. CNPS Rare Plant Inventory. Version v9-01 1.5. Accessed September. https://www.rareplants.cnps.org/.

Collins J.P., T.R. Jones, and H.J. Berna. 1988. Conservation and Management of Genetically Distinctive Populations: The Case of the Huachuca Tiger Salamander (*Ambystoma tigrinum stebbinsi* Lowe). In *Proceedings of the Symposium: Management of Amphibians, Reptiles, and Small Mammals in North America*, 45–53. Editors R.C. Szaro, K.E. Severson, and D.R. Patton. GTR-RM-166. Fort Collins, CO: USDA Forest Service Rocky Mountain Forest and Range Experiment Station.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineers Waterways Experiment Station. Vicksburg, MS. https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf.

Environmental Laboratory. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. Wetlands Regulatory Assistance Program. Vicksburg, MS: U.S. Army Engineer Research and Development Center. September. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf.

Environmental Science Associates (ESA). Dunn, Leanne (2021) Memorandum - Confidential Shiloh Road Project – NEPA Biological Constraints Analysis.

Fellers, G.M., and P.M. Kleeman. 2007. California Red-Legged Frog (*Rana draytonii*) Movement and Habitat Use: Implications for Conservation. *Journal of Herpetology* 41: 276–286.

Hayes, Marc P. and Mark R. Jennings. 1988. Habitat Correlates of Distribution of the California Red-Legged Frog (*Rana aurora draytonii*) and the Foothill Yellow-Legged Frog (*Rana boylii*): Implications for Management. In Management of Amphibians, Reptiles, and Small Mammals of North America, 144-158. Editors Robert C. Szaro, K.E. Severson, and D.R. Patton.

Heil, John. 2021. The Return of Red-Legged Frogs to Southern California. *Reptiles Magazine* online. April 23; accessed September 2022. https://reptilesmagazine.com/the-return-of-red-legged-frogs-to-southern-california/.

Holland, D. C. 1994. The Western Pond Turtle: Habitat and History. Final Report. Portland, OR: US Department of Energy, Bonneville Power Administration.

Holte, D. L. 1998. Nest Site Characteristics of the Western Pond Turtle, *Clemmys marmorata*, at Fern Ridge Reservoir, in West Central Oregon. A Master's Thesis, Oregon State University, Eugene, OR.:106pp.

North Coast Regional Water Quality Control Board (NCRWQCB). 2018. Water Quality Control Plan for the North Coast Region. North Coast Basin Plan. Santa Rosa, CA. https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/190204/Final%20Basin%20Plan_20180620_lmb.pdf.

Rathbun, G. B., N. Seipel, and D. Holland. 1992. Nesting Behavior and Movements of Western Pond Turtles. *Clemmys marmorata*. Southwest. Nat. 37(3):319-324.

Reese, D. A. 1996. Comparative Demography and Habitat use of Western Pond Turtles in Northern California: The Effects of Damming and Related Habitat Alterations. Unpublished. Ph.D. dissertation, University of California Berkeley, Berkeley, CA.

Reese, D. A., and H. H. Welsh, Jr. 1997. Use of Terrestrial Habitat by Western Pond Turtles, *Clemmys marmorata*: Implications for Management. Pp. 352-357. In J. Van Abbema (ed.), Conservation, Restoration, and Management of Tortoises and Turtles, An International Conference WCS Turtle Recovery Program and the New York Turtle and Tortoise Society, New York.

Santos, Nicholas R., Jacob V.E. Katz, Peter B. Moyle, and Joshua H. Viers. 2014. A Programmable

Information System for Management and Analysis of Aquatic Species Range Data in California. *Journal of Environmental Modelling and Software* 53 (March): 13–26. https://www.sciencedirect.com/science/article/abs/pii/S1364815213002673.

Sawyer John O., Todd Keeler-Wolf, and Julie M. Evens. 2009. A Manual of California Vegetation. Second edition. Sacramento, CA: California Native Plant Society. https://vegetation.cnps.org/.

Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. Status report: the California tiger salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game. 36 pp. plus figures and tables.

Shaffer, H.B., G.B. Pauly, J.C. Oliver, and P.C. Trenham. 2004. The Molecular Phylogenetics of Endangerment: Cryptic Variation and Historical Phylogeography of the California Tiger Salamander, *Ambystoma californiense*. *Molecular Ecology* 13: 3033–3049.

Stebbins, Robert C., and Samuel M. McGinnis. 2012. A Field Guide to Amphibians and Reptiles of California. California Natural History Guides. Berkeley and Los Angeles, CA: University of California Press. https://books.google.com/books?id=gZ_hX7xifDMC&pg=PA518&lpg=PA518&dq=378377&source=bl&ots=GfREXsvXqI&sig=AcfU3U006s1ziR8V1LpkuQthkrOK3_WBVQ&hl=en&sa=X&ved=2ahUKEwjDxZbF_OjpAhVmJzQIHVxRCYUQ6AEwBXoECAsQAQ#v=onepage&q=378377&f=false.

Storer, T.I. 1925. A Synopsis of the Amphibia of California. University of California Publications in Zoology, Number 27, Berkeley, CA.

Storer, T. I. 1930. Notes on the Range and Life-History of the Pacific Fresh-Water Turtle, *Clemmys marmorata*. Univ. Calif. Publ. Zool. 32:429-441.

Tatarian, P.J. 2008. Movement Patterns of California Red-Legged Frogs (*Rana draytonii*) in an Inland California Environment. *Herpetological Conservation and Biology* 3(2):155–169.

Thomson, Robert C., Amber N. Wright, and H. Bradley Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Fish and Wildlife. Oakland, CA: University of California Press. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=189271.

Trenham, P.C., and H.B. Shaffer. 2005. Amphibian Upland Habitat Use and its Consequences for Population Viability. *Ecological Applications* 15: 1158–1168.

Twitty, V.C. 1941. Data on the Life History of *Ambystoma tigrinum californiense* Gray. *Copeia* 1941(1): 1–4.

U.S. Fish & Wildlife Service (USFWS). 2005. Final Santa Rosa Plain Conservation Strategy. Sacramento Office of the U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, North Coast Regional Water Quality

Control Board, County of Sonoma, Cities of Cotati, Rohnert Park, and Santa Rosa, Laguna de Santa Rosa Foundation. December 1.

U.S. Fish & Wildlife Service (USFWS). 2016. Recovery Plan for the Santa Rosa Plain: *Blennosperma bakeri* (Sonoma sunshine)*; Lasthenia burkei* (Burke's goldfields)*; Limnanthes vinculans* (Sebastopol meadowfoam); California Tiger Salamander Sonoma County Distinct Population Segment (*Ambystoma californiense*). Sacramento, CA: U.S. Fish and Wildlife Service, Pacific Southwest Region, Region 8. https://www.amphibians.org/wp-content/uploads/2019/04/USFWS-Recovery-Plan-for-the-Santa-Rosa-Plain.pdf.

U.S. Fish and Wildlife Service (USFWS). 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). Portland, OR: Region 1, U.S. Fish and Wildlife Service. https://www.amphibians.org/wp-content/uploads/2019/04/California-Red-legged-Frog-Recovery-Plan.pdf.

U.S. Fish and Wildlife Service (USFWS). 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). Sacramento, CA: Region 8, U.S. Fish and Wildlife Service. June 6. https://ecos.fws.gov/docs/recovery_plan/Signed%20Central%20CTS%20Recovery%20Plan.pdf.

U.S. Fish and Wildlife Service (USFWS). 2022a. IPaC: Information for Planning and Consultation Database. Accessed September 2022. https://ipac.ecosphere.fws.gov/. Project Code: 2022-0084810

U.S. Fish and Wildlife Service (USFWS). 2022b. USFWS Threatened & Endangered Species Active Critical Habitat Report. ECOS: Environmental Conservation Online System. Accessed September. http://ecos.fws.gov/crithab.

U.S. Fish and Wildlife Service (USFWS). 2022b. National Wetlands Inventory. Website at: http://www.fws.gov/wetlands

U.S. Fish and Wildlife Service (USFWS). 2024. IPaC: Information for Planning and Consultation Database. Accessed April 2024. https://ipac.ecosphere.fws.gov/. Project Code: 2024-0078123.

Zaragoza, G., J.P. Rose, K. Purcell, and B.D. Todd. 2015. Terrestrial Habitat use by Western Pond Turtles (*Actinemys marmorata*) in the Sierra Foothills. Journal of Herpetology, Vol. 49, No. 3, 437–441.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1988. California's Wildlife, Volume I: Amphibians and Reptiles. Sacramento, CA: State of California, The Resources Agency, Department of Fish and Game.

Table 3. Plant Species Observed at the Proposed Shiloh Resort and Casino Project Site

Scientific Name	Common Name	Family
Aesculus californica	California buckeye	Sapindaceae
Agapanthus africanus	African lily	Amarylidaceae
Anthemis cotula	stinking chamomile	Asteraceae
Arum italicum	Italian arum	Araceae
Avena barbata	slender oat	Poaceae
Avena fatua	wild oat	Poaceae
Brassica nigra	black mustard	Brassicaceae
Briza minor	little quaking grass	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft chess	Poaceae
Calandrinia menziesii	red maids	Montiaceae
Calendula arvensis	field marigold	Asteraceae
Cardamine hirstua	bittercress	Brassicaceae
Carduus pycnocephalus	Italian thistle	Asteraceae
Carex spp.	sedges	Cyperaceae
Cerastium glomeratum	mouse-ear chickweed	Monitaceae
Chlorogalum pomeridianum	soap plant	Agavaceae
Claytonia perfoliate	miner's lettuce	Montiaceae
Cotoneaster sp.	cotoneaster	Rosaceae
Cyperus eragrostis	tall flatsedge	Cyperaceae
Elymus sp.	wild rye	Poaceae
Erodium botrys	cranesbill	Geraniaceae
Erodium cicutarium	redstem filaree	Geraniaceae
Eucalyptus globulus	blue gum	Myrtaceae
Festuca myuros	six-weeks fescue	Poaceae
Festuca perennis	Italian ryegrass	Poaceae
Fraxinus latifolia	Oregon ash	Fagaceae
Galium aparine	bedstraw	Rubiaceae
Genista monspessulana	French broom	Fabaceae
Geranium dissectum	cutleaf geranium	Geraniaceae
Geranium molle	dove's-foot geranium	Geraniaceae

Table 3. Plant Species Observed at the Proposed Shiloh Resort and Casino Project Site

Scientific Name	Common Name	Family
Geranium robertianum	Robert's geranium	Geraniaceae
Hedera helix	English ivy	Araliaceae
Hirschfeldia incana	shortpod mustard	Brassicaceae
Hordeum murinum	mousetail barley	Poaceae
Hypochaeris radicata	rough cat's-ears	Asteraceae
Juncus balticus	Baltic rush	Juncaceae
Juncus effusus	bog rush	Juncaceae
Juncus xiphioides	iris-leaf rush	Juncaceae
Lepidium nitidum	shining pepperweed	Brassicaceae
Lonicera hispidula	pink honeysuckle	Caprifoliaceae
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae
Malva parviflora	cheeseweed	Malvaceae
Medicago polymorpha	California burclover	Fabaceae
Narcissus pseudonarcissus	daffodil	Amaryllidaceae
Nasturtium officinale	watercress	Brassicaceae
Oxalis pes-caprae	Bermuda buttercup	Oxalidaceae
Pinus sp.	pine	Pinaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa annua	annual bluegrass	Poaceae
Polygonum aviculare	yard knotweed	Polygonaceae
Quercus agrifolia	coast live oak	Fagaceae
Quercus lobata	valley oak	Fagaceae
Ranunculus muricatus	spiny fruit buttercup	Ranunculaceae
Rubus armeniacus	Himalayan blackberry	Rosaceae
Rumex acetosella	sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Rumex pulcher	fiddle dock	Polygonaceae
Schoenoplectus pungens	three-square bulrush	Cyperaceae
Senecio vulgaris	common groundsel	Asteraceae
Stachys bullata	hedge nettle	Lamiaceae
Symphoricarpos mollis	creeping snowberry	Caprifoliaceae
Torilis arvensis	field hedge parsley	Apiaceae
Toxicodendron diversilobum	poison oak	Anacardiaceae
Trifolium spp.	clover	Fabaceae
Typha spp.	cattails	Typhaceae
Umbellularia californica	California bay laurel	Lauraceae

Table 3. Plant Species Observed at the Proposed Shiloh Resort and Casino Project Site

Scientific Name	Common Name	Family
Vicia sativa	common vetch	Fabaceae
Vinca major	periwinkle	Apocynaceae

Table 4. Wildlife Species Observed at the Proposed Shiloh Resort and Casino Project Site.

Scientific Name	Common Name
Junco hyemalis	dark-eyed junco
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Cathartes aura	turkey vulture
Sitta carolinensis	white-breasted nuthatch
Pseudacris sierra	Sierran treefrog (= Sierran chorus frog)

Appendix A

Project Design Plans

Source: Dale Partners

FIGURE 2.1-1

ALTERNATIVE A PROPOSED RESORT AND CASINO SITE PLAN

Appendix B

Information for Planning and Consultation (IPaC) Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 04/16/2024 23:43:12 UTC
Project Code: 2024-0078123
Project Name: Koi Nation Shiloh Resort Casino Site

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2024-0078123
Project Name: Koi Nation Shiloh Resort Casino Site
Project Type: Tribal Construction
Project Description: The Koi Nation purchased a 68-acre parcel at 222 East Shiloh Road in September 2021 and seeks approval from the BIA to take this land into trust. Development of this Project will occur at 222 East Shiloh Road and includes a Class III gaming facility, a five-story hotel, restaurants, a conference center, and a spa (Appendix A). The Koi Nation will build and operate the resort and casino under authority of the U.S. Indian Gaming Regulatory Act (IGRA). Development activities are restricted to the 68-acre property boundary. As currently designed, the proposed Project will result in ground disturbance to approximately 40 acres with the riparian corridor of Pruitt Creek and large portions of existing vineyard left undeveloped/unimpacted. Two clear-span creek crossings are proposed as part of the Project.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.5234785,-122.77361066447865,14z

Counties: Sonoma County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

REPTILES

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Many-flowered Navarretia *Navarretia leucocephala ssp. plieantha* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2491	Endangered
Sebastopol Meadowfoam *Limnanthes vinculans* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/404	Endangered
Sonoma Sunshine *Blennosperma bakeri*	Endangered

NAME STATUS

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1260

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

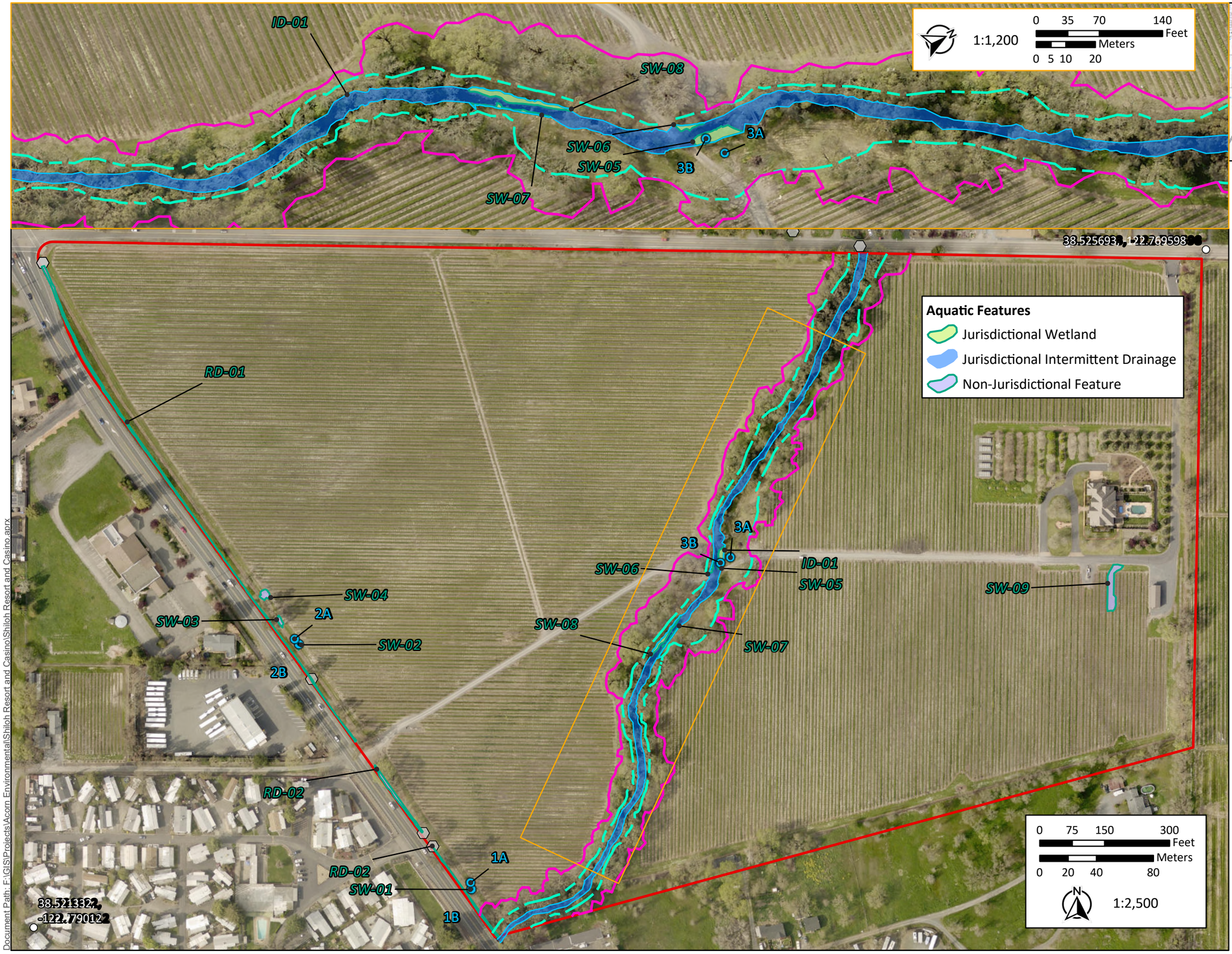
Agency: Private Entity
Name: Brett Hanshew
Address: 2110 K Street, Suite ll
City: Sacramento
State: CA
Zip: 95816
Email bahanshew@gmail.com
Phone: 5308484925

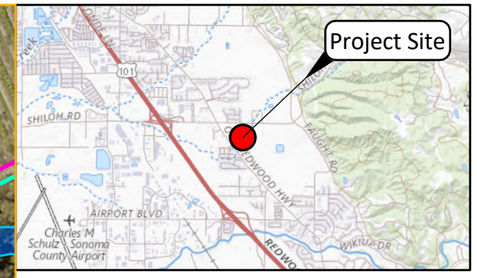
LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Indian Affairs

Appendix C

Aquatic Resources Delineation Map





Project Site

Culvert Opening

Sample Point

Ordinary High Water Mark

Top-of-Bank

Riparian Dripline

Table 1. Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
ID-01	28,200	0.648
SW-01	73.4	0.00169
SW-05	552	0.0127
SW-06	119	0.00272
SW-07	149	0.00341
SW-08	646	0.0148

Table 2. Non-Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
RD-01	3,110	0.0713
RD-02	1,470	0.0339
SW-02	165	0.00378
SW-03	193	0.00442
SW-04	404	0.00927
SW-09	1,780	0.0408

Author: AlexHirth
Date Exported: 12/12/2023
Coordinate System: NAD 1983 2011
StatePlane California II FIPS 0402 Ft US

Service Layer Credits: Pictometry International, Maxar, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

SEQUOIA Ecological Consulting, Inc.

Document Path: F:\GIS\Projects\Acorn Environmental\Shiloh Resort and Casino\Shiloh Resort and Casino.aprx

Appendix G-2

NMFS Biological Assessment

SEQUOIA
Ecological Consulting, Inc.

Biological Assessment
Proposed Shiloh Resort and Casino Project
Sonoma County, California

National Marine Fisheries Service Biological Assessment
for Listed Pacific Salmonids
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Submitted: July 29, 2022

Revised: April 13, 2024

Prepared for:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

Prepared on behalf of:

Acorn Environmental
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762

Prepared by:

Sequoia Ecological Consulting, Inc.
1342 Creekside Drive
Walnut Creek, CA 94596

CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

Sequoia Ecological Consulting, Inc. (Sequoia) has prepared this Biological Assessment (BA) and Essential Fish Habitat (EFH) Assessment on behalf of Acorn Environmental for the proposed Shiloh Resort and Casino Project (hereafter "the Project") located in the Larkfield-Wikiup area of unincorporated Sonoma County, California. The Koi Nation, owner of the Project site and one of California's Federally recognized Native American tribes, has applied to the U.S. Bureau of Indian Affairs (BIA) for a fee-to-trust land acquisition. The BIA's Proposed Action is to place approximately 68 acres of land into Federal trust.

This BA has been prepared to facilitate consultation between BIA and the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Federal Endangered Species Act (FESA; 16 U.S.C. 1536 [c]) and Section 305(b) of the Magnuson-Stevens Act (MSA; 16 U.S.C. 1855[B]). As this Project may affect Federally listed species, consultation with the NMFS pursuant to Section 7 of the FESA is required.

This BA discusses the physical impacts from construction of the proposed Project and the effects of these impacts on Federally listed species protected pursuant to the FESA as well as effects on EFH protected by the Magnuson-Stevens Fisheries Conservation Act. As detailed herein, the proposed Project would likely be regarded as a project that "may affect, but is not likely to adversely affect" the Federally threatened Chinook salmon (*Oncorhynchus tshawytcha*), California Coastal (CC) Evolutionarily Significant Unit (ESU); the Federally endangered coho salmon (*Oncorhynchus kisutch*), Central California Coast (CCC) ESU; and the Federally threatened steelhead (*Oncorhynchus mykiss irideus*), CCC Distinct Population Segment (DPS), the NMFS-designated Critical Habitat for steelhead CCC DPS, and EFH for Pacific Salmonids.

In this BA we provide: 1) a description of the habitats that occur on the Project site, 2) a list of the Federally listed species that have potential to occur on or near the Project site, 3) avoidance and minimization measures (AMMs) for potentially affected listed species that will be implemented to reduce impacts to these species to the greatest extent practicable, and 4) all other necessary information that the NMFS will need to complete FESA Section 7 and Magnuson-Stevens EFH consultations with BIA for the proposed Project.

1.1 Purpose of the Biological Assessment

The purpose of this document is to assess how the Proposed Action may impact listed anadromous fish, NMFS-designated Critical Habitat (National Oceanic and Atmospheric Administration [NOAA] 2005), and EFH. It discusses the physical impacts from construction of the proposed Project and the effects of these impacts on Federally listed species protected pursuant to the FESA. In addition, the information in this report is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species, designated and/or proposed Critical Habitat, and EFH by proposed Federal Actions. This document is prepared in accordance with legal requirements set forth under Section 7 of the FESA (16 U.S.C. 1536 [c]) and is

consistent with NMFS requirements. The species, critical habitats, and EFH considered for analysis in this document are discussed below.

1.2 Listed Species, Critical Habitat, and Essential Fish Habitat

1.2.1 National Marine Fisheries Service-Listed Species

Chinook salmon (*Oncorhynchus tshawytcha*), CC ESU, Threatened – **T**

Coho salmon (*Oncorhynchus kisutch*), CCC ESU, Endangered – **E**

Steelhead (*Oncorhynchus mykiss irideus*), CCC DPS, Threatened – **T**

1.2.2 Critical Habitat

The Proposed Action addressed within this document falls within Critical Habitat for steelhead CCC DPS. Critical Habitat for coho salmon CCC ESU and Chinook salmon CC ESU is located near the Proposed Action within the Russian River Basin. Critical Habitat for coho salmon CCC ESU is approximately .85 miles northwest of the Project boundary. Critical Habitat for Chinook salmon CC ESU is approximately 4.35 miles west of the Project boundary.

1.2.3 Essential Fish Habitat

The Proposed Action addressed within this document falls within EFH for Pacific salmon, specifically for Chinook and coho salmon within the Russian River watershed, as described in the 2014 final rule (FR) for EFH (NOAA 2014).

1.3 Consultation History

- December 15, 2023 – BIA provides Biological Assessment to NMFS for preliminary review
- February 9, 2024 – NMFS provides initial comments on Biological Assessment
- February 21, 2024 – NMFS, BIA, Acorn, and Sequoia meet to discuss NMFS comments
- April 13, 2024 – revised Biological Assessment prepared

2.0 PROJECT DESCRIPTION

2.1 Location and Setting

2.1.1 Project Location

The Project is located at 222 East Shiloh Road (Assessor's Parcel Number 059-300-003) in the Larkfield-Wikiup area of unincorporated Sonoma County near Windsor, California (Figures 1 and 2). The Project site is located east of U.S. Highway 101 (US-101) and west of Shiloh Ranch Regional Park at Latitude: 38.52389°, Longitude -122.77362° (Figure 1). The Project site is within the Healdsburg, CA

U.S. Geological Survey (USGS) 7.5-minute quadrangle and is bordered by Shiloh Road on the north, existing vineyards on the east, scattered residences on the south, and Old Redwood Highway on the west. Pruitt Creek, a fourth-order tributary in the Russian River watershed, flows south/southwest through the center of the Project site (Figure 2). The Project site is surrounded by residential development, agricultural fields, and community centers such as a park and a church. Project activities will occur within the approximately 68-acre parcel.

2.1.2 Regulatory Setting

Regulatory authority over biological resources is shared by Federal, state, and local agencies under a variety of laws, ordinances, regulations, and statutes. The Project is unique in that it will be developed on the Koi Nation sovereign land base, pending Federal approval. Land that is held for trust on behalf of tribes is subject to Federal and tribal law exclusively. Therefore, this Project does not fall under State or local jurisdiction. This BA is in support of National Environmental Policy Act (NEPA) compliance documentation for this Project.

2.2 Project Purpose and Background

The Koi Nation purchased a 68-acre parcel at 222 East Shiloh Road in September 2021 and seeks approval from the BIA to take this land into trust. Following the trust acquisition of the Project site, the Koi Nation proposes to develop a resort facility on the 68-acre parcel that includes a casino, hotel, ballroom/meeting space, event center, spa, and associated parking and infrastructure on the Project Site (Project). The resort would be open 24 hours a day, 7 days a week. It is anticipated that the event center would host concerts and performances while the ballrooms/meeting space would host banquets, conferences, or other special events. The Koi Nation will build and operate the resort and casino under authority of the U.S. Indian Gaming Regulatory Act (IGRA).

The parcel is approximately 12 miles from the Koi Nation tribal headquarters located in Santa Rosa, California. Development of this Project will promote the general welfare of the Koi Nation and raise governmental revenues. The Project will create jobs for members of the Koi Nation and the greater Sonoma County community.

2.3 Work Description

2.3.1 Project Footprint

The Project would develop a resort facility within the western portion of a 68-acre property boundary, and it would include a three-story casino (538,137 square feet), a parking area (1,689,380 square feet), and a five-story hotel (268,930 square feet) with spa and pool area, ballrooms/meeting space, and event center. The main facility, including the casino, hotel, and event center, would have a maximum height of approximately 65 feet above ground level. The architecture of the facility would incorporate natural materials and colors to integrate the buildings with the natural characteristics of the site and surrounding areas, including living rooftops landscaped with fire-resistant plants on both the casino-

resort and parking structures. A five-foot non-combustible zone would be maintained around each structure that would remain void of vegetation and landscaping.

Parking for the resort facility would be provided on the ground floor of the casino, as well as in a four-story parking garage and a parking lot on the eastern side of Pruitt Creek. The parking garage would have a maximum height of approximately 60 feet above ground level. The exterior lighting would be integrated into components of the architecture and would be strategically positioned to minimize off-site lighting and any direct site lines to the public. No lighting would be directed toward Pruitt Creek. The portions of the Project Site outside of the riparian area and building footprint would be landscaped with fire resistant plants, with existing vineyard areas maintained around the perimeter of the site.

An enclosed clear-span pedestrian bridge would connect the parking garage with the casino approximately 12 feet above Pruitt Creek. The pedestrian bridge would be constructed without disturbing the bed and bank of Pruitt Creek, and impacts to the riparian area will be minimized. A clear-span creek crossing over Pruitt Creek for vehicular access is proposed as part of the Project. Outfall structures for treated effluent discharge would be developed within the bed, bank, and riparian corridor of Pruitt Creek. Pipeline crossings between the water and wastewater treatment area and the casino will either be suspended from the proposed pedestrian bridge or vehicle bridge, or installed beneath the creek using horizontal directional drilling or other trenchless techniques. As currently designed, the proposed Project will result in ground disturbance to approximately 4,200 square feet within the riparian corridor of Pruitt Creek (Appendix A).

The Project Site currently contains approximately 59.3 acres of vineyards and development of the proposed Project would impact between approximately 42 and 53 acres of vineyards depending on the size and type of seasonal storage selected for treated effluent. Other supporting infrastructure, including the proposed water treatment and wastewater treatment facilities, would be located on the southeastern portion of the Project Site.

2.3.2 Site Preparation and Construction

Project construction will include installation of underground utilities and vertical construction of a five-story hotel and casino and a four-story parking garage, as well as the construction of concrete access roads, additional parking lots, and a swimming pool (Appendix A). To prepare the Project site for development, staging areas will be designated and appropriate best management practices (BMPs) installed for avoidance and minimization of Project-related impacts to sensitive resources (e.g., Pruitt Creek). The property will then be cleared, grubbed, and graded.

Work within and adjacent to the riparian area and Pruitt Creek will be limited to the two clear-span bridge crossings (one pedestrian, one vehicular), pipeline installation (either by directional drilling or other trenchless, or suspended from bridges), installation of an outfall to Pruitt Creek from the water treatment plant, and installation of a gauge in Pruitt Creek to calibrate allowable discharge flows. All specifics on these construction features are subject to final design and permitting.

To prevent contaminants from being discharged to Pruitt Creek, best management practices would include regular sweeping on streets and parking areas. Sweeping would occur weekly at a minimum during the operational phase. Bioswales will be created to treat 10-year storm events, including along Pruitt Creek near the south end of the Project site. A basin will be designed to detain differential at a 100-year storm volume. Landscaping and riparian planting will occur once construction is complete.

The Project Proponent considered phasing in of the surface parking lot; however, it is currently anticipated to be needed and development of the surface parking area provides a conservative assumption for assessing potential environmental impacts. During the preliminary design phase, engineering considered the option to direct more runoff to infiltration galleries or bioswales, as well as the use of permeable pavement. These options were not viable for the Project site due to a high groundwater table and poorly drained soils in portions of the site. These options would increase surface flow volumes and could result in localized ponding or flooding during storm events. The preliminary drainage plan as designed is consistent with County methodologies to treat/detain the differential in pre- and post- development flows.

2.3.3 Architecture, Signage, Lighting, and Landscaping

The architecture of the facility would incorporate natural materials and colors to integrate the buildings with the natural characteristics of the site and surrounding areas, including living rooftops landscaped with fire-resistant plants on both the casino-resort and parking structures. The main facility, including the casino, hotel, and event center, would have a maximum height of approximately 65 feet above ground level. The parking garage would have a maximum height of approximately 60 to 65 feet above ground level and would include a decorative, perforated metal screen around the exterior to provide shade to the interior of the parking garage and visual screening.

The portions of the Project Site outside of the riparian area and building footprint would be landscaped with fire resistant plants, with existing vineyard areas maintained around the perimeter of the site. The Project Site currently contains approximately 59.3 acres of vineyards and development of the Project would retain between approximately 12.4 and 17.4 acres of vineyards depending on the size and type of seasonal storage selected for treated effluent. A five-foot non-combustible zone would be maintained around each structure that would remain void of vegetation and landscaping. A short decorative rock wall would be installed along the northern and western perimeter of the Project Site to separate the vineyards from the roadways. Architectural renderings of this Project are provided in the EIS (Figures 2.1-2a and 2.1-2b).

A decorative ground-level sign would be incorporated into the rock wall at the northwestern corner of the Project Site near the intersection of Shiloh Road and Old Redwood Highway. Decorative ground-level monument/directional signs would be located at the entryways to the Project Site.

Exterior lighting of the proposed Project would be designed to be consistent with the Dark-Sky Association Model Lighting Ordinance, and internal lightening would be designed to be minimize interior spill light (see EIS: Appendix C and Table 2.1-3 for details). The exterior lighting of the proposed Project

would be integrated into components of the architecture and strategically positioned to minimize off-site lighting and any direct site lines to the public. No illumination would be directed towards Pruitt Creek or beyond the Project Site boundaries with the exception of the three access points, where light may extend to the mid-center of the adjacent roadways, Shiloh Road and Old Redwood Highway. The porte-cochere canopy will be made of a solid material to prevent upward illumination and help capture ground-reflected light. Lighting for the signs would be integrated into components of the sign or landscaping and would be strategically positioned to minimize off-site lighting and any direct site lines to the public. A "no lighting" buffer zone will be established around the Project Site perimeter, including the vineyard areas and Pruitt Creek.

2.3.4 Grading and Drainage

The existing topography of the Project Site is relatively flat, ranging in elevation from 135 feet to 160 feet above mean sea level, and generally slopes toward Pruitt Creek, which runs through the site. Construction would involve grading and excavation for building pads and parking lots. A Site Grading and Hydrology Study is included in Appendix D-3 of the EIS. As described therein, building finish floors were chosen approximately 1-2 feet above existing 500-year floodplain elevations associated with the creek. These range from 142 feet in elevation for the conference center, to 144 feet for the casino and parking structure, and 146 feet for the hotel. Although some vineyard areas would remain undisturbed, the roadway-adjacent vineyards are intended as decorative landscape areas. These areas are to be graded with slopes not to exceed 4:1. Parking lot and roadways are to be designed between 1 and 5% slope. The proposed grading concept accomplishes a near balanced site with less than 10,000 cubic yards of fill required to be imported. Cut areas include the WWTP and foundations of the structures. Fill would primarily be placed on the southwesterly portion of the Project Site near, and outside of, the 100-year and 500-year floodplain. Earthwork within the 100-year and 500-year floodplain would be balanced. Fill would be transported in accordance with applicable requirements from a source within 20 miles during normal construction hours (7 a.m. to 5 p.m.), and dust suppression BMPs would be used for roadways and trucks as discussed in Appendix E.

Although not required for tribal trust lands, the Sonoma County Water Agency Flood Management Design Manual (FMDM) was used for the design of the stormwater drainage system. Per FMDM standards, the stormwater drainage system under Alternative A would limit the post-development peak flow and stormwater volume to pre-development levels during a 100-year probability, 24-hour duration storm event. As shown on Figure 2.1-3 of the EIS, the proposed grading for the portion of the Project Site west of Pruitt Creek consists of three different sub-area watersheds.

The largest shed, Sub Area A (Figure 2.1-3 of the EIS), would collect runoff from vineyards, roadways, and building roof drainage and convey the flows to the decorative bioswale in the front entrance of the casino and then to a detention basin on the southwestern portion of the Project Site prior to discharging to Pruitt Creek. Sub Area B would collect runoff from roof drainage and some landscape/vineyards into a bioswale adjacent to Pruitt Creek. Sub Area C would also collect runoff from roof drainage and the loading dock area and convey the flows through a bioswale and then discharge into the creek. The

bioswale for Sub Area C is located within the flood zone of Pruitt Creek and therefore would be designed with an elevation at or above the floodplain elevation to allow for treatment of pollutants from the roof drains and service yard during a storm event. The proposed grading for the portion of the Project Site east of Pruitt Creek consists of four different sub-area watersheds. Sub Area D, E, and F would convey all drainage runoff from the parking, roadways, and landscape areas into bioswales and then discharge into the creek.

The bioswales would be sized per Sonoma County low impact development (LID) requirements for pollutant reduction. Storm drain outfalls to the creek would be designed with rock slope protection to prevent erosion of the natural creek banks and erosion downstream. Sub Area WWTP is the fourth sub area of the easterly watershed. Due to potential for sanitary sewer spill contamination of potential overflows, runoff in this area would be captured and conveyed to the WWTP for treatment and disposal as described in Section 2.3.6.

2.3.5 Groundwater and Water Quality

The estimated average daily water usage for the proposed Project is approximately 170,000 gallons per day (gpd) of potable water and 108,000 gpd of recycled water. Potable water supply would be provided via on-site wells, and recycled water (tertiary treated effluent) would be provided from the on-site wastewater treatment facilities. Recycled water would be used for toilet and urinal flushing, on-site landscape irrigation, on-site vineyard irrigation, and cooling tower makeup. Fire flow requirements for the proposed Project are anticipated to be 2,000 gallons per minute for 4 hours assuming the use of automatic fire sprinklers consistent with applicable requirements of the Tribe's Building and Safety Code of 2023, which are consistent with the California Building Code (CBC).

Water supply for the existing vineyards and residence on the Project Site is currently provided through four on-site wells; however, additional investigation is needed to determine if the existing wells would be suitable for use as potable water supply sources. Consistent with the CBC, the proposed water supply system for the proposed Project would consist of the following components:

- Water production wells: Up to two water supply wells would be established onsite, drilled to a depth of approximately 700 feet below ground.
- Water treatment plant: A water treatment plant would be located within an enclosed building. See Figures 5-1 and 5-2 of Appendix D.
- Storage tank: The tank would have an approximate diameter of 75 feet and height of 32 feet.
- Pump station: A potable water pump station would be used to convey potable water from the storage tank to the resort facilities.

The water treatment plant, storage tank, and pump station would be located within the "treatment area" designated in the eastern portion of the Project Site (Figure 2.1-1). The location of the four existing wells and potential location of a new well is shown on Figure 2-3 of Appendix D.

2.3.6 Wastewater Treatment

The regulatory, technical, and engineering issues associated with supplying water and handling wastewater have been evaluated for four different buildout alternatives. Impacts to federally listed species have been analyzed with respect to the most feasible alternative.

An on-site Wastewater Treatment Plant (WWTP) would treat wastewater from the resort and casino to a tertiary level, as defined by Title 22 of the California Code of Regulations. It would comply with the effluent quality requirements of the National Pollution Discharge Elimination System (NPDES) discharge permit issued by the U.S. Environmental Protection Agency (USEPA). Wastewater from the resort facilities would flow through sewer lines by gravity to a lift station. The gravity sewer main would be laid along planned roadways within the Project Site to facilitate access and maintenance. The gravity sewer main would be installed either beneath Pruitt Creek by horizontal directional drilling or other trenchless construction methods or over Pruitt Creek by attaching it to either the proposed pedestrian or vehicle bridge to avoid impacts to the creek and riparian corridor. Wastewater would then be pumped from the lift station wet well through a sewer pipeline to the headworks of the WWTP. The lift station wet well would also be used to collect surface water runoff from the treatment site. The WWTP would include a course screening facility, headworks, immersed membrane bioreactor (MBR) system, ultraviolet (UV) disinfection, chlorine disinfection, effluent pump station, equalization tank, emergency storage tank, and associated operations and storage buildings. Any water discharged to surface waters would be non-chlorinated or fully de-chlorinated prior to discharge. Excess effluent from the system that cannot be recycled for toilet flushing, cooling tower makeup, or vineyard irrigation would be disposed directly into Pruitt Creek and permitted by the NPDES. The water quality of the discharge will follow the requirements of the NPDES permit, the California Regional Water Quality Control Board's Water Quality Control Plan for the North Coast Region (Basin Plan; NCRWQCB 2018), and State Water Resources Control Board's Title 22 of California's Code of Regulations Related to Recycled Water (Title 22; SWRCB 2018). The EPA issued NPDES for the proposed Project would follow Clean Water Act (CWA) standards and comply with the effluent limitations adopted for the receiving water. The Receiving Water standards are based on the requirements per the NCRWQCB Basin Plan.

The nearest U.S. Geological Survey (USGS) gauging station #11466800 is located 5.5 miles downstream from the proposed Project. This gauge measures a contributing watershed area of 251 square miles while Pruitt Creek at the Old Redwood Highway contributes 2.1 square miles of flow, which is approximately 120 times smaller than the entire watershed area measured by the gauge. To account for this difference in expected stream flows, a gauge will be installed near the point of discharge in Pruitt Creek to measure discharge. For the purpose of this Biological Assessment and associated impact analysis, it is assumed as an Avoidance and Minimization Measure that no more than 1% of Pruitt Creek flow will be discharged to be consistent with NCRWQCB Basin Plan standards for receiving waters. The applicant assumes that they may be required to prepare a written proposal for monitoring flow in Pruitt Creek for the purpose of determining the effluent discharge rate allowable by the NPDES permit.

Recycled water from the on-site WWTP would be utilized for toilet/urinal flushing, landscape irrigation, vineyard irrigation, cooling tower make-up and other approved non-potable uses consistent with EPA and California Title 22 regulations. Additionally, recycled water could be utilized to supply water for fire protection, such as the sprinkler systems and fire hydrants. Water would be pumped from the recycled water storage tank to the recycled water distribution system and seasonal storage reservoir/tank. The on-site recycled water reuse facilities would be designed to comply with California State Water Resources Control Board standards including, but not limited to, marking irrigation facilities in a purple color and installing recycled water pipelines in separate trenches away from other water pipelines. Recycled water would be pumped out of the seasonal storage ponds/tanks to the irrigated areas for re-use. These pumps would operate seasonally, typically between April and October, and would be sized to convey the entire volume of recycled water stored in the seasonal storage ponds/tanks plus a portion of the daily summertime wastewater flows. The brine generated as a byproduct of the recycled water treatment would be periodically hauled offsite to a facility which accepts and treats such wastes, such as the East Bay Municipal Utility District WWTP. Under the maximum scenario for recycled water use, where no effluent is discharged to the creek, up to 44.8 acres of turf, or 406 acres of vineyards could be irrigated with recycled water produced as a result of the proposed Project; this level of irrigation would be achieved through both on and off-site irrigation. Treated effluent could also be disposed off-site consistent with existing Title 22 regulations for groundwater replenishment and surface water augmentation, and pending Title 22 regulations for potable reuse.

Discharge to Pruitt Creek during the wet season (approximately October 1 to May 14) would be subject to the requirements of an NPDES discharge permit issued by the USEPA, which would allow discharges to surface water in accordance with the federal Clean Water Act (CWA) and applicable provisions of the Water Quality Control Plan for the North Coast Region (Basin Plan). Facilities associated with the seasonal surface water discharge would include a new discharge pipeline and outfall structure. The outfall structure would be designed to prevent erosion of the natural creek banks and erosion downstream. The outfall pipe outlet would include a duckbill check valve or similar component to protect against settlement/silting inside the pipe or nesting of small animals or rodents. The area around the outfall pipe would be covered with riprap or similar material to prevent natural erosion around the pipe from occurring and to protect the banks during periods of discharge. The pipe material would be suitable for permanent exposure to sunlight and creek water quality conditions.

Seasonal storage ponds or tanks would be used to seasonally store treated effluent until it can be reused on-site or discharged to Pruitt Creek. The size of the storage facilities would vary depending on the availability of recycled water use areas. Seasonal storage pond(s) would be constructed using semi-buried ponds and berms and would be lined with an impermeable material, such as clay or concrete, to minimize percolation into the groundwater. Seasonal storage ponds would be located outside of the 100-year and 500-year floodplain and downgradient from any water supply well used for the proposed Project. Seasonal storage ponds would be sized according to the volume of disposal via irrigation and surface water discharge, as well as the remaining carry-over volume required from month to month.

2.4 Conservation Measures and Best Management Practices

Implementation of conservation measures and installation and maintenance of BMPs limit potential impacts of the proposed Project on Pacific salmonids, Critical Habitat, and EFH. These measures have been designed to help avoid and to minimize effects to listed species and their habitat while also addressing the purpose and need of the Project. Individual Pacific salmonids are not likely to be directly impacted by physical construction methods but may be indirectly affected if Project activities modify water quality parameters (e.g., increased temperature or turbidity, lowered dissolved oxygen) within Pruitt Creek.

Potential Project activities that could contribute to indirect effects include removal of riparian vegetation resulting in increased sun exposure, grading, and sediment transport from uplands to the waterway, and unintentional releases (spills) of hazardous materials to surface waters. BMPs employed before, during, and after construction will ensure that ground disturbance, alterations to vegetation, and unintentional spills from the development of this Project do not impact the quality of the aquatic habitat in Pruitt Creek. These Project-related impacts cannot be fully avoided; however, conservation measures listed in Appendix E of this document aim to directly reduce these impacts.

Once all potential effects to an individual, population, and/or Critical Habitat have been identified, additional conservation measures can be logically developed (Section 7: Avoidance and Minimization Measures). Most conservation measures are standard measures consistently requested by NMFS.

3.0 ANALYSIS METHODS

3.1 Background Research

Prior to preparation of this BA, Sequoia researched the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) database (USFWS 2022), the CalFish website (2022), the NMFS website (2022), and the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB 2022) for all recorded occurrences of Federally listed species known from the region of the proposed Project. The potential for species occurrence was determined based on the results of literature reviews, field-based habitat assessments, and GIS-based remote sensing.

Based upon queries of NMFS resources and the CNDDB (2022), three Federally listed fish species were identified to have the potential to occur within the vicinity of the proposed Project and are within the North-CCC Recovery Domain (Appendix B).

All Federally listed species records are compiled and discussed in Table 1. Sequoia examined all known record locations for special-status species to determine if Federally listed species could occur on the Project site or within an area of affect.

3.2 Site Assessment

Sequoia fisheries biologist Claire Buchanan conducted a survey on the Project site on February 23, 2022, to record biological resources and to assess the limits of areas potentially regulated by resource agencies. The survey involved assessing habitat within Pruitt Creek on the Project site and visual survey for Federally listed fish species. The habitat assessment was guided by the habitat requirements defined by EFH (Section 9.1) and the habitat features known to be used by the listed Pacific salmonids expected to occur on the Project site. This assessment informed the analysis of the direct and indirect effects of the proposed Project on listed Pacific salmonids and their habitat. Any special-status fish or suitable habitat was documented.

3.3 Wetland Delineation

A complete formal aquatic resources delineation was performed on the proposed Project site on February 23 and 24, 2022, by Ari Rogers of Sequoia. The purpose of the aquatic resource delineation was to determine the location and extent of potential state and/or federally jurisdictional aquatic resources on the Project site. All features exhibiting wetland characteristics were mapped within the Project site. The wetland delineation was conducted according to the U.S. Army Corps of Engineers' (USACE) Wetlands Delineation Manual (USACE 1987) in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and the State Water Resources Control Board's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (2019). A separate stand-alone report will be provided to water resource agencies for this aquatic resource delineation, as necessary. The current version of the aquatic resource delineation map of the Project site (dated October 31, 2023) is provided in Appendix C.

4.0 ENVIRONMENTAL BASELINE

4.1 Russian River Watershed

The Russian River Basin is rated as "poor" through NOAA's Conservation Action Plan process for the following conditions: habitat complexity, riparian vegetation, passage/migration, estuary/lagoon, velocity refugia, sediment transport, and water quality (turbidity). The watershed's measurements of sediment, temperature, and viability were identified as impaired. These conditions will need to be addressed to allow for the full recovery of anadromous fish species (NOAA 2016a). Historically, anadromous fish in the Russian River watershed have been declining due to a variety of natural and anthropogenic factors.

4.1.1 Geography and Climate

The Russian River is located in a tectonically active area, which occasionally causes unstable landscapes, landslides, and increased sediment into waterways. Additionally, the soil type is typically Franciscan Geologic Complex and alluvium, which naturally produces copious sand and gravel. Sedimentation is further compounded by high annual rainfalls following hot summers, which produce more unstable

soils. Recently, extreme wildland fires have occurred in the watershed, which potentially removed stabilizing vegetation and increased soil erosion, as well as increased sediment production via ash and debris. Oscillation in weather patterns such as El Niño locally affect ocean productivity, which may influence the size and health of salmonids returning inland to spawn. Variable weather conditions can also influence the creation and breakdown of sandbars, sometimes providing a physical barrier to migration and spawning.

4.1.2 Existing Terrestrial Habitat

Vineyards

The Project Site is predominately an active vineyard with ruderal (weedy) vegetation growing in between the grape rows. Vineyard infrastructure is also present including dirt roads, piping, propane tanks, a wash station, and electrical power poles. While the grape rows themselves are weeded and maintained, ruderal and annual vegetation grows between rows and around the vineyard perimeter; ruderal species are adapted to endure intense and/or long-term disturbance. Ruderal species observed within the Project Site include non-native annual grasses such as slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceous*), as well as stinking chamomile (*Anthemis cotula*), English plantain (*Plantago lanceolata*), California burclover (*Medicago polymorpha*), common vetch (*Vicia sativa*), and filaree species (*Erodium botrys, E. cicutarium*). This habitat type occupies approximately 59.3 acres of the Project Site.

Ornamental Landscaping

Landscaped vegetation consisting of ornamental trees and shrubs surround the private residence and other structures on the Project Site. There are olive trees and a variety of fruit trees on the north side of the private residence. Ruderal species occur between the landscape and orchard plantings. Large trees (primarily valley oaks [*Quercus lobata*]) line the property boundary. This habitat type occupies approximately 6.9 acres of the Project Site.

Riparian Corridor

The extent of the riparian corridor along Pruitt Creek is shown in Appendix C (see "Riparian Dripline") and averages approximately 150 feet wide. The riparian corridor ranges from approximately 100 feet wide to 180 feet wide nearly continuously throughout the Project area. Valley oaks dominate the riparian corridor with some smaller eucalyptus (*Eucalyptus* sp.) trees also present. Understory vegetation is composed of both native and non-native species of grasses and shrubs. The understory communities observed had distinct segments heavily dominated by native species alternating with areas dominated by non-native species. Some native species observed include California buckeye (*Aesculus californica*), California bay laurel (*Umbellularia californica*), willow (*Salix* sp.), poison oak (*Toxicodendron diversilobum*), valley oak, and coast live oak (*Quercus agrifolia*). Non-native species observed include Himalayan blackberry (*Rubus armeniacus*), eucalyptus, and black mustard (*Brassica nigra*), among others. There is a narrow buffer of non-native annual grassland between the riparian corridor and the

vineyards. This Riparian Corridor has the potential to serve as a wildlife corridor to species in the area. This habitat type occupies approximately 5.2 acres of the Project Site.

4.1.3 Existing Aquatic Habitat

Roadside Drainage Ditches

Roadside drainage ditches are man-made features that catch sheet flow or convey stormwater flows. Two Roadside drainage ditches were delineated on the western edge of the Project Site, along Old Redwood Highway (Appendix C). The northern roadside drainage ditch (RD-01) is approximately 1,305 feet long and the southern roadside drainage ditch (RD-02) is approximately 444 feet long. These ditches appeared to be excavated in uplands (rather than wetlands) and are not replacing any natural drainages or wetlands, nor did they appear to be fed by seeps or hydrologic sources other than direct precipitation and runoff from the roadside and Seasonal Wetlands. Based on conditions observed in the field and a review of the NWI, NHD, and USGS topographic maps, and other sources, the ditches are not natural tributaries to downstream traditionally navigable waters. The roadside drainage ditches were dry during the delineation and support a marginal bed and bank in some areas but are generally swale-like, as well as OHWM, including presence of leaf litter, matted or absent vegetation, and scour. Vegetation found in the ditches were characterized by a mix of hydrophytic species and ruderal and non-native annual species consistent with the adjacent uplands. These features are unlikely to be considered waters of the U.S. as they appear to fall within the category of "Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water," which are specifically excluded from USACE jurisdiction under current guidance.

Seasonal Wetlands

Seasonal wetlands are habitats that dry down in the summer and fall months, but generally in the rainy, winter months become saturated and inundated for several weeks to months. These areas often become dominated by hydrophytic plant species that are reliant and/or dependent on regular saturation or inundation. Four seasonal wetlands were delineated on the western edge of the Project Site, between the perimeter fencing along Old Redwood Highway and the grape arbors (Appendix C). While cover within these seasonal wetlands was dominated by bare ground and algal matting, the vegetation present consisted almost exclusively of hydrophytic species. Topographical trends and patterns in the land cover/vegetation indicate the seasonal wetlands are hydrologically connected to, if not a direct water source for the RD02 that flows along Old Redwood Highway into Pruitt Creek. Additionally, evaluation of upland soils indicates that the hydrology of the seasonal wetlands is at least partially influenced by irrigation associated with agricultural activities.

Based on current guidance and an analysis of field and background data, the seasonal wetlands do not directly abut "non-navigable tributaries of traditional navigable waters that are relatively permanent" but are hydrologically connected to such tributaries via the Roadside Drainage Ditches and may qualify as "wetlands adjacent to non-navigable tributaries that are not relatively permanent." Conversely, pursuant to CWA 33 CFR § 328.3 "artificially irrigated areas, including fields flooded for agricultural

production, that would revert to upland should application of irrigation water to that area cease" are considered non-jurisdictional. Furthermore, the effect of agricultural activities on the jurisdictional status of the seasonal wetlands may also be influenced by CWA 33 CFR § 323.4, which exempts "normal and established farming, silviculture and ranching activities such as plowing, seeding, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices" from USACE regulations and permitting. While these exemptions appear to be applicable to the seasonal wetlands, only the USACE can determine their pertinence and jurisdiction.

4.1.4 Disease and Predation

Anadromous fish in the Russian River Basin are threatened by diseases associated with diminished water quality, diseases brought by introduced non-native fish, and diseases concentrated in hatchery conditions. Predation is most impactful in degraded habitat, especially areas lacking deep pools, quality estuaries, and emergent vegetation. Invasive and native aquatic species including smallmouth bass (*Micropterus dolomieu*), striped bass (*Morone saxatilis*), channel catfish (*Ictalurus punctatus*), and the Sacramento pikeminnow (*Ptychocheilus grandis*) predate on young Chinook salmon in the Russian River Basin. Once in the ocean, salmon species are predated by marine mammals (NOAA 2016a).

While hatchery efforts have shown marked success in boosting steelhead and Chinook salmon populations, coho salmon populations may have been negatively impacted by hatchery efforts. Early hatchery operations in the Russian River propagated coho salmon fry from far northern populations that were adapted to cooler temperatures and less variable habitat conditions (NOAA 2016b, Brown et al. 1994). The subsequent hybrid population may have been less well-adapted to local conditions than the native coho salmon genetic stock. The effect on today's coho salmon is difficult to measure, but compared with other salmonids, coho salmon have overall low genetic variability (Brown et al. 1994).

In addition, hatchery practices may introduce and encourage growth of disease. Coho salmon stock brought from Oregon and Washington may have greater resistance to different diseases than the native population, and they may introduce parasites or viruses from these distant waterways. Diseases may transmit between hatchery and native stocks, causing a net loss in population.

Hatchery fish may also outcompete native wild-born coho salmon; hatchery fish enter the habitat larger than wild juveniles, and territorial behavior may prevent wild-born fish from using prime juvenile rearing habitat. These hatchery-born coho salmon may exhibit a larger body size, even as spawning adults, and they may outcompete native fish for prime spawning habitat (Brown et al. 1994).

4.1.5 Land Use

Agricultural practices frequently divert and channelize naturally occurring tributaries, which results in removing or severely altering salmonid spawning habitat. Even when channels are not altered, riparian vegetation is often removed to maximize agricultural output. This practice increases water temperatures, exacerbates bank erosion, encourages the invasion of non-native plants, decreases the

recruitment of large woody debris into watercourses, lowers the water table, reduces habitat diversity, and ultimately can lead to the drying of tributaries.

Grazing livestock may increase bank erosion due to trampling of the existing banks, which can also inhibit riparian vegetation. The presence of livestock near tributaries also increases animal waste into the streams, which in turn increases the level of nutrient loading and can cause algae growth and eutrophication. The subsequent decrease in dissolved oxygen levels in waterways makes streams unsuitable for salmonid use.

Historic floodplains and estuaries would have provided ideal juvenile rearing habitat for salmonids. Years of waters management, including diverting/straightening, and embanking of waterways for development and agriculture, have damaged or removed areas of prime habitat. Inundated floodplains are the most productive salmonid habitats because of plentiful prey (NOAA 2016a).

Early logging starting in the 1860s was characterized by intense timber harvest and milling activities. These early timber harvests clear-cut trees along slopes and delivered logs to mills by either dragging them downslope using oxen or floating the logs down larger streams. This practice cleared stabilizing vegetation from the slopes above waterways, causing massive erosion and subsequent sedimentation into streams. In addition, sawmills were built throughout California to process this timber. Sawmills often dumped sawdust and other material directly into adjacent waterways for disposal. From the 1870s through the 1920s, these practices were gradually outlawed or limited to control pollution. Unfortunately, early logging increased bank erosion and sedimentation in streams and the loss of riparian shade. Despite efforts to control these effects, the damage to anadromous fish spawning, rearing, and migration habitat was already done. In the 1950s, logging practices entered a new phase of destruction with the increased use of heavy machinery. The use of this machinery required the creation of roads throughout forests, and many of these roads were built without regard to their impacts on riparian resources, fish migration or erosion (NMFS 2012). These early practices contributed to the historic decline of salmonid species.

Today, large tree removal on slopes and banks above waterways can increase soil erosion by decreasing stabilizing vegetation and can cause direct input of sediment into watercourses. Removal of trees that provide riparian canopy cover can cause increased temperatures in streams. The natural level of large woody debris recruitment may also be reduced by logging practices, further reducing the quality of habitat for salmonids. Timber harvest typically involves heavy machinery and large-scale road construction. Poorly designed logging roads cause increased channel erosion and sedimentation into waterways as a result of inadequate culverts, poorly designed road edges, and plugged ditches. The resulting high sediment yields have impacted sediment transport and resulted in stream substrates unsuitable for salmonid spawning (NOAA 2016a).

4.1.6 Overharvesting

Historically, anadromous fish were commercially overharvested in the Russian River Basin beginning in the 1850s. In the early days of western fishing in the region, techniques were used that are now

recognized as encouraging overharvesting of a population, including netting migrating salmon, using salmon pitchforks, guiding migrating fish into fish wheels, and even using explosives. Many of these techniques had the potential to eliminate a significant portion of the breeding population in a single waterway (NMFS 2012).

Laws governing seasonal closures, area and gear restrictions, and bag limits attempt to address this impact today. However, indirect mortality from catch-and-release of undersized salmonids and bycatch is difficult to prevent. Data on incidental capture is not easily collected, and the degree to which current harvesting practices impact the species is not well known (NOAA 2016a).

4.1.7 Dams and Flood Control Measures

Dams dramatically alter the natural flow of water. Upstream side channels that naturally provide salmonid rearing habitat are lost when water flow is increased. Erosion control measures and stream diversions related to dam construction often involve covering slopes with rip rap rock material, which inhibits the natural meandering ability of the stream. This subsequently reduces the formation of off-channel sloughs and marshes; it also increases channel scour and inhibits growth of riparian successional vegetation.

4.1.8 Rural and Residential Development

Residential developments often introduce exotic plants that overtake native riparian vegetation. This can choke riparian corridors and reduce the natural recruitment of large woody debris into the waterways. Human development also increases the intensity of other impacts due to a greater need for land use. For example, increased development fuels an increase in demand for timber products and logging practices. As residences are established, the use of flood control measures becomes increasingly necessary for human safety. As a result, developed areas have increased levels of levee construction and channel diversions, which change the natural hydrologic processes that are essential for quality salmonid habitat.

Development is typically associated with paving of large swaths of land for parking lots, subdivisions, and shopping areas. This decreases infiltration—the absorption of rainfall into the ground—which may concentrate flows and increase downcutting in small tributaries and could wash away substrate in spawning streams.

4.2 Pruitt Creek

4.2.1 Topography and Climate

The Project site is located on a relatively flat parcel of agriculturally developed land. Elevation within the project area varies slightly and ranges from a high of 190 feet above mean sea level (MSL) to 125 feet MSL at the lowest point. The climate is temperate. Summers are warm and dry with average highs around 27.7 degrees Celsius (°C). Winters are mild with average highs ranging from 13.3 to 17.2°C and

lows ranging from 2.7 to 7.2°C. The average annual precipitation is approximately 36.28 inches falling primarily between November and March (U.S. Climate Data 2022).

4.2.2 Land Use

Regular use for agricultural and residential activities has established a 30-year disturbance regime for Pruitt Creek. Based on aerial imagery, the property was first developed for agriculture starting in 1993 (Google Earth Pro 2022). Before that, it was undeveloped, despite the presence of residential development along all of its edges with the exception of the property directly to the east which was developed for agriculture. By 2003, approximately one-third of the 68-acre parcel was developed into vineyards and in 2004 the remaining portions of the property were planted with vineyards. A private residence was constructed on the parcel, and associated roadways built. An in-creek road crossing was also constructed in 2004 as well as two pipes embedded in the creek banks that span the length of Pruitt Creek immediately upstream of the road crossing (Google Earth Pro 2022). The results of these disturbances include a washed-out portion of the creek at the legacy road crossing, litter within the riparian zone, and areas of trampling from vehicles and heavy foot traffic. The at grade legacy road crossing will not be utilized once the proposed Project is implemented.

4.2.3 Hydrology

Pruitt Creek enters the Project Site from the north via a box culvert underneath East Shiloh Road and flows approximately 1,790 feet to the southwest through the center of the Project Site, where it is bisected by a dirt low flow crossing (Appendix C). The creek encompasses approximately 0.644 acres of the Project Site. Pruitt Creek continues to the southwestern corner of the Project Site where it flows offsite through an adjacent property to the south and into a box culvert below Old Redwood Highway. Once offsite, Pruitt Creek eventually drains into Pool Creek, which flows into Windsor Creek, then into Mark West Creek, and finally into the Russian River. Pruitt Creek is mapped as “Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC)” and “Palustrine, Forested, Emergent, Persistent, Seasonally Flooded (PFO/EM1C) Freshwater Forested/Shrub Wetland” in the NWI.

Pruitt Creek flows southwesterly through the Project site and is a fourth-order tributary to the Russian River. Pruitt Creek terminates at Pool Creek which flows into Windsor Creek, then into Mark West Creek and finally into the Russian River. At the time of the February 2022 site visit, the creek was wetted throughout with connected, flowing water. Some areas along the banks were saturated but no defined drainages or inlets injecting water into the system were observed. Flow was minimal, less than 1 cubic foot per second, with indicators of a recent high flow event (leaf litter and riparian vegetation scattered throughout). The average width was 15 feet. The average depth was 8 inches with a maximum depth of approximately 16 inches and a minimum depth of less than 1 inch. Some of the deeper pools may hold water longer than the rest of the creek during dryer months but are likely to fully dry out by the end of the summer. Water temperature was 11.1°C. Water temperature was measured at 1,000 hours at a depth of approximately 5 inches and in the shade.

Pruitt Creek is mapped as "Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC)" and "Palustrine, Forested, Emergent, Persistent, Seasonally Flooded (PFO/EM1C) Freshwater Forested/Shrub Wetland" in the NWI (USFWS 2022; Figure 3). Intermittent drainages are natural tributaries to downstream traditional navigable water (either through direct discharge or culvert/storm drain networks) and support a bed, bank, and ordinary high-water mark (OHWM) but lack one or more wetland parameters. The ARD delineated Pruitt Creek as an intermittent drainage because: (1) the channel had pooled and flowing water that appeared to be the result of seasonal and recent rains and not perennial hydrology; (2) the channel had significant OHWM indicators such as natural line impressed on the bank, shelving, changes in soil character, presence of litter and debris, and matted and bent vegetation to indicate seasonal flow; and/or (3) background sources (the NWI, NHD, USGS topographic maps, and other sources) indicated seasonal flow. Environmental Science Associates (ESA) visited the Project site in May of 2021, during an extraordinary drought period, and found Pruitt Creek was entirely dry. Based on this observation and observations from Sequoia's February 2022 visit, it was confirmed that Pruitt Creek is an intermittent stream that likely flows from late fall to spring and begins to dry up by early summer and remains dry through the fall.

Although the aquatic resources delineation was performed during an extraordinary drought period, climatic fluctuations such as droughts are not uncommon in the Arid West, and the USACE "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)" addresses such issues in Chapter 5. Extended droughts (lasting more than one year) can impact vegetative characteristics observed and evidence of wetland hydrology while conducting a wetland delineation. Under extended drought conditions, broader ecological conditions must be taken into account through the investigation of previous documentation of the site during normal rainfall years and/or a comparison to a confirmed wetland reference location in the general area for presence of hydrophytic vegetation. During extended droughts, a common complication is identifying wetland hydrology indicators. Generally, if hydrophytic vegetation and hydric soils are confirmed but wetland hydrology indicators are not detected, the region is experiencing an extended drought, and there is no evidence of human water diversion activity (e.g., drainage ditches, dams, levees, water diversions, etc.), then the area may be identified as a wetland.

The hydrological patterns of Pruitt Creek can be further defined by analyzing the USGS Streamflow Data from the gauge at Mark West Creek near Mirabel Heights and just downstream from the confluence with Windsor Creek. This stream gauge is downstream of the Project site and hydrologically connected to Pruitt Creek. It can be inferred that Pruitt Creek has experienced flows historically similar to or less than Mark West Creek, as it is a third-order tributary. For example, on February 23, 2022, when the biologist was onsite, the Mark West Creek gauge registered at approximately 27.5 cubic feet per second (cfs); however, discharge on Pruitt Creek was estimated to be closer to 1 cfs.

Annual trends from streamflow data logged on Mark West Creek from 2012 to 2022 show that flow drops off significantly in June, hovers around 0 cfs for most of July, August, and September, and remains below 5 cfs until the end of October when it increases above 50 cfs following the initiation of seasonal rains. There is some variability of flow between the months of October and May, but generally flows

stay above 75 cfs in the late fall and winter. There are some indications of large, flash flow events; most notably in February of 2016 when flow reached 15,000 cfs.

This USGS data indicates that Pruitt Creek has a very low flow or is likely dry for almost six months of each year, and that it has the highest potential for connectivity from November to April (USGS 2022). Connectivity does not ensure that salmonids can access the creek as they have depth and flow thresholds that limit migration and movement within streams.

Incidentally, from December 2001 through July 2016, Sonoma County Water Agency (SCWA) monitored water temperature and presence of steelhead salmon in a section of Pruitt Creek which included the portion crossing the Project footprint (Church 2023). The monitoring site was located in a reach of Pruitt Creek that crosses Faught Road, southeast of Windsor California. They made observations on the upstream and downstream sides of Faught Road, including upstream to the creek culvert at Shiloh Ridge Road (approximately 450 linear feet of stream length). SCWA determined that Pruitt Creek is perennial in pools immediately downstream of Faught Road and upstream of Faught Road approximately 0.5 miles as observed. Pruitt Creek transitions to an intermittent and ephemeral stream approximately 100 feet downstream of Faught Road during the dry season. Based on SCWA's assessment, Pruitt Creek transitions from intermittent to perennial less than one mile from the proposed Project's northern boundary.

Based on current guidance, Pruitt Creek would presumably qualify as "non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (typically three months)" and therefore fall under USACE jurisdiction.

4.2.3.1 Drainage and Flooding

The Project Site is divided into a western and eastern drainage shed by Pruitt Creek. Surface drainage in both sheds and Pruitt Creek generally sheet flows to the south-southwest. The western shed flows south-southwest toward Old Redwood Highway where roadside channels carry stormwater back southeast to meet Pruitt Creek at the southern boundary of the Project Site. The eastern shed also flows south-southwest toward Pruitt Creek at the southern boundary of the Project Site. Once offsite it drains through an adjacent property to the south and into a box culvert below Old Redwood Highway. Pruitt Creek drains to Pool Creek, which flows into Windsor Creek, then into Mark West Creek, and finally into the Russian River.

4.2.3.2 Groundwater

The following groundwater information is summarized from the Water and Wastewater Feasibility Study (Appendix D).

The Project Site overlies the Windsor Basin, which is part of the Santa Rosa Plain sub-basin, which is part of the larger Santa Rosa Valley Basin. The Santa Rosa Plain sub-basin covers approximately 800,000 acres and underlies the most populated areas of the County. The Windsor Basin is located in the

northern part of the Santa Rosa Plain sub-basin and is centered near the Town of Windsor. Additional information regarding the geologic units associated with aquifers in the groundwater basin is included in Appendix D.

The Santa Rosa Plain groundwater basin is monitored by the Groundwater Sustainability Agency, which recently updated its GSP in January of 2022 (Sonoma County Groundwater Sustainability Agency, 2022). The GSP indicates groundwater is typically a primary source for water supply for irrigated agriculture and a secondary source of supply for many municipal water purveyors (except California American Water Company's Larkfield District). As discussed in the GSP, long-term monitoring of the Santa Rosa Plain sub-basin since the 1970s and 1980s indicates relatively stable groundwater-level conditions over time in the northern portion of the sub-basin. The Project Site is not located in an area designated as critically overdrafted, overdrafted, or in an adjudicated area (Department of Water Resources, 2023; City of Santa Rosa, 2021).

Historically, groundwater has been used at the Project Site to support agricultural uses since the 1950s including orchards and cattle grazing. Based on historical aerial photographs, present-day vineyards appear to have been planted around the late 1990s. There are four existing on-site wells (shown on Figure 1-2 of Appendix D) with capacities ranging to over 600 gpm which provide groundwater to vineyards and the single-family residence on the Project Site. Well completion reports confirm that three of the existing wells were drilled between 1996 and 2002 (State of California, 1996; 1998; 2002).

The nearest, recent groundwater investigations have occurred at Esposti Park, just north of the Project Site. The Town of Windsor has an existing irrigation well and an inactive standby potable water supply well at Esposti Park. The wells are located approximately 250 feet north of the Project Site boundary. The Town is in the process of developing the inactive standby well into a potable water source. There are three wells serving mobile home development to the southwest of the Project. There are shallow, individual wells serving some of the residences north of the Project Site. Local domestic wells located within the vicinity of the Project Site are generally shallow with average depths of between 100 and 200 feet below ground surface (bgs).

There are several shallow wells located within the vicinity of the Project Site. It was noted during the pumping tests at the Esposti well that there was no decline in groundwater levels in the shallow zone (Esposti irrigation well and Mobile Home Estates well) indicating that pumping from the intermediate zone (greater than 380 feet bgs) does not generally affect water levels of wells in the shallow zone. Water level elevations in three shallow wells located south of the Project Site are monitored by the California Department of Water Resources and have been historically stable.

Groundwater quality in wells neighboring the Project Site commonly includes higher levels of iron, manganese, and arsenic requiring treatment for elevated levels. Each of these constituents is found in higher-than-normal concentrations in certain areas of Sonoma County.

4.2.4 Habitat Features

4.2.4.1 Habitat Type

Approximately 1,800 feet of Pruitt Creek flows through the Project site. The upstream and downstream extents of this stretch of creek are marked by road crossings with culverts. Along the 1,800 feet of habitat assessed, some pool habitat was observed, comprising less than 15 percent. The remaining majority, 85 percent, was flat water (as defined by the *California Salmonid Stream Habitat Restoration Manual* [Flosi et al. 2010]). Pool depth and size were not sufficient holding habitat for adult salmonids. Flat water was less than 6 inches deep in most areas and was not conducive to salmonid movement or migration. Abundant shallow (depth less than 4 inches), slower-moving areas of refugia were present which could potentially accommodate juvenile salmonids.

4.2.4.2 Substrate

The substrate size classes present within Pruitt Creek are as follows: organics, silt or fine sediment, sand, gravel (0.8 to 2.5 inches), and cobble (2.5 to 10 inches). Silts and organics dominated the bottom cover of Pruitt Creek. Although some gravel and cobbles were present, it was almost entirely covered with silt and organics, especially when fully submerged in the creek. Where there are exposed or distinct creek banks, the sides of the creek channel are lined with sand. Cobbles are more common than gravel throughout.

4.2.4.3 Cover and Riparian Vegetation

Some large woody debris, root wads, and overhanging vegetation create instream cover within Pruitt Creek. Pool depths and water velocity were not large enough to provide sufficient cover for salmonids.

The variety of riparian vegetation along Pruitt Creek creates canopy cover and bank stabilization along the creek. The riparian vegetation consists of grasses, annual and perennial forbs, vines, shrubs, and trees. Valley oaks (*Quercus lobata*) dominate the overstory with some smaller eucalyptus (*Eucalyptus* sp.) trees; both provide canopy cover. Canopy cover was over 75 percent of the creek when the sun was overhead. The understory communities observed had distinct segments dominated heavily by native species alternating with areas dominated by non-native species.

4.2.4.4 Spawning and Rearing

Rearing habitat is limited on Pruitt Creek. Although some refugia existed in the creek in February, it is unlikely that this ideal rearing habitat exists during the late spring and summer when juvenile salmonids emerge. Characteristic spawning habitat preferred by CCC coho salmon, steelhead, and CC Chinook salmon is lacking. Riffles and more gravel-sized substrate as well as lower levels of sedimentation would make the habitat more ideal for spawning. Access to spawning habitat is also extremely limited by the hydrological period of Pruitt Creek coupled with the migration timing of Pacific salmonids.

4.2.4.5 Predation and Competition

Multiple Sierran treefrogs (*Pseudacris sierra*) were observed near the creek whose eggs and tadpoles could provide food for adult salmonids. Also, some benthic macroinvertebrates were observed in the organic substrate, but generally food availability and abundance were sparse. The limited access and likely utilization of this habitat reach greatly reduces the risk of overabundance and reduces the opportunity for competition. Based on the size and condition of Pruitt Creek and its potentially limited food sources, it likely has very low carrying capacity for Pacific salmonids.

5.0 STATUS OF SPECIES AND CRITICAL HABITAT

5.1 Steelhead – CCC; DPS

5.1.1 Status of the Species and Critical Habitat

Critical Habitat for CCC steelhead was first proposed in 1996, during a comprehensive status review of West Coast steelhead. On July 298, 1997, this ESU was listed as threatened. In 2004, resident (non-anadromous) populations of steelhead that were found in the same watersheds were included in the protected population group, because there is significant gene transfer between resident and anadromous populations (NOAA 2016c). At this time, the CCC steelhead was described as an ESU, under the definition that this population is substantially reproductively isolated from other populations, and it provides a significant component of the evolutionary legacy of the species. However, under the ESU definition, the stable resident rainbow trout and the declining anadromous steelhead trout were categorized as the same ESU, as the two populations interbreed. The population was recategorized using a different system of population designations to protect the anadromous portion of the population. The new DPS determination allowed NOAA to describe and protect geographically distinct populations of anadromous fish, without requiring the protection of resident rainbow trout populations. Thus, in 2006 the population of steelhead once described as the CCC steelhead ESU was recategorized as the CCC steelhead DPS (NOAA 2006, NOAA 2022).

The description and range of the CCC steelhead DPS is defined as “Naturally spawned anadromous *O. mykiss* (steelhead) originating below natural and manmade impassable barriers from the Russian River to and including Aptos Creek, and all drainages of San Francisco and San Pablo Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Also, steelhead from two artificial propagation programs: the Don Clausen Fish Hatchery Program, and the Kingfisher Flat Hatchery Program (Monterey Bay Salmon and Trout Project)” (NOAA 2006).

The Critical Habitat for all steelhead DPS were revised by NOAA on January 5, 2006 (NOAA 2006, Figure 4). The CCC steelhead DPS has mapped Critical Habitat along perennial waterways in Sonoma, Marin, Napa, San Francisco, San Mateo, Santa Cruz, Santa Clara, Alameda, Contra Costa, and Solano counties (NOAA 2006; NOAA 2016c). Critical Habitat overlaps the Project footprint in Pruitt Creek.

5.1.1.1 Species Description

Steelhead are not genetically distinct from rainbow trout; it is anadromy that differentiates them from rainbow trout. Rainbow trout remain in freshwater their entire lives while steelhead are born in freshwater rivers and migrate to the ocean to grow and only return to freshwater to spawn (CalFish 2022). The CCC DPS steelhead is divided into the same subspecies as the Klamath Mountains Province, South-Central California DPS, and Southern California DPS (*O. mykiss irideus*). However, the CCC DPS is differentiated by geographic range (CNDDB 2022).

Steelhead are generally silver in color, with pink cheek marks, green coloration on their backs, and light silver or yellow to white bellies. They have black spots on their adipose fin, dorsal fin, and back. The black spots on their tail often appear in radiating lines. Steelhead have an iridescent pink to red lateral line. Their teeth are well-developed, and the mouth is noticeably large with a powerful maxillary bone that extends to behind the eye. Individuals that spend more time in freshwater typically display a darker silver coloration and more closely resemble resident rainbow trout individuals. Juveniles exhibit similar coloration to adults, with the addition of 5 to 13 ovular par marks along their sides that are interspaced at a greater distance than the width of the par marks. Juveniles also have white to orange tips on the dorsal and anal fins, and exhibit few to no black spots on the tail (CalFish 2022). Adults can reach 55 pounds in weight and 45 inches in length (NOAA 2016d), although typical adults are 8 to 11 pounds and 14 to 25 inches in length (CalFish 2022).

5.1.1.2 Life History

Steelhead sexually mature from two to five years of age. Most adults spend about two years maturing in freshwater, and another two years maturing in the ocean. They spawn from December through April. While other anadromous fish often die after spawning, steelhead can survive spawning and can spawn repeatedly. Each female typically deposits 2,000 eggs per kilogram of body weight—up to 50,000 eggs for a larger female (CalFish 2022). Steelhead fry emerge from the gravel in the summer. The steep areas surrounding the flat spawning regions of rivers provide ideal juvenile rearing habitat when eggs hatch. Steelhead eat aquatic insects, crustaceans, zooplankton, fish, fish eggs, and amphibian eggs (NOAA 2016d).

Steelhead are divided into two categories based on their spawning strategies: summer-run and winter-run. Summer-run steelhead return from the ocean before they have reached sexual maturity and begin heading upstream to their spawning grounds. They travel far upstream, arriving at their spawning grounds to breed the following spring. Winter-run steelhead mature sexually while still in the ocean and head upstream to their spawning grounds in the winter. Winter-run steelhead have a much shorter migration from the ocean to their spawning grounds than summer-run steelhead (CalFish 2022).

5.1.1.3 Habitat Use

Steelhead require a minimum depth of 7 inches of water for adult migration from ocean to spawning habitat. Steelhead have been observed to be unable to traverse water at velocities exceeding 10 feet per second. Ideal water temperatures for migration range between 7.7 and 11.1°C.

The preferred spawning habitat for steelhead is cool, oxygenated water in small- to medium-sized rivers, and their medium-sized perennial tributaries. Spawning typically occurs at flat stretches of water from 6 to 24 inches in depth, where water velocities average 2 feet per second. Females choose spawning locations where stream substrate is composed of gravel that is small enough that they can bury their eggs, but large enough that the eggs remain oxygenated. Once the eggs are deposited, a male fertilizes them, and they are buried. Spawning water temperatures fluctuate from 3.9 to 11.1°C.

Fry and parr stay in waters less than 20 inches in depth, ranging in temperature from 7.2 to 15.6°C. Juvenile rearing habitat is composed of larger cobble substrate at a depth of 10 to 20 inches, typically in estuaries or at stream edges (CalFish 2022). Steelhead have the highest degree of variability in freshwater rearing of all Pacific salmonids—the juvenile freshwater rearing period for steelhead ranges from 1 to 4 years, and as parr grow, microhabitat use changes. Smaller fish occupy riffles, medium fish occupy runs, and larger fish occupy pools.

5.1.1.4 Range, Distribution, and Population Status

Steelhead are found from the California coast to the Kamchatka Peninsula in Russia and have been introduced worldwide (NOAA 2016d). While population trends have increased elsewhere, steelhead have consistently declined in the western United States: Of the 14 identified steelhead ESUs found in the western United States, 11 are listed as threatened or endangered (Garza et al. 2004).

Historically, nine separate populations of steelhead across two diversity strata have been present in the Russian River. These populations represented one of the most productive regions in the ESU, along with the San Francisco Bay tributaries (Bjorkstedt et al. 2005). Steelhead population levels in the eighteenth and early nineteenth centuries were not well documented, but for the first half of the twentieth century, the Russian River was known as the third most productive steelhead river in California. Despite the lack of historic data, the available information consistently suggests that steelhead abundance in the Russian River Basin has declined considerably from historic levels.

As far back as the 1800s, the Russian River Basin steelhead stock originated from a wide variety of sources and exhibited a naturally high degree of genetic diversity (Steiner Environmental Consulting 1996). Subsequent large-scale transfer of hatchery steelhead within the basin has since dramatically increased genetic diversity, and the degree to which this influence has altered the DPS is unclear (Bjorkstedt et al. 2005).

The Russian River Basin continues to support a widely distributed steelhead population, despite apparent declines in abundance (Bjorkstedt et al. 2005). Within the basin, steelhead have been extirpated in areas with barriers to upstream migration. These include the region upstream of Coyote Valley Dam, constructed in 1958, which blocks approximately 21 percent of the historical habitat of the Upper Russian River population. Additionally, the Warm Springs Dam closed the Dry Creek watershed to migration in 1983; this blocked approximately 56 percent of the Dry Creek population's historical habitat (Spence et al. 1996).

In contrast with other anadromous species in the region, aspects of the steelhead's unique life history have afforded the species resistance to extinction. However, the species' reliance on estuarine habitat for juvenile rearing has hindered its recovery. The portion of the population that rear in estuaries naturally have greater feeding resources and thus greater growth opportunities than their stream-rearing counterparts (Bond 2006; Hayes et al. 2006). Studies in juvenile movement have found that a significant portion of the Russian River steelhead population attempts to migrate toward the estuaries to rear and grow (Chase et al. 2007, Katz et al. 2011); however, rearing conditions in the Russian River estuaries are poor and juveniles have low survivorship in the estuaries. The combination of low quality upstream rearing habitat with poor rearing conditions in estuaries is likely the major cause of depressed population levels in the Russian River Basin.

5.1.2 Environmental Baseline

Steelhead historically ranged along the Pacific basin coastal waters and tributaries, from northern Mexico to the Kamchatka Peninsula in Russia. Pomo and Makahmo Indigenous People historically fished the tributaries of the Russian River and caught copious amounts of salmon and trout of unspecified species (Haran 2008). The area was sparsely settled by westerners until 1857, when the City of Healdsburg was established. Declines in trout and salmon populations were already apparent by the 1850s, and in 1852 California began passing a series of laws regulating the trout and salmon harvest season and harvesting techniques.

The Russian River population of CCC steelhead was historically the primary source for this DPS. However, historical sedimentation and pollution from agricultural runoff, timber harvesting practices, and water diversion projects severely degraded the spawning grounds for steelhead within the Russian River Basin. The basin could potentially provide a healthy source population again, supporting the recovery of the DPS. Additionally, the Russian River Basin is important geographically because it is physically large, it fosters a significant diversity of habitats, and it is the northernmost population of this DPS's range. Extirpation of the DPS in this region would cause a dramatic reduction in the population's known range. The Russian River Basin provides wet coastal as well as interior steelhead habitat, and the continued adaptation of steelhead to a diversity of habitats is vital to the species' survival.

Today, two steelhead hatchery programs are active within the DPS: the Don Clausen Fish Hatchery in Sonoma County, and the Kingfisher Flat Hatchery in Santa Cruz County (NOAA 2016d). Although hatcheries influence the genetics of other salmonids, analysis of steelhead genetics has shown that the population structure of steelhead trout in California has been unaffected by hatcheries and is primarily influenced by migration (Garza et al. 2004).

5.1.2.1 CNDDB Occurrences and Local Records

The nearest CNDDB occurrence for steelhead is outside of the 3-mile radius analyzed (CNDDB 2022, Figure 5. However, Pruitt Creek falls under the extant range determined by expert opinion provided through the PISCES database (2022).

The Sonoma County Water Agency (SCWA) actively monitors salmonids in the Russian River Basin using downstream migrant fish traps on the mainstem of the river and on some of the major tributaries. SCWA operates a fish trap on Mark West Creek located near its confluence with the Russian River. The location of this trap is hydrologically connected to Pruitt Creek which is approximately 9 river miles upstream. This trap is typically operated during salmonid out-migration from April to July or until flow becomes disconnected and is an effort to assess population trends of steelhead and salmon smolts. In 2016, the trap was operated from April 6 to June 23; 141 young-of-the-year (YOY) and parr, and 46 smolts, all CCC steelhead, were captured. The trap was removed in June due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020a). In 2017, the trap was operated from April 28 to June 20; 509 YOY and parr, and 150 smolts, all CCC steelhead, were captured. Operation of the trap ended due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020b). Comparing the number of juvenile steelhead captured in SCWA-operated traps in Mark West Creek from 2012 to 2017, numbers in 2017 were only slightly lower than the average over those six years. In 2021, SCWA reported that due to extreme dry winter conditions, the traps were not operated at all on Mark West Creek because of the lack of sufficient flow during the window they typically monitor migrating smolts (SCWA Technical Advisory Committee meeting June 7, 2021).

Between December 2001 and July 2016, SCWA monitored water temperature and steelhead occurrence within a reach of Pruitt Creek that crosses Faught Road, southeast of Windsor (Church 2023). Monitoring occurred at a minimum monthly and at most daily. Steelhead were observed in all years of monitoring except during the beginning of the effort in December 2001 and winter/spring 2002 due to high turbidity (and low visibility) from a failed culvert and earthen creek crossing upstream of the monitoring location which were subsequently removed. While the majority of observations included resident rainbow trout, adult anadromous steelhead were observed migrating upstream on two different occasions. The first observation occurred on February 3, 2008, and included one adult steelhead (approximately 18-20 inches in length) in a pool upstream of Faught Road but carried downstream to a pool below the Faught Road crossing (Church 2023). The second observation occurred on February 13, 2008, and included one adult steelhead (approximately 24 inches in length) under the Faught Road Bridge that also moved into the pool downstream of the crossing. This observation included a second smaller fish, approximately 10 to 12 inches in length (Church 2023). Adult steelhead were also observed in Pool Creek downstream of the confluence with Pruitt Creek in a pool underneath the pedestrian bridge at Windsor Golf Course. Two separate incidental undocumented observations of adult steelhead were made in the spring in the late 2000s or early 2010s.

5.1.2.2 Site-Specific Conditions

The hydrological period of the Pruitt Creek reach on the Project site is considered intermittent and ephemeral, and it is not ideal for consistent successful migration, spawning, and rearing. However, within a mile of the site Pruitt Creek transitions from an intermittent and ephemeral stream to perennial approximately 100 feet downstream of Faught Road. SCWA observed Pruitt Creek is perennial in pools immediately downstream of Faught Road and upstream of Faught Road for approximately 0.5 miles, which was the area within their monitoring purview (Chase 2023). Within the adjacent perennial reach

of Pruitt Creek, SCWA has observed salmon consistently from 2001 to 2016. Thus, the reach of Pruitt Creek on the Project-site likely provides suitable seasonal transitory habitat for salmonids in years with adequate rainfall when the hydrology and associated connectivity of the system align. However, the reach of Pruitt Creek on the Project site is not expected to provide suitable spawning or rearing habitat.

When salmonids are able to access the reach of Pruitt Creek within the Project site, the habitat is suitable but not ideal breeding habitat. There is instream cover and predation opportunities, but the habitat type is not diverse and is dominated by flat water with some pools. When flow is sufficient to sustain fish, the depth of the pools could temporarily accommodate adult salmonids. Temperature could be a limiting factor as the water diminishes and ambient temperatures seasonally increase.

Within the reach of Pruitt Creek that runs through the project area, ideal spawning substrate is minimal and riffle habitat types were not present. Water temperature was measured at the upper end of the salmonid spawning threshold, 11.1°C, although the measurement was taken at the very end of the spawning season for steelhead and just outside spawning season for salmon. Water temperature along with the lack of substrate and preferred habitat type all decrease the potential for spawning to occur in the project reach of Pruitt Creek.

Within a mile of the Project site, where Pruitt Creek is considered to be perennial, SCWA observed adult steelhead regularly during normal rainfall years (2001-2016), and therefore there is potential for steelhead to breed. SCWA's steelhead observations could be coupled with water temperature data to determine if water temperature regimes in Pruitt Creek (and similar sub-watersheds) are suitable for steelhead long-term survivability. However, this perennial portion of Pruitt Creek has not been conclusively assessed for breeding habitat suitability. It is worth noting that SCWA's observations suggest successful rainbow trout breeding in Pruitt Creek based on many sightings of resident rainbow trout of several age classes including fry and young of the year.

During typical rainfall years, the typical hydrological period in Pruitt Creek along the Project site reach could serve as a passage for adult steelhead to reach potentially suitable breeding pools, and/or for overwintering juvenile steelhead to seasonally move downstream during flowing conditions (SCWA, unconfirmed). However, juvenile salmonids cannot rear in the project reach of Pruitt Creek. The creek does not have sufficient flow to sustain incubation and rearing of juvenile populations of salmonids during the late spring and summer months. The portion of the creek within the vicinity of the project area is best classified as seasonally suitable movement habitat.

5.2 Coho Salmon – CCC; ESU

5.2.1 Status of the Species and Critical Habitat

The CCC ESU coho salmon was listed as threatened and Critical Habitat was established on May 5, 1999 (CalFish 2022; Figure 4). The species' Federal listing was changed from threatened to endangered status on June 28, 2005 (Olswang 2017), but the Critical Habitat was not changed. This Critical Habitat is defined as "accessible reaches of all rivers (including estuarine areas and tributaries) between Punta

Gorda and the San Lorenzo River (inclusive) in California, including two streams entering San Francisco Bay: Arroyo Corte Madera Del Presidio and Corte Madera Creek" (NOAA 1999). Inaccessible areas blocked by dams or other water projects are not considered part of the species' Critical Habitat. The nearest mapped Critical Habitat to the Project site is Pool Creek, which is located approximately 1 mile northwest.

5.2.1.1 Species Description

Adult coho salmon are generally silver in color, typically measuring 21 to 27 inches in length and weighing 6 to 13 pounds (Olswang 2017; CalFish 2022). Sexual dimorphism is apparent in spawning adults. Spawning males display a characteristic dark red on both sides, dark green to brown head and back, and gray to black belly. Most spawning males have an exaggerated hooked jaw and humped backs. Spawning females have similar but comparatively dull coloration, pink on their sides, and a slightly less hooked jaw. All adults have small black spots on the dorsal fin and upper caudal fin, with no spots on the lower portion of the caudal fin. They can be distinguished from other salmon by a white line on the upper area of the gums, at the base of the teeth. Juveniles, in contrast, are dusky gray or brown, and have 8 to 12 widely spaced parr marks on each side of their bodies. Juveniles have a speckled adipose fin, and their other fins are tinted orange. They can be distinguished from other salmonid juveniles by their comparatively large eyes and their anal fin, which is sickle shaped with a white leading edge (Olswang 2017).

5.2.1.2 Life History

Most adult coho salmon spend two years in the ocean before returning to their spawning ground. They begin their migration from the ocean in September through January, with spawning occurring from November through March. Female coho salmon select their desired redd (nest) site, dig a small oval depression in the gravel, and lay approximately 100 eggs, which the male fertilizes externally. The female then buries the first redd by digging another redd immediately upstream, from which loose gravel is deposed into the location of the first redd. The total number of eggs deposited varies based on the female's health and size; studies have found the number of eggs laid per individual ranges from 1,440 to 5,700 (CalFish 2022). Adults die shortly after spawning, although female coho salmon have been seen guarding their fertilized nests for up to 14 days before perishing (CalFish 2022).

Eggs incubate from November through April. Newly hatched coho salmon, called alevins, emerge after 38 to 48 days and remain under the gravel from March through July until their egg sacs are absorbed. After 2 to 10 weeks in this stage, juvenile coho salmon emerge from the gravel and begin to gather in large schools. Unlike other salmonid species, juveniles continue to inhabit freshwater streams for about a year, during which time they exhibit territorial behavior (Brown et al. 1994). After one year in fresh water, the juveniles migrate to the ocean starting in March and continue through July with peak migration from April through June (CalFish 2022). In the ocean, coho salmon congregate in large schools. They stay close to the shore and gradually migrate northward, while feeding on crustaceans, invertebrates, and fish.

5.2.1.3 Habitat Use

Coho salmon typically inhabit cool streams in coastal redwood and conifer forests (Bjorkstedt et al. 2005). The adults return from the ocean and migrate up short coastal streams after heavy rains when sandbars are cleared (CalFish 2022). Water depths below 7.1 inches prevent migration of adult coho salmon upstream. High turbidity and temperatures exceeding 16.1°C delay out-migration of coho salmon. They prefer to wait in upstream refugia rather than migrating to the ocean when conditions are not suitable. Large woody debris, pools, riparian vegetation, and undercut banks provide cover for migrating coho salmon (California Department of Fish and Game [CDFG] 2004).

Coho salmon need small streams (often mainstem tributaries) near the coast for spawning. Females prefer redd sites with turbulent flow near the head of a riffle, just below a pool. Like other anadromous fish, a medium-sized gravel substrate (approximately 6 inches in diameter) is required to protect eggs and alevins while also being large enough to allow for ample oxygenation and waste flushing (CalFish 2022, CDFG 2004). Ideal incubation habitat has water temperatures of 8.9 to 14.4°C, water flow between 2.9 and 3.4 cfs, stream depth between 3.9 and 13 inches, low sedimentation, and good circulation of oxygenated water (CDFG 2004).

CCC coho salmon are most frequently found in small coastal streams and tributaries of large rivers. Juveniles typically use low-gradient coastal streams, channels, alcoves, estuaries, beaver ponds, and slack waters, especially low-gradient alluvial channels with abundant pools and woody debris (CalFish 2022). In contrast to other salmonids, all coho salmon juveniles over-summer in fresh water. As a result, over-summering juvenile coho salmon are at extremely high risk of impact from habitat degradation: California waterways generally exhibit declining water quality and increased temperature in the summer as intermittent waters dry (Bjorkstedt et al. 2005).

Juvenile coho salmon need habitat with at least 80 percent riparian vegetative cover, less than 60 Nephelometric Turbidity Units (NTUs) of turbidity, water depths between 9 and 48 inches, water temperatures between 2.2 and 25.5°C, and water velocity between 0.16 feet/second (pools) and 1.51 feet/second (riffles) (CDFG 2004).

The survival of juvenile coho salmon is highly dependent on water temperatures. Individuals will not survive in water temperatures exceeding 21.7°C for an extended period of time (CalFish 2022). Frissell (1992) found that in Oregon, coho salmon densities decreased linearly as temperatures exceeded 17°C, and two studies in Northern California found that juvenile coho salmon did not persist when weekly average temperatures exceeded 18.3°C (Welsh et al. 2001, Hines and Ambrose 1998).

5.2.1.4 Range, Distribution, and Population Status

Coho salmon were historically abundant in coastal watersheds from the Oregon border through Santa Cruz County. North of Humboldt County, they are believed to only be present in two-thirds of their historic habitat (Olswang 2017). Coho salmon were once present in nearly all tributaries of the San Francisco Bay and most streams south of the Bay Area but are now extirpated from these waterways (Olswang 2017). In 1994, Brown et al. noted that the current coho salmon population in California was

estimated to be limited to only about 31,000 returning adults annually, 57 percent of which were born in a hatchery. Statewide, fewer than 5,000 native coho salmon individuals return to spawn that have no known hatchery ancestry; this represents 6 percent of the estimated population from the 1940s. Throughout the Pacific Northwest, coho salmon are considered extinct in the eastern half of their range, and in serious decline across their western range (Brown et al. 1994).

CCC coho salmon populations have dropped rapidly from their prolific abundance in the early 1800s to near extinction today within most of their range. Early logging and milling practices diverted water, dammed streams, increased temperatures, and deposited large quantities of sediment into coho salmon streams, making them unsuitable for habitation. This, combined with overfishing and mining practices, caused significant declines in coho salmon numbers that were apparent by 1880. In response, legislation was established to reduce overfishing and prevent stream pollution, and hatcheries began opening to propagate steelhead, coho, and Chinook salmon populations. However, coho salmon populations were not successfully increased by hatchery efforts until the mid-twentieth century.

An increase in gravel mining from rivers, urban development, and poor erosion control measures damaged and eliminated coho salmon spawning grounds. Additionally, physical barriers were introduced that blocked large portions of the historic range, including the Coyote Valley Dam, constructed in 1958, and the Warm Springs Dam, constructed in 1983 (Spence et al. 1996).

Studies of juvenile coho salmon migrating to the ocean found an 85 percent decline in population between 1975 and 1991. In 2009, only one coho salmon was observed in the Russian River Basin, and it was inadvertently killed by an angler (NMFS 2012).

Two distinct populations of CCC coho salmon were identified by Bjorkstedt et al. (2005); the northwestern portion of the Russian River Basin contains a small ephemeral coho salmon population that occupies tributaries of the Russian River, and the southern portion of the basin supports a large independent population that represents, historically, the largest and most dominant source population in the ESU. Pruitt Creek is in the range of the northwestern ephemeral population that relied on favorable conditions in the typically dryer, warmer tributaries of the Russian River to complete their life cycle.

5.2.2 Environmental Baseline

Historic abundance of coho salmon in the western United States is difficult to measure, as older records are unreliable and frequently do not distinguish between salmon species (NMFS 2012). In the 1930s, the Russian River was known for large coho salmon runs, which were “once a mainstay of California’s sport and commercial fisheries” (NMFS 2012, Moyle 2002). It has been suggested that the San Francisco Bay tributaries historically provided inconsistent quality habitat for coho salmon due to temperature and water quality, and the population was historically reliant on dispersal from coastal populations to persist (Bjorkstedt et al. 2005).

Today, coho salmon are restricted to a few tributaries in the lower watershed and rear only in isolated areas of suitable habitat (Spence et al. 1996). Historically, they represented a significant component of the Russian River Basin aquatic community, occupying many tributaries throughout the basin, and likely spawning in tributaries of the main stem (CDFG 2002). Since the 1800s, the large wetland area known as Laguna de Santa Rosa in the Mark West Creek watershed has gradually been destroyed by reclamation activities. This watershed likely provided historic rearing habitat.

In 2001, the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP) was initiated to re-establish self-sustaining runs of native coho salmon in streams within the Russian River watershed that historically supported them. This program implemented a two-tiered approach to coho salmon recovery by establishing a coho salmon hatchery at Don Clausen/Warm Springs and a continuous monitoring program at all life stages for coho salmon released from the hatcheries (Obedzinski et al. 2007). From 2009 through 2012, the program released 10,000 smolts into historic spawning grounds, and an estimated 173 adults returned (Fishpro and Entrix 2012).

Juvenile coho salmon in the Russian River Basin have measuredly declined in abundance and distribution in recent years (Conrad and White 2006). The RRCSCBP has confirmed the presence of wild juvenile coho salmon in 5 of 32 historic coho salmon streams in the basin (Brown et al. 1994). Similar studies in recent years have found coho salmon juveniles in only 3 of the 32 historic coho salmon streams, and only in intermittent years (Conrad and White 2006).

Recent analyses of coho salmon genetics in the Russian River tributaries suggest that the population has experienced an acute loss of genetic diversity in the basin. The results of genetic analyses are consistent with a population experiencing extremely reduced abundance, strong departures from genetic equilibrium, and recent severe population bottlenecks (Bjorkstedt et al. 2005).

The population of coho salmon in the Russian River Basin is likely trending toward extinction given their steep declines in abundance, lack of genetic diversity, and a fragmented distribution. The population has declined so rapidly that inbreeding and demographic instability will likely occur and lead to an even faster decline (Frankham et al. 2002). The Russian River Basin represents one-third of the CCC coho salmon ESU's entire range by area, and it is located in the center of the ESU's range. This ESU represents the southern extent of the species' range (NOAA 2016b).

Conservation of this regional population is considered essential for recovery of the entire species, which is why widespread coho salmon hatchery operations have existed in the Russian River since 2005. Although hatchery efforts initially resulted in few measurable improvements to the coho salmon population, hatcheries initiated experiments to vary the timing of juvenile release beginning in 2012. Early measurements of the subsequent improvements to coho salmon have been encouraging; counts of returning coho salmon in the 2014-2015 spawning year represented the largest yield since hatchery efforts began (NOAA 2016b).

5.2.2.1 CNDDB Occurrences and Local Records

According to CNDDB, the nearest known record of CCC coho salmon was documented in in 2015 in Mark West Creek, approximately 0.75 miles south of the southern edge of the Project site (Figure 5). This occurrence was mapped to include given detection locations and represents 1,051 smolts counted at a downstream trap near the confluence of Mark West and Windsor creeks from March 26 to June 8, 2015. This occurrence also represents 67 smolts observed during direct observation snorkel surveys that were conducted in July and August of 2015. No additional records of coho salmon are recorded on CNDDB within 3 miles of the Project site.

SCWA actively monitors salmonids in the Russian River Basin using downstream migrant fish traps on the mainstem of the river and on some of the major tributaries. SCWA operates a fish trap on Mark West Creek located near the confluence with the Russian River. The location of this trap is hydrologically connected to Pruitt Creek which is approximately nine river miles upstream. This trap is typically operated during salmonid out-migration from April to July or until flow becomes disconnected. It is an effort to assess population trends of steelhead and salmon smolts. In 2016, the trap was operated from April 6 to June 23, and 37 hatchery smolts, 16 smolts of unknown origin, and 5 wild YOY/parr—all CCC coho salmon—were detected at the trap. The trap was removed in June due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020a). Similarly, in 2017 the trap was operated from April 28 to June 20 and 1,065 hatchery smolts, 44 smolts of unknown origin, and 17 wild smolts, all CCC coho salmon, were detected at the trap. Operation of the trap ended due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020b).

Comparing the number of juvenile coho salmon captured in SCWA-operated traps in Mark West Creek from 2012 to 2017, numbers were the highest in 2013, followed by 2017. In 2021, SCWA reported that due to extreme dry winter conditions, the traps were not operated at all on Mark West Creek because of the lack of sufficient flow during the window they typically monitor migrating smolts (SCWA Technical Advisory Committee meeting June 7, 2021).

5.2.2.2 Site-Specific Conditions

Site-specific conditions are similar for all three Pacific salmonids. Refer to Section 5.1.2.2.

Coho salmon's specific life history requirements make them less adaptable to habitat degradation than other salmonids, especially regarding water quality and temperature. While other salmonids may migrate to the ocean before fully maturing, all coho salmon spend their first summer in freshwater streams, wetlands, and estuaries. Northern California streams are naturally subject to unpredictable changes in flow, which can cause quick jumps in temperature or loss of connectivity with mainstem rivers. Combined with juvenile coho salmon's susceptibility to high water temperatures, natural variability in Northern California waterways can threaten developing coho salmon. Human influences can exacerbate this effect: agricultural runoff can cause eutrophication and algae blooms, decreasing dissolved oxygen and increasing temperatures. Development, logging, and agriculture may result in

decrease/removal of emergent vegetation, reducing shade and increasing erosion into waterways, which in turn increases water temperatures and sedimentation.

5.3 Chinook Salmon – CC; ESU

5.3.1 Status of the Species and Critical Habitat

The CC ESU Chinook salmon was designated as a threatened species in 1999, with Critical Habitat designated the same year. In 2005, an addendum to the listing mandated that hatchery-born individuals are protected within this ESU. The ESU is defined as all accessible reaches south of the Klamath River to the Russian River, including seven artificial propagation programs, none of which occur within the Russian River Basin. The CC Chinook salmon Critical Habitat includes waterways in Sonoma, Mendocino, and Humboldt counties, and a few small tributaries of the Eel River that reach into Lake and Trinity counties (NOAA 2005). The closest Critical Habitat to the proposed work area is the Russian River (Figure 4).

5.3.1.1 Species Description

Chinook salmon are the largest Pacific salmonid, ranging from 20 to 99 pounds and 30 to 55 inches in length at adult size (CalFish 2022). Adults are typically blue green, with small black spots across the tail, and black gums along the base of the teeth. While in the ocean, they have silver sides. When returning to their spawning grounds, both sexes display small black spots on the back, dorsal fin, and tail, with olive brown to dark maroon blotches on their sides. Some minor sexual dimorphism is apparent during spawning; males have more hooked jaws, slightly humped backs, and are overall darker in color than females. Juvenile Chinook salmon have 6 to 12 parr marks spaced equal to or wider than the width of the marks, mostly extending below the lateral line. They can be differentiated from other juvenile anadromous fish because all their fins are clear except for the adipose fin, which is pigmented only at the upper edge, and the dorsal fin, which is spotted.

5.3.1.2 Life History

The CC Chinook salmon exhibit only fall-run migration patterns and are typical ocean-type salmon. The spring-run population is believed to be extirpated from the range of this ESU (Moyle et al. 2008). Adults typically return from the ocean to their spawning grounds from September through November. Spawning occurs soon after freshwater entry, starting in October and continuing through December. Each female deposits between 2,000 and 17,000 eggs, and adults die within a few days of spawning (Moyle et al. 2008).

In late winter through spring, alevin emerge from the gravel. Within a month of emerging, most juvenile Chinook salmon are large and strong enough to migrate downstream to deeper and faster waters where they feed opportunistically on small prey items, primarily insects, zooplankton, and other fish larvae during their gradual migration toward the ocean. They spend variable amounts of time growing from juvenile to adult size in transitional habitat such as estuaries, lagoons, and bays before entering the ocean. (Calfish 2022).

Once they enter the ocean, Chinook salmon prey primarily on crustaceans and smaller fish. Individuals often migrate northward along the coast and return to their spawning grounds after two to four years at sea (CalFish 2022).

5.3.1.3 Habitat Use

Ideal spawning habitat for Chinook salmon is similar to steelhead and coho salmon: clear, cool streams with high levels of dissolved oxygen and low sedimentation. Chinook salmon require relatively larger gravel and smaller cobble substrate compared to other salmon species (Santos et al. 2014). Spawning Chinook salmon are also particularly sensitive to low levels of dissolved oxygen and reduced water clarity (Moyle et al. 2008). Chinook salmon eggs develop best at temperatures of 5 to 13°C (Santos et al. 2014). Chinook salmon fries prefer water temperatures of 13 to 18°C for optimal growth rates; water temperatures greater than 24°C are lethal to juveniles (CalFish 2022).

After emerging from the gravel, juvenile Chinook salmon move to shallow stream margins with dense emergent vegetation. Juveniles are highly dependent on transitional habitats such as estuaries, lagoons, and bays where they grow into their adult size. Once in the ocean, Chinook salmon migrate northward along the California coast. They typically use ocean habitat ranging in depth from 65 to 150 feet and will seasonally travel to waters up to 330 feet in depth (CalFish 2022).

Chinook salmon adults migrating upstream often make use of pools with low water velocities to rest. These holding areas are typically bedrock-substrate pools containing overhanging ledges and pockets that provide cover (Calfish 2022).

5.3.1.4 Range, Distribution, and Population Status

Historical conditions of the Russian River provided substantial suitable habitat and likely supported a healthy population of fall-run Chinook salmon. Early accounts from local tribes in the Coyote Valley provide evidence that Chinook salmon were widely harvested prior to the construction of the Coyote Valley Dam in 1958 (Steiner Environmental Consulting [SEC] 1996). However, by the 1980s, Chinook salmon were considered nearly extirpated from the Russian River Basin (Cook 2008). Hatchery programs and fishing regulations introduced since that time have helped the population to rebound, though continued development and habitat degradation increasingly threaten the recovery of the population. The degree to which the population has recovered is unknown, as reliable data on Chinook salmon abundance in the Russian River Basin was not available until 2000 (Chase et al. 2007).

Over the last several years, data from the fish ladders at Mirabel Dam have indicated an increase in Chinook salmon abundance (Chase et al. 2007). Considering there are 548 stream miles of historic habitat in the basin, the current population is not considered stable (Bjorkstedt et al. 2005).

Genetic analysis of Chinook salmon in the Russian River indicates that they are not closely related to nearby populations of Chinook salmon found in the Eel River or the Central Valley. This could be an indication that the population evolved as a diverse group of coastal sub-populations. It could also be a result of widespread hatchery stocking beginning in the 1880s (Bjorkstedt et al. 2005, Chase et al. 2007).

The uncertain genetic origin of this population may mislead researchers conducting genetic analyses of the population's historic abundance. No compelling evidence of the decline of the Russian River population can be made from examining genetics alone. This analysis should be considered with caution because continued degradation of the species' habitat, including water diversion, confinement of the river channel, limited riparian vegetation, and increased sedimentation from roads, construction, and development, continue to threaten the recovery of the Russian River Chinook salmon.

The Russian River Basin is the southernmost extent of the CC Chinook salmon ESU range, and its extirpation from the region would constitute a substantial range restriction. The Russian River represents the largest watershed within the CC Chinook salmon ESU, and currently is believed to support the largest population within the ESU. As such, the Chinook salmon in the Russian River likely contribute a significant amount of genetic diversity to the ESU, and the conservation of this population of Chinook salmon is critical for the conservation of the population.

5.3.2 Environmental Baseline

The Russian River Chinook salmon population was not historically well documented, and no definitive records of the species are available prior to the first fish stocking effort in 1881 (Chase et al. 2007). All prior sources represented an unspecified salmon species. There is extensive historical record of large water projects throughout the Russian River Basin that diverted and impeded the flow of water since 1908. Extensive fish stocking programs of Chinook salmon from other watersheds beginning in the 1800s may have complicated genetic analyses of Chinook salmon populations in the area. Recent hatchery introduction of Chinook salmon from the Don Clausen Fish Hatchery has failed to result in a measurable increase in the adult population of Chinook salmon in the basin. SCWA conducted fish surveys starting in 2000 using improved survey techniques and found spawning salmon in 82 miles of the mainstem Russian River and Dry Creek (Chase et al. 2007).

This recent measured increase in Chinook salmon abundance is thought to have been a result of improved survey methods rather than a true reflection in population increase. SCWA determined that due to a lack of reliable historic data, the population of Chinook salmon in the Russian River Basin is impossible to determine prior to 2000. However, due to widespread destruction of habitat, the population has likely declined (Chase et al. 2007).

5.3.2.1 CNDDB Occurrences and Local Records

There are no recorded occurrences of the CC Chinook salmon in CNDDB within 3 miles of the Project site (Figure 5.). CNDDB data for CC Chinook salmon is limited and currently only exists in Northern California near the Eel River (CNDDB 2022).

SCWA's surveys of the Russian River from Healdsburg at Riverfront Park north to Ukiah found high Chinook salmon abundance and redds between 2002 and 2006. Throughout the watershed, 1,036 redds were observed in 2002, and 1,157 redds were counted in 2003. In 2006, however, only 603 were counted in the same watershed. The highest abundance of redds occurred at Dry Creek near Ukiah, and

the highest abundance of adults were counted at Mirabel Dam, approximately 1 mile upstream of the confluence of Mark West Creek and the Russian River. The small number of adults versus juveniles observed could have been caused by spawning occurring after surveys were conducted or outside of study areas; it may also be due to loss of fish to poaching and predation.

SCWA actively monitors salmonids in the Russian River Basin using downstream migrant fish traps on the mainstem of the river and on some of the major tributaries. They also operate a trap on Mark West Creek near its confluence with the Russian River. The location of this trap is hydrologically connected to Pruitt Creek which is approximately 9 river miles upstream. This trap is typically operated during salmonid out-migration from April to July or until flow becomes disconnected and is part of an effort to assess population trends of steelhead and salmon smolts.

In 2016, the trap was operated from April 6 to June 23 and 136 CC Chinook salmon smolts were detected. The trap was removed in June due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020a). Similarly, in 2017 the trap was operated from April 28 to June 20 and no CC Chinook salmon smolts were detected at the trap. Operation of the trap ended due to a large drop in the number of fish captured (Martini-Lamb and Manning 2020b). Relatively few CC Chinook salmon smolts were captured in tributaries of the Russian River in 2016 and 2017, with a sharp drop in 2017. In 2021, SCWA reported that due to extreme dry winter conditions the traps were not operated at all on Mark West Creek because of the lack of sufficient flow during the window they typically monitor migrating smolts (SCWA Technical Advisory Committee meeting June 7, 2021).

5.3.2.2 Site-specific Conditions

Site-specific conditions are similar for all three Pacific salmonids. Refer to Section 5.1.2.2.

6.0 EFFECTS OF THE PROJECT ON LISTED PACIFIC SALMONIDS AND CRITICAL HABITAT

6.1 Potential Effects to Terrestrial Habitats and Aquatic Features

Vineyards and Ornamental Landscaping

Development of the Proposed Project would impact between approximately 49 and 53 acres of vineyards and ornamental landscaping depending on the size and type of seasonal storage selected for treated effluent. Vineyards and ornamental landscaping are not considered critical or sensitive habitats; therefore, no significant impacts would occur to biological resources as a result of a reduction in vineyards and ornamental landscaping. Ornamental trees around the perimeter of the Project Site would be left in place, except for where the new accesses on Old Redwood Highway and Shiloh Road would be installed.

Intermittent Drainage (Pruitt Creek) and Riparian Corridor

As shown in Appendix A, the majority of the development would occur outside of the riparian corridor, with the exception of the enclosed clear-span pedestrian bridge connecting the parking garage with the casino approximately 12 feet above Pruitt Creek and a clear-span vehicle bridge on the southern portion of the Project Site. The two bridges would be constructed outside of the OHWM of Pruitt Creek and, therefore, would have no direct impacts to the intermittent drainage. The pedestrian bridge would not impact the riparian corridor at ground level but may involve cutting tree branches in the canopy. Depending on the final alignment, the clear-span vehicle bridge may require some tree removal and ground clearing within the riparian corridor. Additionally, the pipelines and outfall structures for treated effluent discharge and stormwater drainage would be developed within the riparian corridor and bed, bank, and channel of Pruitt Creek. Directional drilling or other trenchless construction methods would be used to install the pipelines for water and sewage beneath the Pruitt Creek to avoid impacts to the creek and riparian corridor.

The removal or alteration of riparian vegetation may lead to a loss of instream cover, loss of temperature regulation capacity, and a reduction of bank stabilization. A loss or reduction of instream cover could result in an increase in predation of salmonids. Removing shade along the riparian corridor may increase the temperature of the water. However, salmonids are anticipated to only occur in Pruitt Creek during the late fall, winter, and early spring when temperature stress is low and canopy cover has less effect on the temperature of the creek, during appropriate flow conditions. Once constructed, the clear-span bridges would provide additional shade to the creek, and cover from predation. In addition to providing shade and protection from predation, vegetation plays an important role in stabilizing the banks of a creek, and alteration to this vegetation could increase erosion and change the course of a stream. These effects have the potential to affect individual listed Pacific salmonids by degrading water quality and reducing the habitat suitability of Pruitt Creek. Wildlife movement would not be restricted, as the riparian corridor would remain unimpeded under the bridges and around the outfalls.

As described in Sections 2.1.4 of the Administrative Draft Environmental Impact Statement (EIS; Bureau of Indian Affairs 2024)**,** the outfall structures would be designed to prevent erosion of the natural creek banks and erosion downstream. The outfall pipe outlet would include a duckbill check valve or similar component to protect against settlement/silting inside the pipe or nesting of small animals or rodents. The area around the outfall pipe would be covered with riprap or similar material to prevent natural erosion around the pipe from occurring and to protect the banks during periods of discharge. The pipe material would be suitable for permanent exposure to sunlight and creek water quality conditions. Effects to water quality and fish habitat are further addressed under the heading of Special Status Fish Species below.

As described in Section 2.3.4 of this BA, the Tribe would comply with the NPDES General Construction Permit from the USEPA, for construction site runoff during the construction phase in compliance with the CWA. Mitigation measures included in Section 4 of the EIS (See Appendix E) would minimize construction impacts to Pruitt Creek by limiting ground disturbing activities, such as grading, clearing,

and excavation to between June 15 and October 15 when Pruitt Creek has little to no water flow, as well as requiring consultation with the USACE and USEPA regarding the need to obtain permits under Sections 404 and 401 of the CWA. Further, mitigation measures (Appendix E) would minimize potential impacts to the riparian corridor through minimizing the project footprint in those areas, installation of high-visibility fence to prevent incursion in the riparian corridor, and replanting of native trees and shrubs in any temporarily disturbed riparian areas.

With adherence to the conditions of applicable permits and implementation of BMPs in Table 2.1-3 of the EIS, and mitigation measures (Appendix E), the proposed Project would have a less than significant effect on Pruitt Creek and the riparian corridor.

6.2 Effects to Individual Listed Pacific Salmonids

Effects of the Proposed Action are anticipated to be similar for the three Federally listed Pacific salmonids and will come from potential changes in water quality and associated changes in downstream habitat suitability, as the reach of Pruitt Creek, particularly the section within the Project footprint, is generally poor-quality breeding habitat for all salmonids due to hydrological period and water quality parameters. Salmonids are sensitive to changes in water quality and temperature. They prefer a range from 7.2 to 14.4°C with adequate dissolved oxygen levels and low turbidity. Water quality can adversely affect salmonid growth and survival at all stages of their lifecycle. Water quality along with the hydroperiod can determine migration timing and spawning location, and the success of incubation, rearing and out-migration. Their resilience is highly limited by the quality and availability of their habitat.

The potential for Pacific salmonids to occur and use habitat in this far east portion of the Russian River Basin is temporally and physically limited. There is a low potential that CC Chinook salmon will occur in Pruitt Creek based on their current distribution and their patterns of migration. There is a moderate potential for CCC coho salmon and steelhead to occur in Pruitt Creek; however, consistent normal annual rainfall and associated increases in water flow and decreases in water temperature need to align with their migration event, particularly for steelhead which have a historical presence. Historic records exist (2001-2016) of anadromous adult steelhead occurring regularly within Pruitt Creek upstream of the Project site in years with adequate rainfall, viz., not during an extensive drought period; however, no evidence of breeding has been observed. Additionally, all higher-order tributaries to the Russian River connected to Pruitt Creek would need to have sufficient flow and provide uninhibited access to Pruitt Creek particularly to the upstream perennial reach adjacent to Faught Road.

The extent of potential indirect effects includes the portion of Pruitt Creek within the Project site as well as a small portion of the watershed downstream. Furthermore, potential effects of the proposed Project would be minimal, short-term, and localized. Thus, no effects to the environmental baseline of the Russian River Basin are anticipated.

6.2.1 Direct Effects

Water quality can be degraded during construction activities. There is a potential for an increase in soil erosion, suspended sediment load, turbidity, or direct introduction of harmful materials such as grease and oil. This can have a direct effect on salmonids by reducing water clarity for feeding visibility, clogging fish gills, introducing fine sediment to spawning beds, or introducing an environmental toxin (Bash, Berman, and Bolton 2001). Though there is potential for such direct effects during construction, industry recognized BMPs (refer to Section 0) and Mitigation Measures (Appendix E) will be implemented to manage construction on the Project site. After construction is complete, there is a potential for untreated storm water to reach Pruitt Creek if it flows over an impervious surface. This could have the same direct effects to the water quality in Pruitt Creek as discussed above. Bioswales will be created to treat stormwater on the Project site and help avoid water qualiy degradation in the creek. In addition, direct effects to listed Pacific salmonids can be avoided by limiting all activities with the likelihood to degrade water quality to a work window of June 15 through October 15, when Pruitt Creek is dry. During this time, salmonids would be absent from the section of Pruitt Creek bisecting the Project site; therefore, no direct effects to salmonids are anticipated as a result of the proposed Project.

Discharge of wastewater directly into Pruitt Creek from the on-site MBR treatment system could potentially decrease water quality. Water discharged into the creek could alter the temperature, hydrogen ion concentration (pH), and dissolved oxygen level. The current projected discharge volume would be greater than 1% of Pruitt Creek flow, which would degrade water conditions on site as well as impact the ability of salmonids to migrate through the site upstream or downstream. The turbidity could increase as well as the bacteria and toxicity content, and a temperature increase can have a direct effect on salmonids. Salmonid spawning, incubation, emergence, and maturation can all be affected by increasing water temperatures and consequently negatively affect the success of salmonid reproduction (Carter 2008). If temperatures are increased significantly and reach a lethal threshold for multiple days in a row, it can cause death for all life stages of salmonids. According to Carter (2008), the literature suggests that for steelhead adults migrating and holding as well as juveniles growing and rearing, the lethal temperature is 24°C and 20°C for spawning, incubation, and emergence. For Chinook and coho salmon adults migrating and holding as well as juveniles growing and rearing, the lethal temperature is 25°C and 20°C for spawning, incubation, and emergence.

Changes in the pH levels that sustain for extended periods of time in a freshwater system can have a direct effect on salmonids. Altered pH levels decrease activity levels, create stress responses, cause a decrease or absence of feeding, and can lead to a loss of physiological equilibrium. Altered pH levels can also be exacerbated by increases in water temperature (Wagner, Boasakowski, and Intelmann 1997). Reproduction and juvenile growth and rearing is affected by low levels of pH in a system (Jordahl and Benson 1987).

Dissolved oxygen at adequate levels is essential to survival, and alterations in dissolved oxygen can have direct effects on salmonids. Reduced levels of dissolved oxygen can negatively impact growth and maturation of salmonids at all life stages. High levels of dissolved oxygen can also cause disease and

death for salmonids (Carter 2008). As discussed above, increased turbidity can directly affect salmonids by reducing water clarity for feeding visibility, clogging fish gills, and introducing fine sediment to spawning beds (Bash, Berman, and Bolton 2001).

Though there is potential for direct effects from wastewater discharged into Pruitt Creek, these effects from the Project will be minimized, as the design of the MBR treatment system will implement the water quality and recycled water discharge requirements based on the EPA NPDES permit and those provided in the Basin Plan (NCRWQCB 2018) and Title 22 (SWRCB 2018). The Basin Plan recognizes the unique characteristics of the region (including the Russian River watershed) and how they relate to natural water quality beneficial uses and water quality issues. The Basin Plan specifically considers the North Coast Region streams and rivers, which support anadromous fisheries such as CCC coho, CC Chinook, and CCC steelhead and details how healthy fisheries and riparian ecosystems are integral to the continued success of these native fish populations. Pruitt Creek is part of the Mark West Hydrological Subarea, and beneficial uses include cold freshwater habitat and Spawning, Reproduction, and/or Early Development (SPWN) as defined in Chapter 2 of the Basin Plan. The wastewater discharge from the Project will meet all Basin Plan requirements for water quality for a designated cold freshwater habitat and spawning, reproduction, and/or early development. It will also consider the standards established in Title 22.

For water temperature, this means at no time or place shall the temperature be increased by more than 5°F above natural receiving water condition. If deemed necessary, a cooling mechanism will be integrated into the design to ensure that water is cooled before it is discharged into Pruitt Creek and meets the conditions required per the Basin Plan and Title 22. For turbidity, it will meet or exceed Title 22 standards of less than 0.2 NTU as well as the Basin Plan's requirement that it shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. The pH levels will be between 8.5 and 6.5.

The daily minimum objective for dissolved oxygen will be 9 milligrams per liter (mg/L) with a 7-day moving average objective of 11 mg/L. This is the average of each set of seven consecutive daily averages and represents the highest water quality requirements based on the SPWN designation for the Mark West Hydrological Subarea. Water quality objectives designed to protect SPWN-designated waters apply to reaches where spawning occurs and during the periods of time when spawning, egg incubation, and larval development occur or have historically occurred. For the North Coast Region, this period is between September 15 and June 4. Outside of that date range, the daily minimum objective for dissolved oxygen will be 6 mg/L with a 7-day moving average objective of 8 mg/L per the cold freshwater habitat requirement.

The bacteria content will meet or exceed the Title 22 standards of less than a most probable number (MPN) of 2.2 per 100 ml for coliform. It shall not be degraded beyond natural background levels according to the North Coast Region. Additives planned for use include chlorine, which would be added to water being reused in the toilets on site. Water would be dechlorinated before being discharged to

surface waters; therefore, no additives for the treated effluent will be discharged to Pruitt Creek. According to the Basin Plan, no biostimulatory substances may be discharged.

The timing of discharge will coincide with a specific threshold streamflow that must be present in Pruitt Creek. Discharge will occur only when there is sufficient flow to dilute the effluent, and it seasonally aligns with the natural low regime of the system both to minimize changes in water quality and to avoid altering migration or movement patterns of salmonids. The Basin Plan prohibits effluent discharges from wastewater treatment plants to some surface waters between May 15 and September 30 due to significant seasonal flow variations during the summer and winter months. Discharges during the wetter winter months (October 1 to May 14) must comply with the surface water rate discharge flow limitation. The wastewater discharged from the Project will be limited to discharging up to 1 percent of the measured flow at a gauge station that would be installed as part of Project compliance with NDPES at the point of discharge on Pruitt Creek. For example, this percentage is equal to 4.48 gallons per minute when Pruitt Creek is flowing at 1 cfs. This scenario minimizes any long-term or widely spread effects to water quality from direct discharge.

The implementation of these requirements coupled with water quality monitoring as an AMM will minimize the direct effects of discharge from the MBR treatment system into Pruitt Creek.

6.2.2 Indirect Effects

Removal or alteration of riparian vegetation may lead to a loss of instream cover, loss of temperature regulation capacity, and a reduction of bank stabilization. A loss or reduction of instream cover could result in an increase in predation. Removing shade along the riparian corridor may increase the temperature of the water. Vegetation plays an important role in stabilizing the banks of a creek, and alteration to this vegetation could increase erosion and change the course of a stream. These effects have the potential to indirectly affect individual listed Pacific salmonids by degrading water quality and reducing the habitat suitability of Pruitt Creek. Salmonids are anticipated to only occur during the late fall, winter, and early spring when temperature stress is low and canopy cover has less effect on the temperature of the creek, during appropriate flow conditions. These indirect effects will have an insignificant effect on individual salmonids with implemented BMPs coupled with the seasonality of the construction window.

Water quality changes in Pruitt Creek from MBR treatment system discharge could alter habitat characteristics that would indirectly affect salmonids. Injecting bacteria into the system could cause algal blooms that could decrease oxygen levels in the water, release toxins into the system, and decrease visibility. High water temperatures, pH changes, and increased turbidity all promote the growth of bacterial algal blooms (CDC 2022). Artificially increased temperatures from effluent may limit the geographic range of salmonids which could decrease opportunities for spawning, rearing, and/or migration. Increases in water temperatures can also increase salmonid susceptibility to disease (Carter 2008) making habitat less suitable for salmonids.

The planned gravity sewer main would be installed beneath the existing creek to reach a lift station and wastewater treatment plant (WWTP). Hydrofracture (i.e., frac out) during construction of the gravity sewer main could result in erosion, sedimentation, reduced water quality, and degraded riparian habitat. Directional drilling or other trenchless construction methods would be used to avoid impacts to the creek and riparian areas. Impacts would be minimized by limiting drilling and construction of the pipeline to the dry season. Wastewater would then be pumped from the lift station wet well through a sewer pipeline to the headworks of the WWTP.

These indirect effects from discharge will have an insignificant effect on individual salmonids with implemented requirements from the Basin Plan (NCRWQCB 2018) and Title 22 (SWRCB 2018) coupled with water quality monitoring required as an AMM.

6.3 Effects on Critical Habitat

The Proposed Action may have short-term and localized effects on designated CCC steelhead DPS Critical Habitat. With the implementation of the AMMs described in this BA, these potential direct and/or indirect effects would be reduced to an insignificant and discountable level.

6.4 Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area of the Federal action subject to consultation (50 CFR 402.02). Future Federal actions that are unrelated to the Proposed Action are not considered in these cumulative effects analysis because those actions would require separate consultation pursuant to Section 7 of the ESA.

Current, future, and reasonably foreseeable actions in the Project area that could affect listed salmonids, Critical Habitat, and EFH potentially affected by the proposed Project are discussed below:

- Development and the associated increase in surface area of impervious surfaces creates more sheet flow runoff after precipitation events. Runoff could discharge sediment and hazardous waste into Pruitt Creek and decrease the quality of habitat.
- Increase in human activity within the Project area creates more opportunity for disturbance within the creek and riparian corridor.
- Non-Federal activities that contribute to climate effects within the Project area must be considered. It is challenging to identify, qualify, or quantify the future environmental conditions caused by climate changes, but it is reasonably certain that indirect adverse effects can be expected for listed salmonids and their habitat.

Construction of the proposed project would contribute a minor amount to the cumulative loss of suitable aquatic habitat for CCC steelhead, CCC coho salmon, and CC Chinook salmon. With the implementation of the AMMs described in this BA, the Project's contribution to effects on listed fish would be reduced to a less than cumulatively considerable level.

6.5 Interrelated and Interdependent Activities

Interrelated and interdependent effects are effects that occur because of interrelated or interdependent activities. They can be direct or indirect effects. The construction of the proposed Project is an interrelated and interdependent activity to the proposed Federal action of placing land into Federal trust. The Project would not be constructed but for the transfer of land into a Federal trust.

7.0 AVOIDANCE AND MINIMIZATION MEASURES

The Project's EIS describes best management plans and mitigation measures to avoid impacts (Appendix E). BMPs include trash management and the development of a Stormwater Pollution Prevention Plan and a Spill Prevention and Response Plan. All wastewater discharge from the on-site MBR treatment system will follow requirements set forth in the EPA NPDES, Basin Plan (NCRWQCB 2018), and standards established in Title 22 (SWRCB 2018). This section provides AMMs that will protect and minimize impacts to Federally listed Pacific salmonid species that may be adversely affected by the proposed Project. These measures are an integral part of the Proposed Action and will be carried out by the Applicant. AMMs as part of this Project include:

The following AMMs from the EIS will be implemented to reduce potential impacts on listed salmonids:

A. Alterations to riparian vegetation shall be avoided to the maximum extent possible. The project footprint shall be established at the minimum size necessary to complete the work. Temporary setback areas shall be marked with fencing to protect the riparian zone and its function. Any disturbed riparian areas shall be replanted with native trees and shrubs. A restoration plan will be created to restore disturbed riparian areas and replanting will use native trees and shrubs.

B. A qualified biologist shall delineate an Environmentally Sensitive Area along Pruitt Creek. The contractor shall install high-visibility fence to prevent accidental incursion on the Environmentally Sensitive Area.

C. Staging areas, access routes, and total area of activity shall be limited to the minimum area necessary to achieve Project goals. Routes and boundaries shall be clearly marked and outside of the riparian area and create a buffer zone wide enough to support sediment and nutrient control and bank stabilization function.

The following AMMs shall be implemented to minimize or avoid potential impacts to wetlands, Waters of the U.S., and special-status species:

D. The wastewater discharged will flow through a gauge station that would be installed as part of Project compliance with NDPES. The gauge will be located at the point of project-related discharge on Pruitt Creek. No more than 1% of Pruitt Creek flow will be discharged to be consistent with NCRWQCB Basin Plan standards for receiving waters. A water quality monitoring protocol and schedule will be established to ensure that parameters are being met during discharge activities in Pruitt Creek.

E. Prior to the start of construction, wetlands and jurisdictional features shall be fenced, and excluded from activity. Fencing shall be located as far as feasible from the edge of wetlands and riparian habitats and installed prior to the dry season, after special-status species surveys have been conducted and prior to construction. The fencing shall remain in place until all construction activities on the site have been completed.

F. Ground disturbing activities, such as grading, clearing, and excavation, within 50 feet of any U.S. Army Corps of Engineers (USACE) jurisdictional features identified in the formal delineation process shall be conducted during the dry season (between June 15 and October 15) to minimize erosion. In the event of substantial, unseasonably high flow within Pruitt Creek on or after April 15, work shall be altered or stopped until flow ceases in the creek. Temporary stormwater Best Management Practices such as vegetative stabilization and linear sediment barriers shall be established between disturbed portions of the Project Site and Pruitt Creek to prevent sedimentation in the watercourse.

G. Staging areas shall be located away from the areas of aquatic habitat that are fenced off. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate facility. Stockpiles that are to remain on the site through the wet season shall be protected to prevent erosion (e.g. with tarps, silt fences, or straw bales). All storm runoff will be managed through an erosion control plan. Temporary erosion control measures should remain on the Project site until perennial or planted vegetation is established and functioning to minimize sediment discharged into the creek.

H. Standard precautions shall be employed by the construction contractor to prevent the accidental release of fuel, oil, lubricant, or other hazardous materials associated with construction activities into jurisdictional features. A contaminant program shall be developed and implemented in the event of release of hazardous materials.

I. If impacts to Waters of the U.S. and wetland habitat are unavoidable, a 404 permit and 401 Certification under the Clean Water Act shall be obtained from the USACE and U.S. Environmental Protection Agency (USEPA). Mitigation measures may include creation or restoration of wetland habitats either on site or at an appropriate off-site location, or the purchase of approved credits in a wetland mitigation bank approved by the USACE. Compensatory mitigation shall occur at a minimum of 1:1 ratio or as required by the USACE and USEPA.

J. Consultation with the National Oceanic and Atmospheric Administration Fisheries for impacts to fish and essential fish habitat shall be conducted in accordance with Section 7 of the federal Endangered Species Act (FESA) and Magnuson-Stevens Act and any requirements resulting from that consultation shall be adhered to.

8.0 CONCLUSION AND DETERMINATION

The proposed project has been designed to avoid and minimize impacts to species and habitats within the Action Area. This section provides a summary of potential project impacts to each species; see Section 6 above for a full discussion of potential impacts.

Following the analysis of the potential impacts that may result from the Proposed Action, a determination is made that the Proposed Action has a determination of "May Affect, Not Likely to Adversely Affect" the CCC steelhead – DPS, the CCC coho salmon – ESU, and the CC Chinook salmon ESU.

The Proposed Action may result in effects to the salmonids and their habitat in Pruitt Creek. Due to this finding of effect, the BIA is requesting initiation of formal consultation with NMFS, in accordance with Section 7 of the ESA.

To reduce these potential impacts to a level regarded as less than significant, appropriate construction measures and AMMs will be implemented prior to Project commencement and throughout the duration of Project-related activities. Implementation of the prescribed AMMs will ensure that the proposed Project does not adversely affect CCC steelhead – DPS, the CCC coho salmon – ESU, and the CC Chinook salmon ESU, CCC steelhead – DPS Critical Habitat, Pacific salmonid EFH, and downstream receiving waters.

In conclusion, the Applicant is requesting concurrence from the NMFS that the Project "may affect but is not likely to adversely affect" the CCC steelhead – DPS, the CCC coho salmon – ESU, the CC Chinook salmon ESU, CCC steelhead – DSP Critical Habitat, and Pacific salmonid EFH.

8.1 Determination

Based on the analysis provided in this document and the more than negligible probability of take of individual listed anadromous salmonids, the Proposed Action has the following determinations:

CCC Steelhead – DPS: "May Affect, Not Likely to Adversely Affect"

CCC Coho Salmon – ESU: "May Affect, Not Likely to Adversely Affect"

CC Chinook Salmon – ESU: "May Affect, Not Likely to Adversely Affect"

CCC Steelhead – DPS Critical Habitat: "May Affect, Not Likely to Adversely Affect"

EFH for Pacific Salmonids: "May Affect, Not Likely to Adversely Affect"

9.0 ESSENTIAL FISH HABITAT CONSULTATION

9.1 Overview of Essential Fish Habitat

The MSA established methods designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. The MSA requires Federal agencies to consult with NMFS on all Actions, or Proposed Actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (MSA Section 305(B)(2)). "Adverse effect" means any impact that reduces quality and/or quantity of EFH, and may include direct, indirect, site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of Actions (50 CFR 600.810).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA Section 3). For the purpose of interpreting this definition of EFH, "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. And "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Consultation under Section 305(b) of the MSA (16 U.S.C. 1855(B)) requires that:

"Federal agencies must consult with NMFS on all Actions, or Proposed Actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;"

NMFS shall provide conservation measure recommendations for any Federal or State activity that may adversely affect EFH; Federal agencies shall, within 30 days after receiving conservation measure recommendations from NMFS, provide a detailed response in writing to NMFS regarding the recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the recommendations of NMFS, the Federal agency shall explain its reason for not following the recommendations.

The MSA requires consultation for all Actions that may adversely affect EFH and does not distinguish between Actions within EFH and Actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must consider Actions that occur outside EFH, such as upstream and upslope activity, which may have an adverse effect on the EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of location.

9.2 Identification of EFH

EFH for the Pacific Coast Salmon Fishery means those waters and substrate necessary for salmon production needed to support a long-term sustainable fishery and salmon contributions to a healthy ecosystem. To achieve that level of production, EFH must include all those streams, lakes, ponds, wetlands, and other currently viable water bodies. It must also include most of the habitat historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassible barriers identified by Pacific Fisheries Management Council (PFMC 2014). Salmon EFH excludes areas upstream of longstanding naturally impassable barriers. In the estuarine and marine areas, salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone offshore of Washington, Oregon, and California, north of Point Conception.

9.3 Effect on Essential Fish Habitat

With the implementation of the measures outlined in Section 7.0, the effects to EFH in the Project area from the Proposed Action will be reduced to a less than significant level. The direct and indirect effects of this Project will not significantly reduce the available breeding and rearing habitat for Pacific salmonids and will not significantly reduce their likelihood of survival in the wild by reducing their population size, distribution, or reproduction.

10.0 REFERENCES

Bash J, C Berman, and S Bolton. 2001. Effects of Turbidity and Suspended Solids on Salmonids. Olympia, Washington: Washington State Department of Transportation. November. https://www.wsdot.wa.gov/research/reports/fullreports/526.1.pdf.

Bjorkstedt et al. 2005. An analysis of historical population structure of Evolutionarily Significant Units of Chinook salmon, coho salmon, and steelhead in the North-Central Coast Recovery Domain. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-SWFSC-382, La Jolla (CA).

Bond MH. 2006. Importance of estuarine rearing to central California steelhead (*Oncorhynchus mykiss*) growth and marine survival [master's thesis]. Santa Cruz (CA): University of California, Santa Cruz.

Brown LR, PB Moyle, RM Yoshiyama. 1994. Historical decline and current status of coho salmon in California. North American Journal of Fisheries Management. 14(2):237-261.

Bureau of Indian Affairs. 2024. Administrative Draft Environmental Impact Statement. Koi Nation of Northern California, Shiloh Resort and Casino Project, Sonoma County, California. Lead Agency: Bureau of Indian Affairs, Sacramento, California. April 2024.

CalFish. 2022. Calfish Species Pages. [accessed 2022 March]. Website: https://www.calfish.org/FisheriesManagement/SpeciesPages

California Department of Fish and Game (CDFG). 2002. Russian River Basin fisheries restoration plan, unpublished report. California Department of Fish and Game.

California Department of Fish and Game (CDFG). 2004. Recovery strategy for California coho salmon. Report to the California Fish and Game Commission. Sacramento (CA): California Department of Fish and Game, Native Anadromous Fish and Watershed Branch; [accessed 2022 March]. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=165447

California Natural Diversity Database (CNDDB). 2022. RareFind 5. Computer Printout for Special-Status Species Within a 3-Mile Radius of the Project Site. California Natural Heritage Division, California Department of Fish and Wildlife, Sacramento, CA.

Carter K. 2008. Effects of Temperature, Dissolved Oxygen/Total Dissolved Gas, Ammonia, and pH on Salmonids. Santa Rosa, California. North Coast Regional Water Quality Control Board. July. https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/klamath_river/100927/staff_report/16_Appendix4_WaterQualityEffectsonSalmonids.pdf.

Center for Disease Control and Prevention (CDC). 2022. Harmful Algal Bloom Associated Illness – Causes and Ecosystem Impacts; [Accessed 2022 July]. Website: https://www.cdc.gov/habs/environment.html

Chase SD, Manning DJ, Cook DG, White SK. 2007. Historic accounts, recent abundance, and current redistribution of threatened Chinook salmon in the Russian River, California. Sacramento (CA): California Department of Fish and Game.

Church, Jeff. 2023. Koi Nation Casino Environmental Assessment: Documentation of observations of steelhead salmon (*Oncorhynchus mykiss)* in Pruitt Creek, Windsor California. Sonoma County Water Agency. Date of Memorandum October 27, 2023.

Conrad JL, White B. 2006. Russian River coho salmon captive broodstock program broodstock management and progeny release 2005-2006 annual report to NOAA Fisheries. Geyserville (CA): Pacific States Marine Fisheries Commission/California Department of Fish and Game and Warm Springs Hatchery.

Cook D. 2008. Chinook salmon spawning study Russian River fall 2002-2007. Santa Rosa (CA): Sonoma County Water Agency.

Fishpro and Entrix, Inc. 2012. Hatchery and genetic management plans for Russian River fish production facilities: coho salmon and steelhead. Hatchery and genetic management plans. U.S. Army Corps of Engineers, National Marine Fisheries Service, and California Department of Fish and Game.

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey and B. Collins. 2010. California Salmonid Stream Habitat Restoration Manual. 4th Edition. Vol. 1. State of California Resources Agency. Department of Fish and Game. Inland Fisheries Division.

Frankham R, Ballou JD, Briscoe DA. 2002. Introduction to conservation genetics. Cambridge (GB): Cambridge University Press.

Frissell CA. 1992. Cumulative effects of land use on salmonid habitat on southwest Oregon streams [Ph.D. thesis]. Corvalis (OR): Oregon State University.

Garza JC, Hilbert-Horvath L, Anderson J, Williams T, Spence B, Fish H. 2004. Population structure and history of steelhead trout in California, NPAFC Technical Report No. 5.

Google Earth Pro. 2022. 3D map; [accessed 2022 March]. Website: http://www.google.com/earth/index.html

Haran M. 2008. The history of fishing in and around Healdsburg. Sebastopol (CA): Sonoma West Times and News, Sonoma West Publishers; [accessed 2022 March]. Website: www.sonomawest.com/healdsburg/news/the-history-of-fishing-in-and-around-healdsburg/article_2f65df89-7723-5362-a6bf-29d9d13b6ede.html

Hayes SA, Bond MH, Hanson CV, Freund EV, Anderson E, Amman AJ, MacFarlane RB. 2006. Steelhead growth patterns from egg to ocean entry in their native Southern Range. Santa Cruz (CA).

Hines DH, Ambrose JM. 1998. Evaluation of stream temperature thresholds based on coho salmon (*Oncorhynchus kisutch*) presence and absence in managed forest lands in coastal Mendocino County, California. Fort Bragg (CA): Georgia Pacific Corporation.

Jordahl, DM, and A Benson. 1987. "Effect of Low pH on Survival of Brook Trout Embryos and Yolk-Sac Larvae in West Virginia Streams." *Transactions of the American Fisheries Society* 116, no. 6 (November): 807-816. https://doi.org/10.1577/1548-8659(1987)116<807:EOLPOS>2.0.CO;2.

Katz J, Moyle PB, Quinones RM, Israel J, Purdy S. 2011. Impending extinction of salmon, steelhead, and trout (Salmonidae) in California.

Martini-Lamb, J. and Manning, D. J., editors. 2020a. Russian River Biological Opinion Status and Data Report Year 2017. Sonoma County Water Agency, Santa Rosa, CA. 401 p.

Martini-Lamb, J. and Manning, D.J., editors. 2020b. Russian River Biological Opinion status and data report year 2016. Sonoma County Water Agency, Santa Rosa, CA. 315 p.

Moyle PB. 2002. Inland fishes of California: revised and expanded. Berkeley (CA): University of California Press.

Moyle PB, Israel JA, Purdy SE. 2008. Salmon, steelhead, and trout in California: status of an emblematic fauna. Davis (CA): California Trout and Center for Watershed Sciences, UC Davis.

National Marine Fisheries Service (NMFS). 2012. Final recovery plan for Central California Coast coho salmon Evolutionarily Significant Unit. Santa Rosa (CA): National Marine Fisheries Services,

Southwest Region; [Accessed 2022 March]. Website: https://www.fisheries.noaa.gov/resource/document/recovery-plan-evolutionarily-significant-unit-central-california-coast-coho.

National Marine Fisheries Service (NMFS). 2022. West Coast Region. [accessed 2022 February]. Website: https://www.fisheries.noaa.gov/region/west-coast.

National Oceanic and Atmospheric Administration (NOAA) Fisheries. 1999. Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts coho salmon. Federal Register Vol. 64, No. 86, 24049-24062. [Accessed 2022 March]. https://www.fisheries.noaa.gov/action/designation-critical-habitat-central-california-coast-and-southern-oregon-northern.

National Oceanic and Atmospheric Administration (NOAA) Fisheries. 2005. Endangered and threatened species; designation of Critical Habitat for seven Evolutionarily Significant Units of Pacific salmon and steelhead in California. Federal Register Vol. 70, No. 170, 52488-52547. [Accessed 2022 February]. Website: https://www.fisheries.noaa.gov/action/designation-critical-habitat-7-evolutionarily-significant-units-pacific-salmon-and-steelhead.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2006. Endangered and threatened species: final listing determinations for 10 Distinct Population Segments of West Coast steelhead. Federal Register Vol. 71, No. 3, 834-862. [Accessed 2022 March]. Website: https://www.gpo.gov/fdsys/pkg/FR-2006-01-05/pdf/06-47.pdf#page=2.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2014. EFH Identification and descriptions for Pacific salmon. Federal Register Vol. 79, No. 243, 75450-75454. [Accessed 2022 February]

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2016a. Coastal multispecies plan volume II: California Coastal Chinook salmon. [Accessed 2022 March]. Website: https://media.fisheries.noaa.gov/dam-migration/2016-multispecies-recovery_plan-vol2.pdf.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2016b. National Marine Fisheries Services West Coast Region. 2016 5-year review: summary and evaluation of Central California Coast coho salmon. [Accessed 2022 March]. Website: http://www.westcoast.fisheries.noaa.gov/publications/status_reviews/salmon_steelhead/2016/2016_ccc-coho.pdf.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2016c. Coastal multispecies plan volume IV: Central California Coast steelhead, North Coastal Diversity Stratum. [Accessed 2022 March]. Website: https://media.fisheries.noaa.gov/dam-migration/2016-multispecies-recovery_plan-vol4.pdf.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2016d. National Marine Fisheries Services West Coast Region. 2016 5-year review: summary and evaluation of Central California Coast steelhead. [Accessed 2022 March]. https://www.fisheries.noaa.gov/resource/document/2016-5-year-review-summary-evaluation-central-california-coast-steelhead.

National Oceanic and Atmospheric Administration (NOAA Fisheries). 2022. Steelhead trout (*Oncorhynchus mykiss).* National Oceanic and Atmospheric Administration Fisheries. Updated on 2022 February 17. [Accessed 2022 March]. Website: https://www.fisheries.noaa.gov/species/steelhead-trout.

North Coast Regional Water Quality Control Board (NCRWQCB). 2018. Water Quality Control Plan for the North Coast Region. Santa Rosa, CA. June.

Obedzinski M, Pecharich JC, Vogeazopoulos G, Lewis DJ, Olin PG. 2007. Monitoring the Russian River coho salmon captive broodstock program: annual report, July 2005-June 2006. University of California Cooperative Extension and Sea.

Olswang M. 2017. Coho Salmon. Sacramento (CA): California Department of Fish and Wildlife, Fisheries Branch; [accessed 2022 March]. https://www.wildlife.ca.gov/Conservation/Fishes/Coho-Salmon

Pacific Fishery Management Council (PFMC). 2014. Pacific Coast Salmon Plan (PCSP), Amendment 18: Identification and description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. [accessed 2022 February]. Website: https://www.pcouncil.org/documents/2019/08/salmon-efh-appendix-a.pdf/

PISCES Database. 2022. University of California Davis Center for Watershed Sciences. [accessed 2022 March] Website: https://pisces.ucdavis.edu/fish

Santos NR, Katz JVE, Moyle PB, Viers JH. 2014. A programmable information system for management and analysis of aquatic species range data in California. Journal of Environmental Modeling and Software. 13-26. [accessed 2022 March]. Website: http://www.sciencedirect.com/science/article/pii/S1364815213002673

Sonoma County Water Agency (SCWA). 2021. Technical Advisory Committee meeting. June 7, 2021.

Spence BC, Lomnicky GA, Hughes RM, Novitzki RP. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. Corvallis (OR): ManTech Environmental Research Services Corp. (Available from National Marine Fisheries Service, Portland Oregon.)

State Water Resources Control Board (SWRCB). 2018. Title 22 of California's Code of Regulations Related to Recycled Water. Updated October.

State Water Resources Control Board (SWRCB). 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Adopted April 2, 2019.

Steiner Environmental Consulting. 1996. A history of the salmonid decline in the Russian River, Potter Valley, California.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report, Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi. 100 pp.

U.S. Army Corps of Engineers (USACE). 2008. Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Wakeley JS, Lichvar RW, Noble CV, editors. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Climate Data. 2022. [Accessed 2020 March]. Website: https://www.usclimatedata.com/climate/hollister/california/united-states/usca0486

U.S. Fish & Wildlife Service (USFWS). 2022. Information for Planning and Consultation (IPaC). [Accessed 2022 February]. Website: https://ecos.fws.gov/ipac/

U.S. Geological Survey (USGS). 2022. National Water Information System (USGS Water Data for the Nation). [Accessed 2022 March] https://waterdata.usgs.gov/nwis

Wagner EJ, T Bosakowski, and S Intelmann. 1997. "Combined Effects of Temperature and High pH on Mortality and the Stress Response of Rainbow Trout after Stocking." *Transactions of the American Fisheries Society* 126, no. 6 (November): 985–998. https://doi.org/10.1577/1548-8659(1997)126<0985:CEOTAH>2.3.CO;2.

Welsh HH, Hodgson GR, Roche MF, Harvey BC. 2001. Distribution of juvenile coho salmon (*Oncorhynchus kisutch*) in relation to water temperature in tributaries of a Northern California watershed determining management thresholds for an impaired coldwater adapted fauna. August 2000 North American Journal of Fisheries Management. USDA Forest Service, Redwood Sciences.

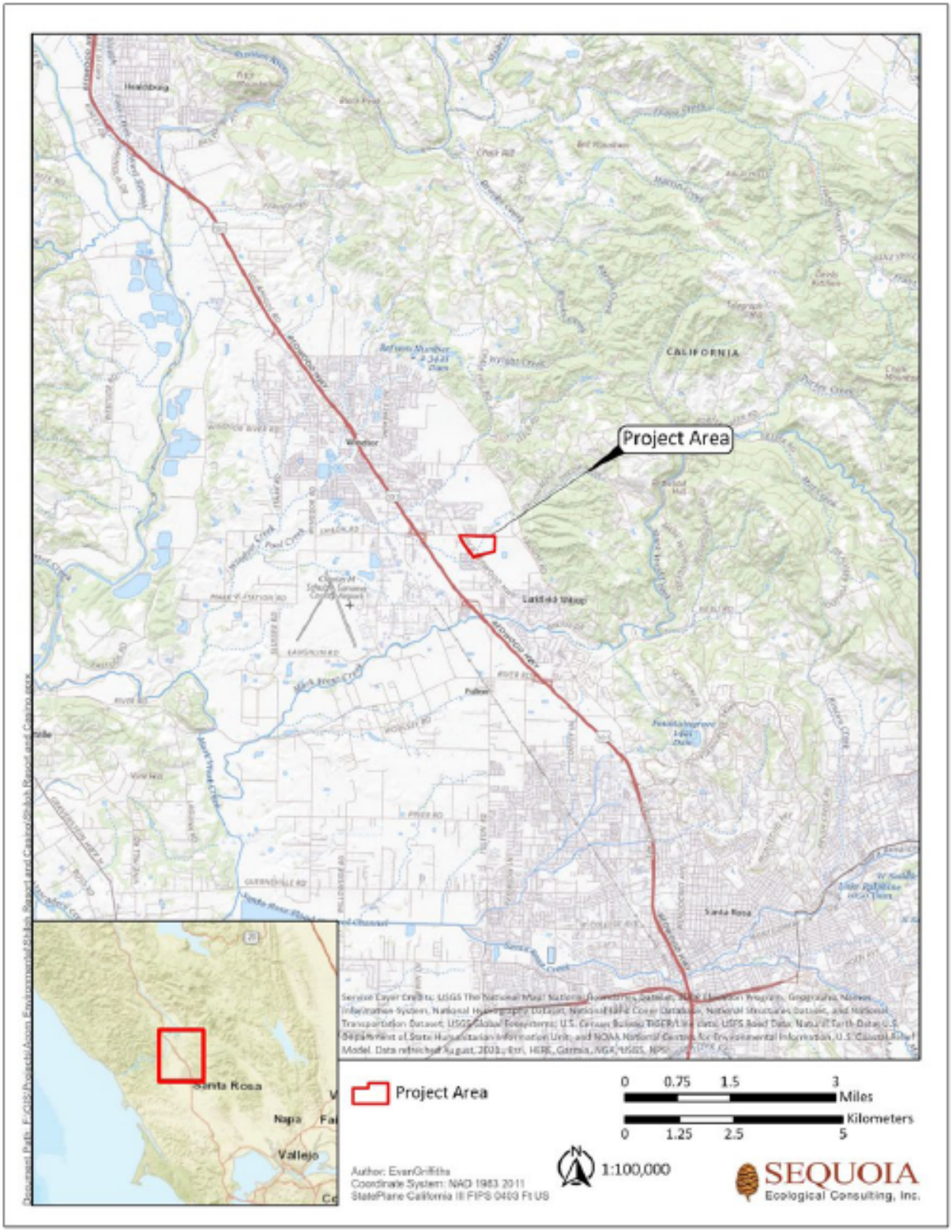


Figure 1. Regional map of the proposed Shiloh Resort and Casino project site.

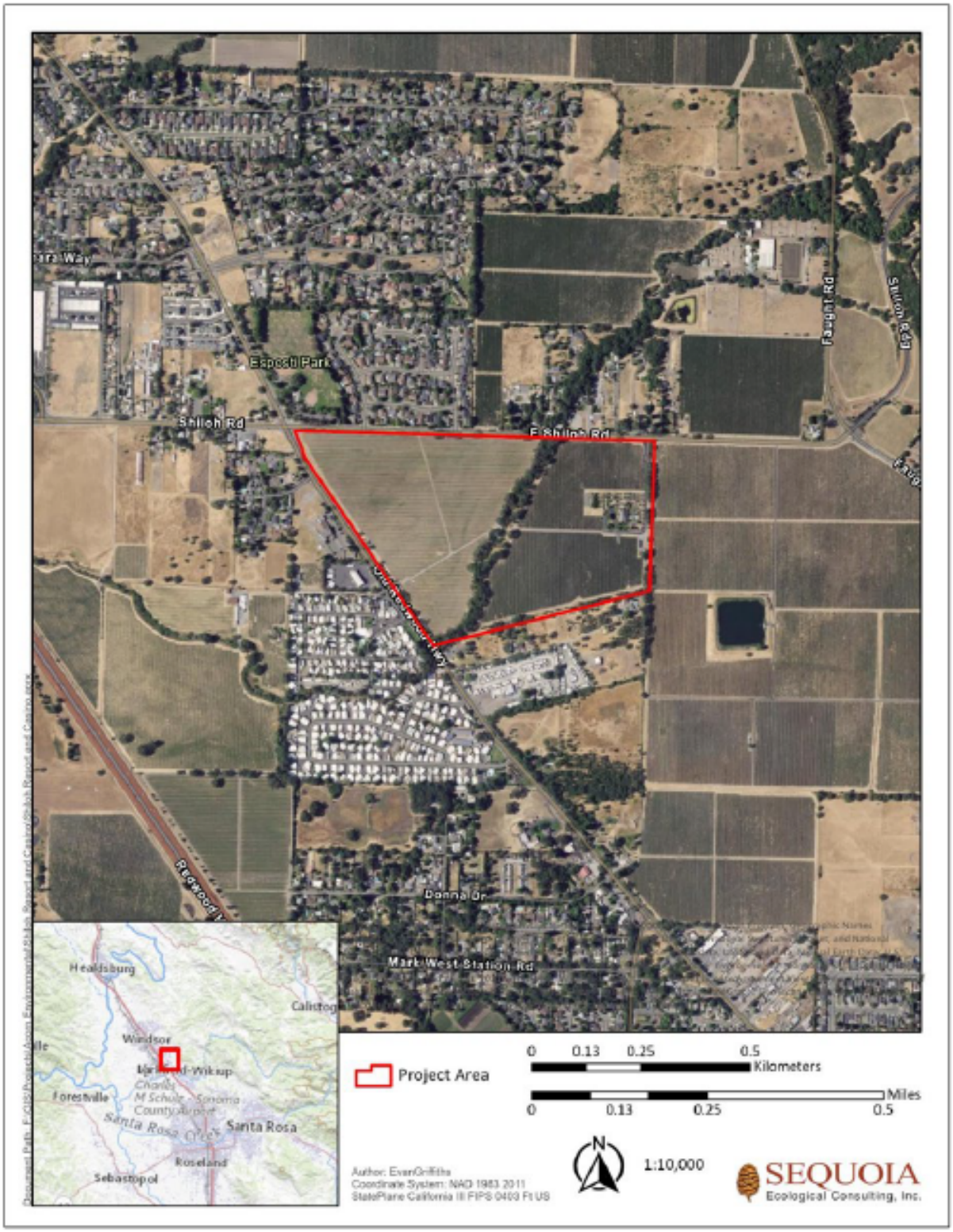


Figure 2. Location map of the proposed Shiloh Resort and Casino project site.

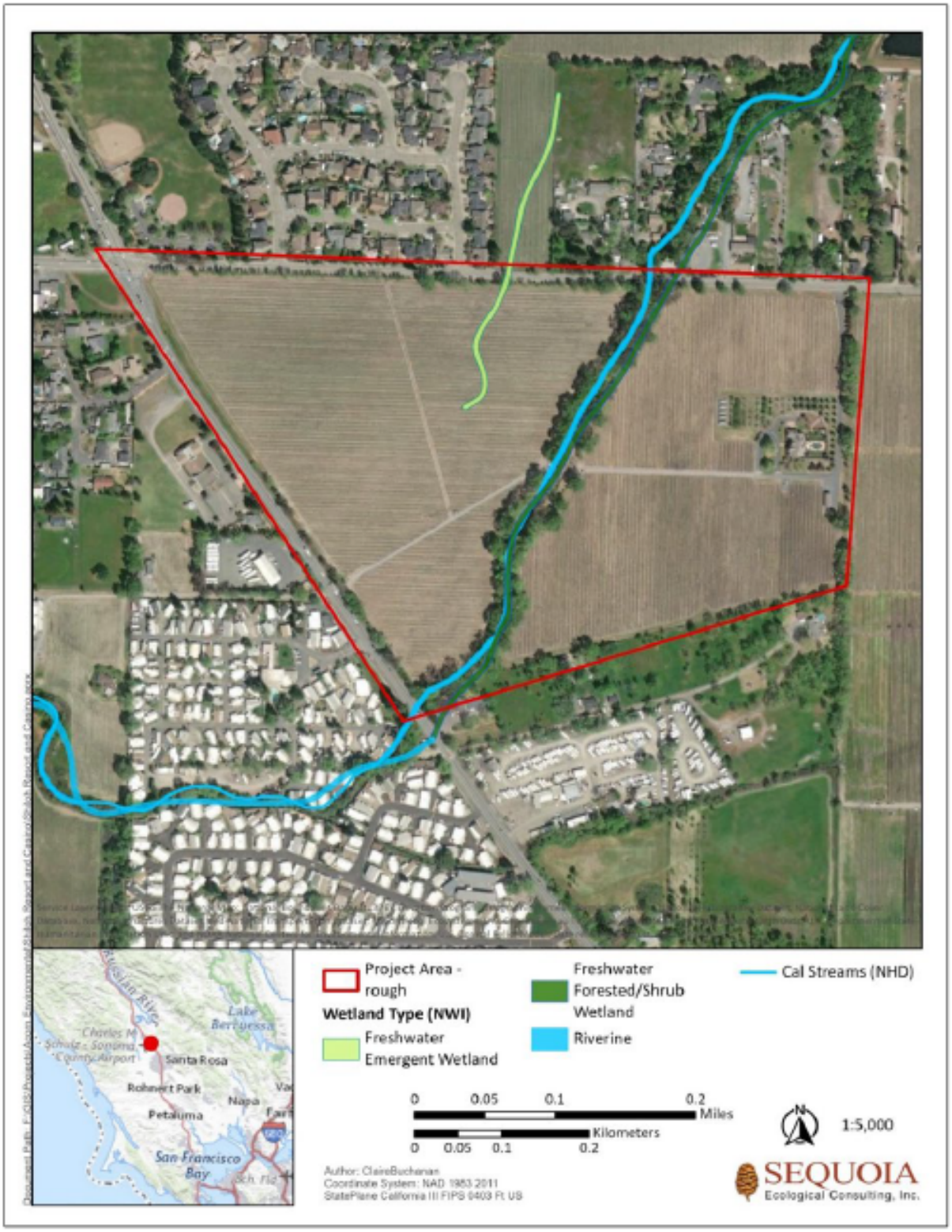


Figure 3. Aquatic features on the proposed Shiloh Resort and Casino project site.

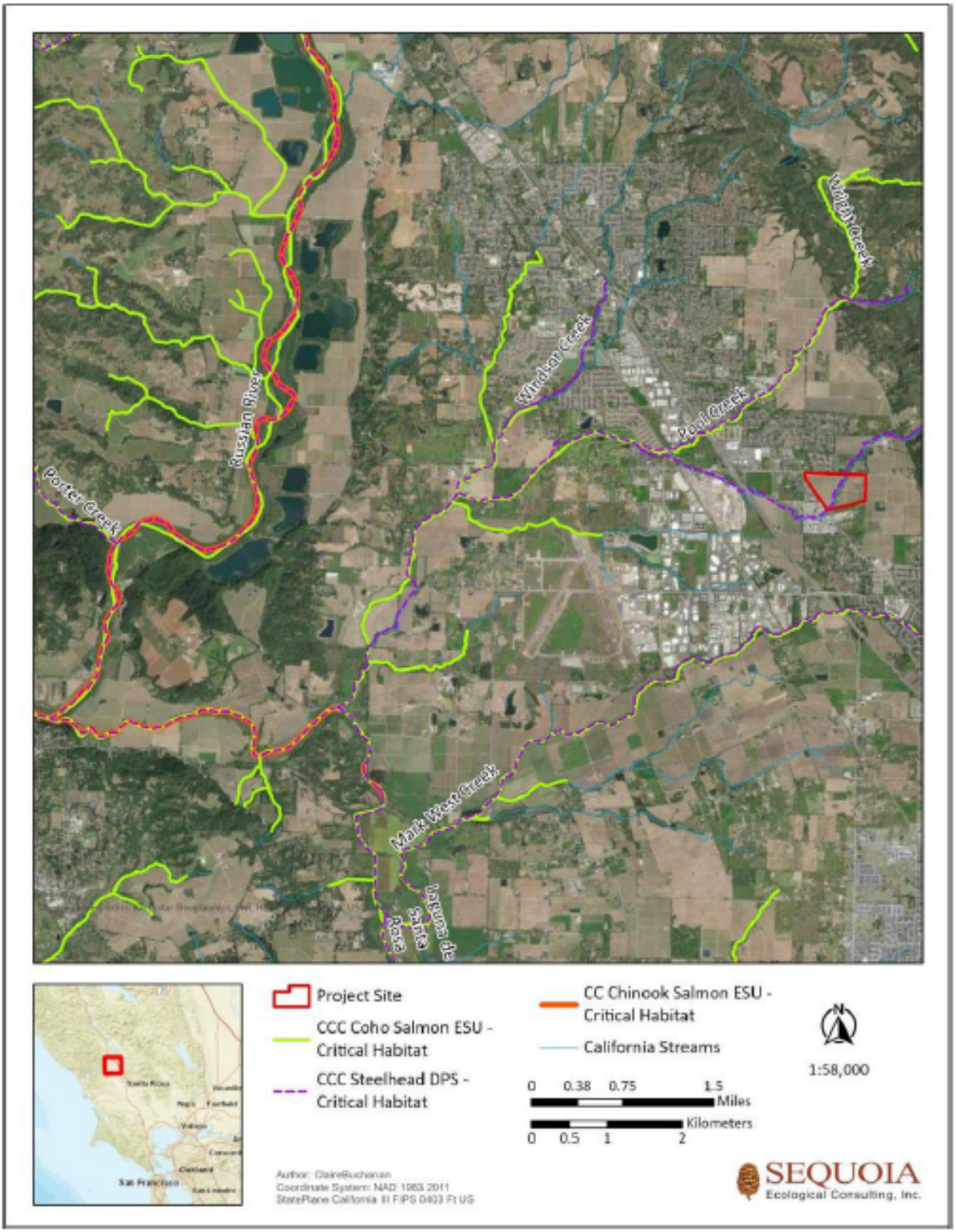


Figure 4. NMFS Critical Habitat in the vicinity of the proposed Shiloh Resort and Casino project site.

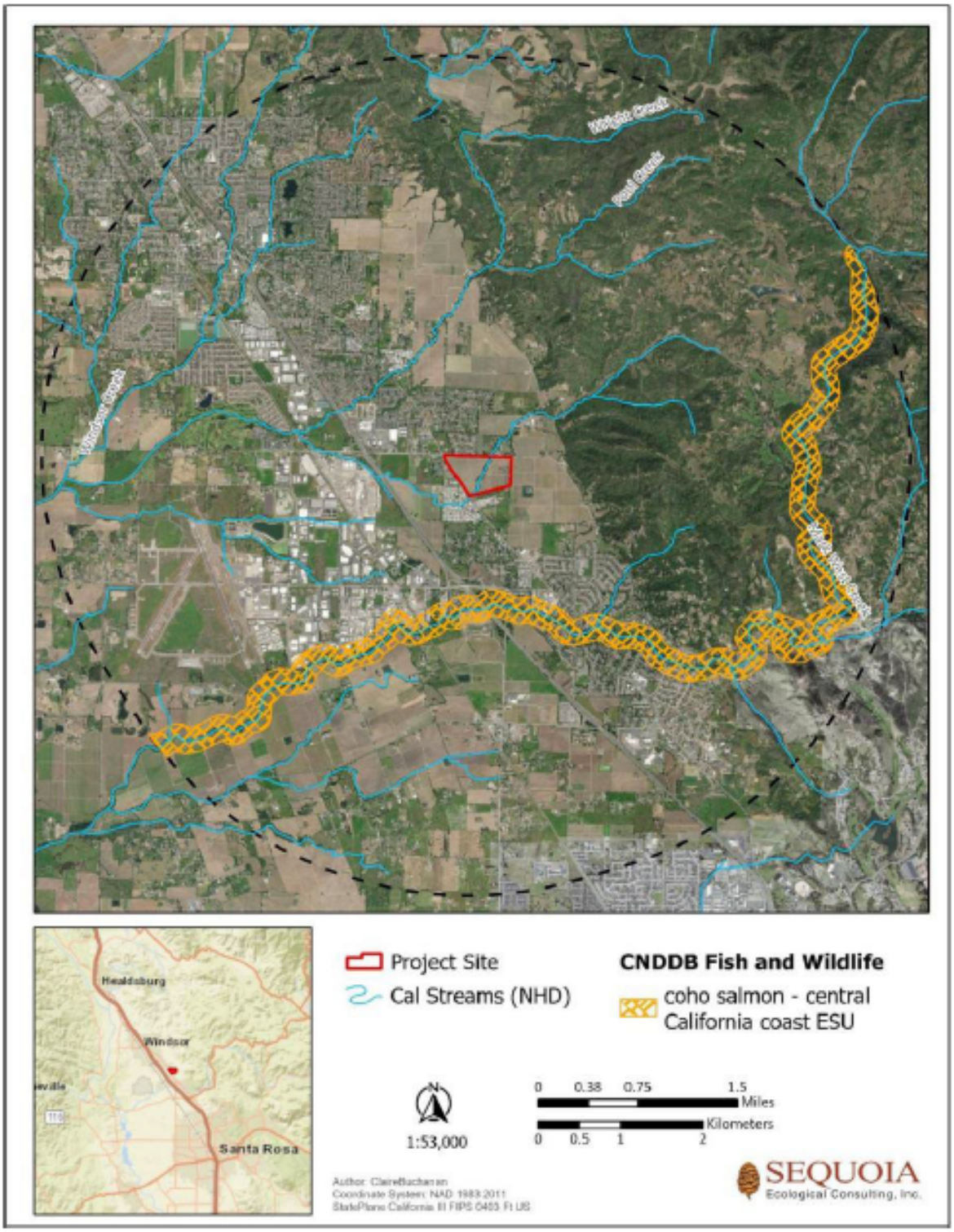


Figure 5. Closest known occurrences of federally listed species within 3 miles of the proposed Shiloh Resort and Casino project site.

Table 1. Federally listed fish species known to occur in the vicinity of the Project site.

Scientific Name	Common Name	Listed Status	Critical Habitat	Essential Fish Habitat	Potential for Occurrence	Effects Determination
Oncorhynchus kisutch	Coho salmon California Central Coast ESU	FE, CE	No, final Critical Habitat within the Action Area	Yes; EFH within Action Area	Moderate potential for occurrence in Pruitt Creek. Hydrological events and accessibility must align temporally with migration events for occurrence.	May Affect, Not Likely to Adversely Affect
Oncorhynchus mykiss irideus	Steelhead California Central Coast DPS, Northern California DPS	FT	Yes, final Critical Habitat within the Action Area	No EFH within Action Area	Known to seasonally occur (upstream/downstream movement) in intermittent project reach of Pruitt Creek and occur in upstream perennial reach (Church, 2023). Hydrological events and accessibility must align temporally with migration events for occurrence.	May Affect, Not Likely to Adversely Affect
Oncorhynchus tshawytcha	Chinook salmon California Coastal ESU	FT	No, final Critical Habitat within the Action Area	Yes, EFH within Action Area	Low potential for occurrence in Pruitt Creek based on their current distribution and their patterns of migration.	May Affect, Not Likely to Adversely Affect

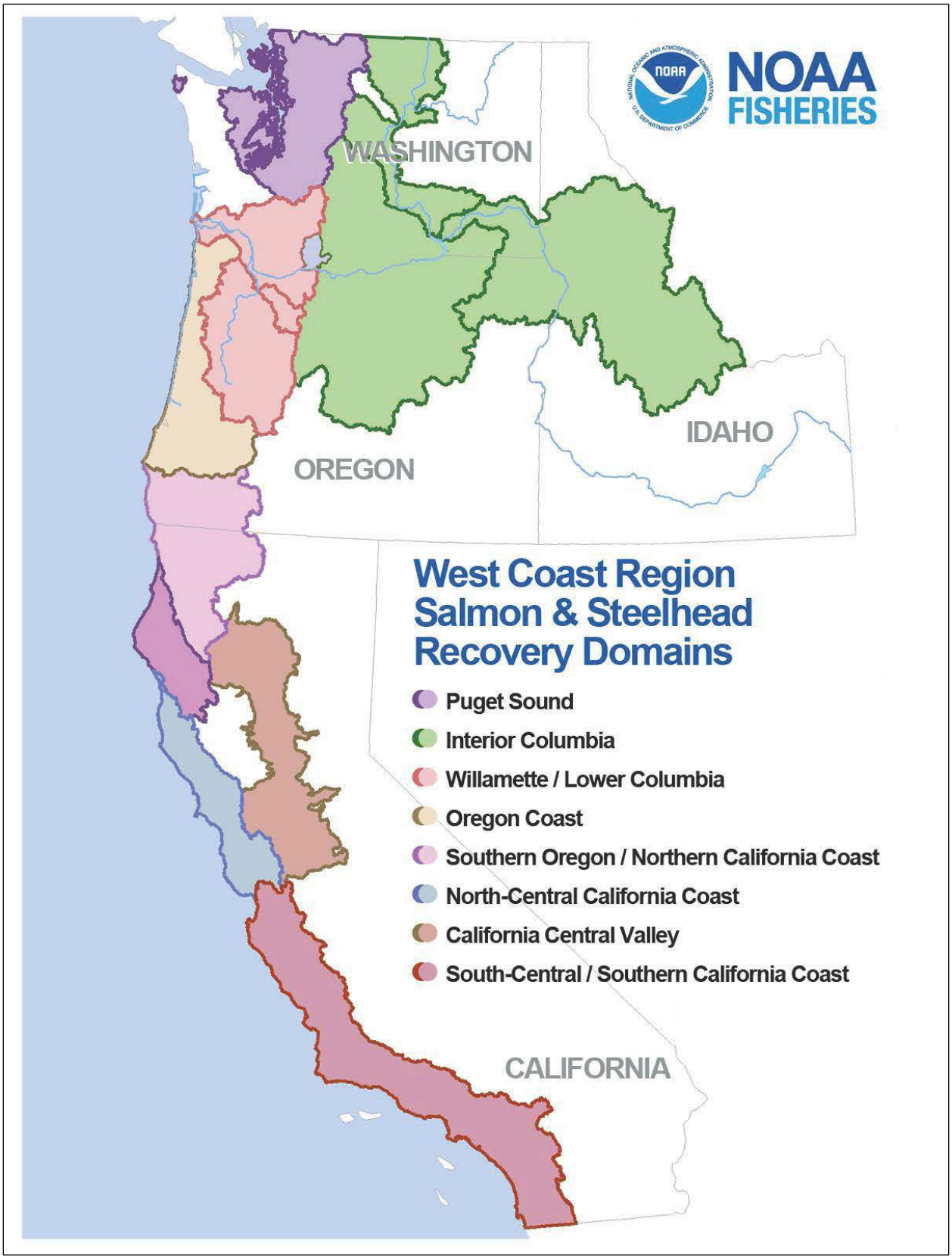
Key to status:
FT - Federally listed as threatened species
CE - California listed as endangered species

Appendix A

Preliminary Site Plans for Proposed Shiloh Resort and Casino Project

Appendix B

North-Central California Coast Recovery Domain Map


NOAA
FISHERIES
WASHINGTON
OREGON
IDAHO
CALIFORNIA
West Coast Region
Salmon & Steelhead
Recovery Domains
Puget Sound
Interior Columbia
Willamette / Lower Columbia
Oregon Coast
Southern Oregon / Northern California Coast
North-Central California Coast
California Central Valley
South-Central / Southern California Coast

Appendix C

Aquatic Resources Delineation Map (Revised December 2023)

Appendix D

Water and Wastewater Feasibility Study

The Water and Wastewater Feasibility Study is included within the appendices of the Koi Nation of Northern California Shiloh Resort and Casino Project EIS. Please see Appendix D-1 of the EIS.

Appendix E

Applicable Best Management Practices and Mitigation Measures from the Shiloh Casino and Resort Project Administrative Draft Environmental Impact Statement (April 2024)

Best Management Practices

Resource Area	Protective Measures and Best Management Practices
Water Resources	The Tribe will apply for coverage under and comply with the NPDES General Construction Permit from the USEPA, for construction site runoff during the construction phase in compliance with the CWA. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared, implemented, and maintained throughout the construction phase of the development, consistent with the General Construction Permit requirements. The SWPPP prepared for the Project Site would include, but would not be limited to, the following BMPs to minimize storm water effects to water quality during construction. Grading activities will be limited to the immediate area required for construction. Temporary erosion control measures (such as silt fences, fiber rolls, vegetated swales, a velocity dissipation structure, staked straw bales, temporary re-vegetation, rock bag dams, erosion control blankets, and sediment traps) will be employed for disturbed areas. Construction activities will be scheduled to minimize land disturbance during peak runoff periods. Disturbed areas will be paved or re-vegetated following construction activities. Construction area entrances and exits will be stabilized with large-diameter rock. A spill prevention and countermeasure plan will be developed that identifies proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used on site. Petroleum products will be stored, handled, used, and disposed of properly in accordance with provisions of the CWA (33 USC § 1251 to 1387). Construction materials, including topsoil and chemicals, will be stored, covered, and isolated to prevent runoff losses and contamination of surface and groundwater. Fuel and vehicle maintenance areas will be designed to control runoff. Sanitary facilities will be provided for construction workers. Disposal facilities will be provided for soil wastes, including excess asphalt during construction. Food-related trash will be stored in closed containers and removed from the site daily. Wheel wash or rumble strips and sweeping of paved surfaces will be used to remove any and all tracked soil. LID methods (e.g., bioswales) will be implemented that would help store, infiltrate, evaporate, and detain stormwater runoff. Should dewatering (the process of removing surface or ground water from a particular location) be needed during construction, extracted water would be treated in a proposed or temporary basin and/or be trucked out and disposed of consistent with stormwater regulations.

	During operation, internal roadways and parking areas will be subject to trash clean-up daily and swept weekly to prevent debris from entering the stormwater management system.
Biological Resources	Prior to construction, all construction workers will take part in an environmental awareness program conducted by an agency-approved biologist. Special-status species to be covered in the program include, but are not limited to: California red-legged frog, northwestern pond turtle, nesting migratory birds, western burrowing owl, Chinook salmon (CC ESU), coho salmon (CCC ESU), and steelhead (CCC DPS). This training shall include a description of the special-status species with the potential to occur in the work area, habitat needs, an explanation of the status of the species and protection under federal law, and a list of the measures being taken to avoid or reduce impacts to the species during project construction. The awareness program will be conducted at the start of construction and thereafter as required for new construction personnel. The training shall include a handout containing training information. The project manager shall use this handout to train any additional construction personnel that were not in attendance at the first meeting, prior to starting work on the project. At the end of each workday, all excavations (e.g., holes, construction pits, and trenches) of a depth of eight inches or greater will be covered with plywood or other hard material, and gaps around the cover will be filled with dirt, rocks, or other appropriate material to prevent entry by wildlife. If excavations cannot be covered, then they will include escape ramps constructed of either dirt fill, wood planking, or other appropriate material installed at a 3:1 grade (i.e., an angle no greater than 30 degrees) to allow wildlife that fall in a means to escape. If directional drilling is used, pipelines would be installed a minimum of 10 feet below the bottom of Pruitt Creek and during the dry season, to prevent hydrofracture (e.g., frac-out).
Public Services and Utilities	BMPs to be implemented during construction: The site will be cleaned daily of trash and debris to the maximum extent practicable. BMPs to be implemented during construction and operation: A solid waste management plan will be developed and adopted by the Tribe that addresses recycling and solid waste reduction and proper disposal onsite during construction and operation. These measures will include, but not be limited to, the installation of a trash compactor for cardboard and paper products, the installation of ample and visible trash and recycling bins to encourage proper disposal, and periodic waste stream audits.
Visual Resources	Exterior lighting on buildings will be designed so as to not cast significant light or glare into the public right-of-way or any surrounding residentially zoned properties, natural areas, or properties used for activities falling under household living. Lighting equipment at the project entrances will aim

	downward and backward toward the site to create only indirect illumination that would be visible to adjacent sensitive receptors. No direct lighting shall be cast on Pruitt Creek. The riparian line will be used to establish an internal project boundary in which no illumination will be permitted. A no-lighting zone will also be created on either side of the creek riparian lines extending to the building structures and out to the Project Site boundary. All signage lighting will aim downward and backward toward the Project Site to create only indirect illumination that would be visible to adjacent sensitive receptors. No signage will be internally illuminated. Outdoor light fixtures will be fully or partially shielded and filtered and oriented downward when possible. The onsite loop road planned vehicular traffic will be unlit except where there is potential conflict with pedestrians or hazards such as bus parking, sharp curves, and intersections. Lighting at the front roadways will be concentrated at the points of entry, the roundabout, and intersections. Lighting between these points may be considered where shielded by sufficiently mature landscape. Marking and lighting necessary to indicate the presence of buildings, structures, or vegetation to operators of aircraft in the vicinity of the airport will be provided if required by the Federal Aviation Administration. The exterior lighting of will be designed in accordance with the International Dark-Sky Association's Model Lighting Ordinance so as not to cast light or glare off site (e.g. utilize a warm correlated color temperatures (3000K or less) for exterior lighting for reduced likelihood of blue wavelengths which stimulate the photoreceptors of humans and some wildlife). Lighting will consist of pole-mounted lights up to a maximum height of 16 feet and use high pressure sodium or light-emitting diodes (LEDs) with cut-off lenses and downcast illumination unless an alternative light configuration is needed for security or emergency purposes. Additionally, no strobe lights, spotlights, or flood lights will be used. Shielding will be used in accordance with the International Dark-Sky Association's Model Lighting Ordinance. Efforts shall be made to "capture" the light emitted upward with built or natural material beyond what is specified in the Dark-Sky Association's Model Lighting Ordinance. Less reflective materials will be used in uncovered areas to reduce reflected light and glare. A wall with a gate will be constructed around the service yard to shield Pruitt Creek from work lights which will be automatically controlled-off when not in use. The foot bridge from the parking garage to the casino will incorporate electrochromic glass which can be automatically shaded when electric pathway lighting is required to contain electric light within the bridge. This will enable the bridge to be transparent during the day but prevent illumination from being cast on Pruitt Creek during the night.

	The surface parking lot will be restricted to daytime use only to prevent the need for permanent lighting in this area. Interior light will be controlled from spilling onto Pruit Creek or nearby sensitive receptors through the following methods: • Casino/Events windows – glazing will be minimized and primarily facing the main entryway and spill light will be utilized for backlighting of rain screens or contributing to illumination below canopies. • Casino skylights – shading devices will be used to black out interior light that would otherwise be wasted into the night sky. • Hotel – guest room windows facing Shiloh Road and the creek will be minimized, and automated shading and lighting sequences will be employed. A reliable presence detection method such as room-key docking will be used to enable lighting and also lower shades at sunset. The interior room lighting will also be developed with consideration of luminaire placement relative to windows. Parking structure lighting – Shielding will be used to reduce light reaching sensitive receptors and Pruitt Creek, such as a parapet wall wrapping all other exposures to contain reflected light. Lighting placement and luminaire distribution will be carefully coordinated to contain direct light onto the parking garage footprint. Further, automated controls will reduce light levels when occupants are not detected. On the top level, pole lights will be located interior to the parking surfaces so that all emitted light can be useable on the parking surface. Sight lines will be studied to ensure the lighting equipment is not visible from common angles of adjacent properties, and reflection reducing materials will be used in the parking to reduce reflectance.
Noise	The following BMPs will be implemented during construction: Construction activities involving noise generating equipment will be limited to daytime hours between 7:00 a.m. and 6:00 p.m., with the exception of federal holidays where no work will occur, and with no construction work occurring between the hours of 10:00 p.m. to 7:00 a.m. All powered equipment will comply with applicable federal regulations and all such equipment will be fitted with adequate mufflers according to the manufacturer's specifications to minimize construction noise effects. Noise-generating construction equipment will be located as away far from sensitive receptors as practicable while in usage. The use of vibratory rollers will be limited to locations beyond 250 feet from an existing sensitive receptor and non-vibratory rollers will be utilized at locations within 250 feet from an existing sensitive receptor. The following BMPs will be implemented during operation: Heating, ventilation, and air conditioning equipment will be shielded to reduce noise. Noise generating equipment associated with water and wastewater treatment facilities will be shielded, enclosed, or located within buildings.

Hazardous Materials and Hazards	Personnel will follow BMPs for filling and servicing construction equipment and vehicles. BMPs that are designed to reduce the potential for incidents/spills involving hazardous materials include the following. Fuel, oil, and hydraulic fluids will be transferred directly from a service truck to construction equipment to reduce the potential for accidental release. Catch-pans will be placed under equipment to catch potential spills during servicing. Refueling will be conducted only with U.S. Department of Labor Occupational Safety and Health Administration approved pumps, hoses, and nozzles. All disconnected hoses will be placed in containers to collect residual fuel from the hose. Vehicle engines will be shut down during refueling. Refueling will be performed away from bodies of water to prevent contamination of water in the event of a leak or spill. Service trucks will be provided spill containment equipment, such as absorbents. Should a spill contaminate soil, the soil will be put into containers and disposed of in accordance with local, State, and federal regulations. All containers used to store hazardous materials will be inspected at least once per week for signs of leaking or failure. In the event that contaminated soil and/or groundwater is encountered during construction-related earthmoving activities, all work will be halted until a professional hazardous materials specialist or other qualified individual assesses the extent of contamination. If contamination is determined to be hazardous, the Tribe will consult with the USEPA to determine the appropriate course of action, including development of a Sampling and Remediation Plan if necessary. Contaminated soils that are determined to be hazardous will be disposed of in accordance with federal regulations. Personnel will follow the following BMPs that are designed to reduce the potential for igniting a fire during construction: Construction equipment will contain spark arrestors, as provided by the manufacturer. Staging areas, welding areas, or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other materials that could serve as fire fuel. No smoking, open flames, or welding will be allowed in refueling or service areas. Service trucks will be provided with fire extinguishers. Diesel fuel storage tanks for on-site emergency generators would comply with the National Fire Protection Association standards for aboveground storage tanks and have secondary containments systems. Materials used for the emergency generators would be handled, stored, and disposed of according to federal and manufacturer's guidelines. BMPs to be implemented during operation to address fire hazards:

	• Annual maintenance will be conducted to ensure fire resistive materials and construction details are maintained at their highest level to reduce ember impacts. • Fire protection devices including, but not limited to, fire sprinkler systems, alarm systems, commercial kitchens, and fire hydrants will be maintained, inspected, and tested per National Fire Protection Association standards. The exterior landscape of ignition resistant plants and existing vineyard areas will be maintained, including a five-foot non-combustible zone around each structure that will remain void of vegetation and landscaping.

Mitigation Measures

Resource Area	Proposed Mitigation	Alternative
Biological Resources	The following measures shall be implemented to avoid and/or reduce impacts to the Riparian Corridor: A. Alterations to riparian vegetation shall be avoided to the maximum extent possible. The project footprint shall be established at the minimum size necessary to complete the work. Temporary setback areas shall be marked with fencing to protect the riparian zone and its function. Any disturbed riparian areas shall be replanted with native trees and shrubs. A restoration plan will be created to restore disturbed riparian areas and replanting will use native trees and shrubs. B. A qualified biologist shall delineate an Environmentally Sensitive Area along Pruitt Creek. The contractor shall install high-visibility fence to prevent accidental incursion on the Environmentally Sensitive Area. C. Staging areas, access routes, and total area of activity shall be limited to the minimum area necessary to achieve Project goals. Routes and boundaries shall be clearly marked and outside of the riparian area and create a buffer zone wide enough to support sediment and nutrient control and bank stabilization function. The following measures shall be implemented to minimize or avoid potential impacts to wetlands, Waters of the U.S., and special-status species: D. The wastewater discharged will flow through a gauge station that would be installed as part of Project compliance with NDPES. The gauge will be located at the point of project-related discharge on Pruitt Creek. No more than 1% of Pruitt Creek flow will be discharged to be	A, B, C

	consistent with NCRWQCB Basin Plan standards for receiving waters. A water quality monitoring protocol and schedule will be established to ensure that parameters are being met during discharge activities in Pruitt Creek. E. Prior to the start of construction, wetlands and jurisdictional features shall be fenced, and excluded from activity. Fencing shall be located as far as feasible from the edge of wetlands and riparian habitats and installed prior to the dry season, after special-status species surveys have been conducted and prior to construction. The fencing shall remain in place until all construction activities on the site have been completed. F. Ground disturbing activities, such as grading, clearing, and excavation, within 50 feet of any U.S. Army Corps of Engineers (USACE) jurisdictional features identified in the formal delineation process shall be conducted during the dry season (between June 15 and October 15) to minimize erosion. In the event of substantial, unseasonably high flow within Pruitt Creek on or after April 15, work shall be altered or stopped until flow ceases in the creek. Temporary stormwater Best Management Practices such as vegetative stabilization and linear sediment barriers shall be established between disturbed portions of the Project Site and Pruitt Creek to prevent sedimentation in the watercourse. G. Staging areas shall be located away from the areas of aquatic habitat that are fenced off. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate facility. Stockpiles that are to remain on the site through the wet season shall be protected to prevent erosion (e.g. with tarps, silt fences, or straw bales). All storm runoff will be managed through an erosion control plan. Temporary erosion control measures should remain on the Project site until perennial or planted vegetation is established and functioning to minimize sediment discharged into the creek. H. Standard precautions shall be employed by the construction contractor to prevent the accidental release of fuel, oil, lubricant, or other hazardous materials associated with construction activities into jurisdictional features. A contaminant program shall be developed and implemented in the event of release of hazardous materials. I. If impacts to Waters of the U.S. and wetland habitat are unavoidable, a 404 permit and 401 Certification under the Clean Water Act shall be obtained from the USACE and U.S. Environmental Protection Agency (USEPA). Mitigation measures may include creation or restoration of wetland habitats either	

	on site or at an appropriate off-site location, or the purchase of approved credits in a wetland mitigation bank approved by the USACE. Compensatory mitigation shall occur at a minimum of 1:1 ratio or as required by the USACE and USEPA. J. Consultation with the National Oceanic and Atmospheric Administration Fisheries for impacts to fish and essential fish habitat shall be conducted in accordance with Section 7 of the federal Endangered Species Act (FESA) and Magnuson-Stevens Act and any requirements resulting from that consultation shall be adhered to. The following measures shall be implemented to avoid impacts to California red-legged frogs (CRLF): K. A qualified biologist shall conduct a preconstruction habitat assessment survey for CRLF following Appendix D of the U.S. Fish and Wildlife Service [USFWS (2005)] *Revised Guidance of Site Assessments and Field Surveys for the California Red-legged Frog*. The survey shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the CRLF. The survey shall be conducted in all potential CRLF habitat on and within 200 feet of ground disturbance. L. If CRLF is detected during pre-construction surveys or during construction, the USFWS shall be contacted immediately to determine the best course of action. M. Should CRLF be identified during surveys, additional silt fencing shall be installed after surveys have been completed to further protect this species from construction impacts. The fencing shall remain in place until construction activities cease. The following measures shall be implemented to avoid impacts to northwestern pond turtle (NWPT): N. A qualified biologist shall conduct a preconstruction survey for NWPT along Pruitt Creek 24 hours prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the NWPT. The survey shall be conducted within 350 feet of the stretch of Pruitt Creek. If NWPT is detected within or immediately adjacent to the area of ground disturbance, the USFWS shall be contacted immediately to determine the best course of action. O. Should NWPT be identified during surveys, additional silt fencing shall be installed after surveys have been completed to further protect this species from construction impacts. The fencing shall remain in place until construction activities cease.	

	The following measures shall be implemented to avoid and/or reduce impacts to potentially nesting migratory birds and other birds of prey in accordance with the federal Migratory Bird Treaty Act. P. Removal of vegetation and trimming or removal of trees shall occur outside the bird nesting season (February 1 to August 30) to the extent feasible. Q. If removal or trimming of vegetation and trees cannot avoid the bird nesting season, a qualified wildlife biologist shall conduct a pre-construction nesting survey within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed for the Project Site and suitable habitat within 250 feet of the Project Site in order to detect any active passerine (perching bird) nests and within 500 feet of the Project Site to identify any active raptor (bird of prey) nests. R. If active nests are identified during the pre-construction bird nesting surveys, the wildlife biologist shall place species- and site-specific no-disturbance buffers around each nest. Buffer size would typically be between 50 and 250 feet for passerines and between 300 and 500 feet for raptors (birds of prey). These distances may be adjusted depending on the level of surrounding ambient activity (e.g., if the Project Site is adjacent to a road or community development) and if an obstruction, such as a building structure, is within line-of-sight between the nest and construction. For bird species that are federally- and/or State-listed sensitive species (i.e., fully protected, endangered, threatened, species of special concern), a Project representative, supported by the wildlife biologist, shall consult with the USFWS and/or the California Department of Fish and Wildlife (CDFW) regarding modifying nest buffers. The following measures shall be implemented based on their determination: ▪ If construction would occur outside of the no-disturbance buffer and is not likely to affect the active nest, the construction may proceed. However, the biologist shall be consulted to determine if changes in the location or magnitude of construction activities (e.g., blasting) could affect the nest. In this case, the following measure would apply: ▪ If construction may affect the active nest, the biologist and a Project representative shall consult with USFWS and/or CDFW, dependent on regulatory status, to develop alternative actions such as modifying construction, monitoring of the nest during construction, or removing or relocating active nests.	

	S. Any birds that begin nesting within the Project Site and survey buffers amid construction activities shall be assumed to be habituated to construction-related or similar noise and disturbance levels and minimum work exclusion zones of 25 feet shall be established around active nests in these cases. T. A qualified wildlife biologist shall conduct pre-construction burrowing owl surveys within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed at known mammal burrows or areas with the potential for new mammal burrows, within 250 feet of the Project Site. Surveys shall be conducted between morning civil twilight and 10:00 AM or two hours before sunset until evening civil twilight to provide the highest detection probabilities. U. If surveys identify evidence of western burrowing owls within 250 feet of the Project Site, the contractor shall: ▪ Establish a 250-foot exclusion zone around the occupied burrow or nest, as directed by the qualified biologist. ▪ Avoid the exclusion zone while the burrow is occupied. ▪ Not resume construction activities within the 250-foot zone until the Project representative provides written Notice to Proceed based on the recommendation of the qualified biologist. V. If avoidance of occupied burrows is not feasible during the September 1 to January 31 non-breeding season, construction may occur within 250 feet of the overwintering burrows as long as the contractor's qualified biologist monitors the owls for at least 3 days prior to Project construction and during construction and finds no change in owl foraging behavior in response to construction activities. If there is any change in owl foraging behavior as a result of construction activities, activities shall cease within the 250-foot exclusion zone. W. If destruction of occupied burrows is necessary, burrow exclusion can be conducted in accordance with the Staff Report on Burrowing Owl Mitigation.	
Hazardous Materials and Hazards – Wildfire Hazards	The following measures shall be implemented for all alternatives: A. Prior to opening day the Tribe shall engage a qualified arborist and/or biologist to develop a riparian corridor wildfire management plan to be implemented annually during operation. The goal of the plan shall be to reduce fire hazard on and adjacent to the on-site riparian corridor. At a minimum the plan shall include the following procedures and best management practices that shall be overseen by a qualified arborist and/or biologist:	A, B, C

	▪ Weed abatement and fuel load reduction outside of the creek channel shall be conducted in late Spring (May and June) by hand crews and repeated as necessary through the fire season. ▪ When riparian vegetation is within a 100-foot radius of a structure or the property line, the following procedures shall be implemented: ○ All dead or dying trees, branches, shrubs, or other plants adjacent to or overhanging buildings shall be removed. ○ Lower branches of trees shall be pruned to a height of 6 to 15 feet or 1 /3 tree height for trees under 18 feet. ○ All dead or dying grass, leaves, needles, or other vegetation shall be removed. ○ Live flammable ground cover and shrubs shall be removed or separated. ○ Climbing vines shall be maintained free of dead or dying material or removed from trees and structures. ○ Dead or dying grass shall be mowed to a maximum of 4 inches in height. Trimmings may remain on the ground. ○ Live flammable ground cover less than 18 inches in height may remain, but overhanging and adjacent trees must be pruned to a height of 6 to 15 feet. ○ Logs and stumps embedded in the soil shall be removed or isolated from structures and other vegetation. ○ All dead or dying brush or trees, and all dead or dying tree branches within 15 feet of the ground shall be removed. ▪ Vegetation management is prohibited in the wetted channel (i.e., the creek must be dry to perform work) ▪ Vegetation removal is with hand tools; if a chain saw is needed to perform work, a tarp is used to contain any wood chips/debris. ▪ No motorized vehicles are allowed in the channel. ▪ Vegetation shall not be removed from channel banks. ▪ Large woody debris (downed logs and root wads) in the channel and banks shall remain in place. ▪ Debris jams (fallen trees) that block the channel causing obstruction shall be removed. ▪ Vegetation management shall be conducted in a manner that protects riparian habitat and water quality, including tree canopies that provide shade to the channel (i.e., trees shall be trimmed only if a canopy can be maintained over the creek). ▪ Vegetation removal shall either conducted outside the bird nesting season (February 1 to August 15) or a field survey	

	for bird nests by a qualified biologist shall occur prior to starting work and implementing appropriate avoidance buffers.	

Appendix G-3

CESA Species Evaluation

SEQUOIA
Ecological Consulting, Inc.

Date: April 15, 2022

To: Bibiana Sparks-Alvarez, Project Manager
Acorn Environmental
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762

From: Claire Buchanan, Project Manager
Sequoia Ecological Consulting, Inc.

RE: **CESA-Listed Species Evaluation for the Shiloh Resort and Casino Project**

1.0 INTRODUCTION

The purpose of this memorandum is to acknowledge and assess potential impacts to California Endangered Species Act- (CESA) listed species in support of National Environmental Policy Act (NEPA) compliance documentation for the proposed Shiloh Resort and Casino Project (Project) in Windsor, California (Figures 1 and 2). The Project site is located at 222 East Shiloh Road (Assessor's Parcel Number 059-300-003) in the Larkfield-Wikiup area of unincorporated Sonoma County and is bordered by Old Redwood Highway to the west, East Shiloh Road to the north, vineyards to the east, and residential homes and the Santa Rosa Mineral Gem Society to the south (Figure 2; Google Earth 2022). The remainder of the Project site includes vineyards and associated infrastructure, a private home on the east side of the property, and multiple dirt roads that bisect the vineyards.

As detailed below, Sequoia Ecological Consulting, Inc. (Sequoia) performed a literature and desktop review for CESA-listed species known from the region and conducted a site assessment on the Project site. This memorandum discusses findings of the desktop review and field visit and evaluates potential impacts, as well as mitigation opportunities and constraints for, CESA-listed species on the Project site and within a zone of influence.

2.0 ANALYSIS

2.1 Literature and Desktop Review

Sequoia reviewed the Draft Constraints Report (ESA 2021) and updated the associated desktop review to better evaluate state listed species with potential to occur on the Project site. The review included the following sources: California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB; CDFW 2022) and RareFind 5; California Native Plant Society's (CNPS 2022) database; U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI; USFWS 2022a); Information

for Planning and Consultation (IPaC; USFWS 2022b) and U.S. Geological Survey (USGS 2022) topographic maps. The results of this desktop analysis were used to focus the subsequent on-site reconnaissance survey.

2.2 Site Assessment

Sequoia biologists, Ari Rogers and Claire Buchanan, conducted surveys on the Project site on February 23 and 24, 2022, to record biological resources and to assess potential impacts to CESA-listed species as a result of the proposed Project. Surveys involved searching all habitats on the site and recording all plant and animal species observed. Sequoia cross-referenced the habitats occurring on the Project site with the habitat requirements of regional special-status species to determine if the proposed Project could directly or indirectly impact these species. Any CESA-listed species or suitable habitat was documented.

Tables 1 and 2 present the potential for occurrence of CESA-listed plant and animal species known to occur in the vicinity of the Project site, along with their habitat requirements, potential to occur on the Project site, and basis for occurrence classification. Tables 3 and 4 provide plant and wildlife species observed on the Project site.

3.0 RESULTS OF BACKGROUND RESEARCH AND SITE ASSESSMENT

3.1 Topography and Hydrology

The Project site is located within the Santa Rosa Plain, and as such the topography is fairly uniform with elevation ranging from 135 feet above mean sea level (MSL) along the western property boundary to 160 feet MSL in the northeast corner of the property. Pruitt Creek flows southwesterly through the Project site and is a fourth order tributary to the Russian River. Pruitt Creek terminates at Pool Creek which flows into Windsor Creek, then into Mark West Creek, and finally into the Russian River. At the time of the February 2022 site visit, Pruitt Creek was wetted throughout. Flow was minimal, less than one cubic foot per second, with an average depth of eight inches and indicators of a high flow event (leaf litter and riparian vegetation scattered throughout). Water temperature was 52°F. Water temperature was measured at 1000 hours at a depth of approximately five inches in the shade. Comparing the observations from the Draft Constraints Report (ESA 2021) and observations from Sequoia's February 2022 survey, it is likely that Pruitt Creek is an intermittent stream that flows from late fall to spring and begins to dry up by early summer and remains dry through the fall.

3.2 Plant Communities and Wildlife Habitats

On February 23 and 24, 2022, Sequoia biologists conducted a survey of the Project site and characterized vegetation present (Figure 7). During the survey, Sequoia also documented plant and wildlife species observed on the Project site (Tables 3 and 4). Nomenclature used for plant names

follows *The Jepson Manual Second Edition* (Baldwin 2012), while nomenclature used for wildlife follows CDFW's *Complete list of amphibian, reptile, bird, and mammal species in California* (2016).

3.2.1 Vineyards

The Project site is predominately an active vineyard with ruderal (weedy) vegetation growing in between the grape rows. Vineyard infrastructure is also present including dirt roads, piping, propane tanks, wash station, and electrical power poles. While the grape rows themselves are weeded and maintained, ruderal and annual vegetation grows between rows and around the vineyard perimeter; ruderal species are adapted to endure intense and/or long-term disturbance.

The vineyard land cover type occupies approximately 59.3 acres within the Project site (Figure 7).

3.2.2 Ornamental/Landscaping

Landscaped vegetation consisting of ornamental trees and shrubs surround the private residence and other structures on the Project site. There are olive trees and a variety of fruit trees on the north side of the private residence. Ruderal species occur between the landscape and orchard plantings. Large trees (primarily valley oaks [*Quercus lobata*]) line the property boundary.

The ornamental land cover type occupies approximately 6.9 acres within the Project site (Figure 7).

3.2.3 Aquatic Features

Pruitt Creek is mapped as "Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC)" and "Palustrine, Forested, Emergent, Persistent, Seasonally Flooded (PFO/EM1C) Freshwater Forested/Shrub Wetland" in the NWI (USFWS 2022a; Figure 3). The NWI layer indicates a freshwater emergent wetland is present in the central northern portion of the Project site (Figure 3). Sequoia staff did not detect any wetted habitat or indications of wetland presence in that portion of the Project site while surveying for CESA-listed species.

3.2.4 Riparian Corridor

There is a narrow buffer of non-native annual grassland between the riparian corridor and the vineyards. Valley oaks dominate the riparian corridor with some smaller eucalyptus (*Eucalyptus* sp.) trees also present. Understory vegetation is composed of both native and non-native species of grasses and shrubs. The understory communities observed had distinct segments heavily dominated by native species alternating with areas dominated by non-native species. Some native species observed include California buckeye (*Aesculus californica*), California bay laurel (*Umbellularia californica*), willow (*Salix* sp.), poison oak (*Toxicodendron diversilobum*), valley oak, and coast live oak (*Quercus agrifolia*). Non-native species observed include Himalayan blackberry (*Rubus armeniacus*), eucalyptus, and black mustard (*Brassica nigra*), among others.

The riparian land cover type occupies approximately 5.2 acres within the Project site (Figure 7).

4.0 POTENTIALLY OCCURRING CESA-LISTED SPECIES

CESA-listed plant and animal species known to occur in the vicinity of the Project site are discussed below. CESA-listed plant species known to occur within 3 miles of the Project site are listed in Table 1. CESA-listed animal species known to occur within 3 miles of the Project site are listed in Table 2. We also discuss those CESA-listed species that could be impacted as a result of the proposed Project.

4.1 Potential to Occur

Potential for CESA-listed species to occur on the Project site was evaluated according to the following criteria:

- *No Potential.* Habitat on and adjacent to the site is clearly unsuitable for the species' requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- *Unlikely.* Few of the habitat components meeting the species' requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- *Moderate Potential.* Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- *High Potential.* All of the habitat components meeting the species' requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- *Present.* Species is observed on the site or has been recorded (i.e., CNDDB, other reports) on the site recently.

4.2 CESA-listed Plants

For the purpose of this document, CESA-listed plant species are plant species that meet one of the following criteria;

- Plant species listed as Threatened or Endangered under CESA, the laws and regulations for implementing CESA as defined by California Fish and Game Code (CFGC §2050 et seq.) and the California Code of Regulations (CCR) 14 CCR §670.1 et seq., and candidates for listing under the statute (CFGC §2068) or plants listed . These species are protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state Threatened or Endangered species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFW prior to initiating the "take."

- Species meeting the definition of 'Rare' or 'Endangered' under California Environmental Quality Act Guidelines 14 CCR §15125 (c) and/or 14 CCR §15380, including plants listed on CNPS Lists 1A, 1B, 2A, and 2B (CNPS 2001) Rank 1 and 2 species are defined below:
    - Rank 1A: Presumed extinct in California;
    - Rank 1B: Rare, threatened, or endangered in California and elsewhere;
    - Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
    - Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.

Figure 4 provides a graphical illustration for CESA-listed plant species CNDDB occurrences within 3 miles of the Project site. Table 1 provides an assessment of the potential of CESA-listed plant species to occur on the Project site. Fourteen CESA-listed plants have been previously documented within 3 miles of the Project site; however, no CESA-listed plants have been observed or mapped on the site itself. Sequoia analyzed the potential to occur for these plant species, as well as species included in CNPS and IPaC resource lists (USFWS 2022b) during the desktop review (Table 1). A number of these species require specialized habitats such as vernal pools, mesic meadows, seeps, cismontane woodland, and serpentinite soils that are not found on the Project site. Due to lack of suitable habitat and/or lack of known/recent occurrences in the Project vicinity, all 14 of these CESA-listed plant species are not expected to occur and are therefore not discussed further in this analysis. These species are: Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*), Jepson's leptosiphon (*Leptosiphon jepsonii*), Napa false indigo (*Amorpha californica* var. *napensis*), congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*), dwarf downingia (*Downingia pusilla*), narrow-anthered brodiaea (*Brodiaea leptandra*), oval-leaved viburnum (*Viburnum ellipticum*), pappose tarplant (*Centromadia parryi* ssp. *parryi*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Burke's goldfields (*Lasthenia burkei*), many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*), Pitkin marsh lily (*Lilium pardalinum* ssp. *pitkinense*), sebastapool meadowfoam (*Limnanthes vinculans*), and Sonoma sunshine (*Blennosperma bakeri*) (CNDDB 2022; CNPS 2022).

The Project site's history of prolonged and intense disturbance through agricultural and residential uses has resulted in habitat conditions that are not suitable for CESA-listed plant species. These conditions, coupled with the lack of suitable habitat and/or lack of known/recent occurrences on or in the immediate vicinity of the Project site, indicate that CESA-listed plant species are not expected to occur and therefore are not discussed further in this analysis. Furthermore, per the USFWS 2005 *Santa Rosa Plain Conservation Strategy*, which was designed to ensure the conservation of the California tiger salamander (*Ambystoma californiense*) and listed plants and contribute to their recovery (USFWS 2005), the Project site is located within a designation of the Conservation Strategy that determined the presence of California tiger salamander is not likely and "no listed plants [occur] in this area."

4.3 CESA-listed Animals

For the purpose of this document, CESA-listed animal species are species that meet one of the following criteria;

- Fish, and wildlife species listed as Threatened or Endangered under CESA; and the laws and regulations for implementing CESA as defined in CFGC §2050 et seq. and CCR 14 CCR §670.1 et seq., and candidates for listing under the statute (CFGC §2068);
- Fully Protected species, as designated by the CDFW (CFGC § 3511, 4700, 5050, and 5515).

Figure 5 provides a graphical illustration for CESA-listed animal species occurrences within 3 miles of the Project site. Table 2 provides an assessment of potential to occur for CESA-listed animal species on the Project site. One CESA-listed animal species occurrence has been previously documented within 3 miles of the Project site (CNDDB 2022). Sequoia analyzed the potential to occur for this animal species, as well as species included in the IPaC resource list (USFWS 2022b) during the desktop review (Table 2). A number of these species require specialized habitat such as dense forests and woodlands, vernal pools, large bodies of water, and perennial freshwater streams. Due to lack of suitable habitat and/or lack of recent occurrences in the project vicinity, five CESA-listed wildlife species are not expected to occur and are therefore not discussed further in this analysis. These five species are: bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), northern spotted owl (*Strix occidentalis caurina*), California tiger salamander (*Ambystoma californiense*) - Sonoma County Distinct Population Segment (DPS) *and* California freshwater shrimp (*Syncaris pacifica*). Descriptions and potential for occurrence of the remaining CESA-listed wildlife species—coho salmon (*Oncorhynchus kisutch*)—central California coast Evolutionary Significant Unit (ESU) is provided in more detail below.

4.3.1 Coho Central California Coast ESU

The coho salmon is an anadromous fish that spends two years in the ocean and returns to perennial freshwater streams during the spring to spawn. Adult coho salmon enter fresh water from September through January in order to spawn. In the short coastal streams of California, migration usually begins between mid-November and mid- January. Coho salmon in northern California coastal streams are typically associated with low gradient reaches of tributary streams, which provide suitable spawning areas and good juvenile rearing habitat. Juvenile coho salmon typically rear in low-gradient coastal streams, sloughs, side channels, alcoves, estuaries, low-gradient tributaries, large rivers, beaver ponds, and large slack waters. In general salmonids require cold, well-oxygenated water for respiration and gravels with low quantities of fine sediment for spawning and egg development. Due to their early life history requirement for one year of freshwater residency, coho salmon are relatively more vulnerable to stressors that change water quality parameters such as dissolved oxygen, temperature, and turbidity over hot summer months where cold water rearing habitat is already limited. The most productive juvenile habitats are found in smaller streams with low-gradient alluvial channels containing abundant pools formed by large woody debris. Coho salmon are now absent from all tributaries of San Francisco

Bay and many streams south of the Bay; this is likely associated with adverse effects from increased urbanization and other human developments on watersheds and fish habitat (CDFG 2004).

Critical habitat includes all river reaches accessible to listed coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California, including Arroyo Corte Madera Del Presidio and Corte Madera Creek, tributaries to San Francisco Bay (NOAA 1999). Critical habitat consists of the water, substrate, and adjacent riparian zone of estuarine and riverine reaches, including off-channel habitats, in specified hydrologic units in Mendocino, Sonoma, Napa, Marin, San Mateo and Santa Cruz counties. Accessible reaches are those within the historical range of the ESU that can still be occupied by any life stage of coho salmon. Inaccessible reaches are those above dams or longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) (NOAA 1999).

Pruitt Creek is within the designated range of the state and federally endangered Central California Coast (CCC) coho salmon evolutionary significant unit (ESU; CDFW 2021). The Project site is located within the Russian River Watershed, which is designated critical habitat for CCC coho below Coyote Dam and Warm Springs Dam; however, Pruitt Creek is not part of the mapped critical habitat for CCC coho (NOAA 2005, Figure 6). There is a CNDDB occurrence for CCC coho salmon in Mark West Creek (recorded in 2015; CNDDB Occurrence No. 25; Figure 5), approximately 0.75-air-miles south of the Project site. Mark West Creek is hydrologically connected to Pruitt Creek at times of moderate flow, historically with highest potential for connectivity from November to April (USGS 2022). At moderate flows, the habitat in Pruitt Creek would have the depth, cover, and predation opportunities to accommodate adult CCC coho salmon but there is very little spawning and rearing habitat available on the Project site.

For CCC coho salmon to occur in Pruitt Creek, large rain events and associated increases in water flow and decreases in water temperature have to align with the CCC coho salmon's migration event. Additionally, all higher order tributaries to the Russian River connected to Pruitt Creek would need to have sufficient flow and provide uninhibited access to Pruitt Creek. There is no potential for CCC coho salmon to occur on the Project when the creek is dry. There is a moderate potential for occurrence when Pruitt Creek has sufficient connection to higher order tributaries and wetted habitat. Therefore, impacts to the CCC Coho salmon are possible as a result of the proposed Project, depending on final design plans and construction methods. Individuals are not likely to be directly impacted by physical construction methods but may be indirectly affected if Project activities modify water quality parameters (e.g., increased temperature or turbidity, lowered dissolved oxygen) within Pruitt Creek. Potential project activities that could contribute to indirect effects include removal of riparian vegetation, grading and sediment transport from uplands to the waterway, and unintentional releases (spills) of hazardous materials to surface waters.

5.0 REGULATORY SETTING

Regulatory authority over biological resources is shared by federal, state, and local agencies under a variety of laws, ordinances, regulations, and statutes. Under each law we discuss their pertinence to the proposed development. As part of the Proposed Action, the Project site would be taken into federal trust for the benefit of the Koi Nation prior to any construction activities. Land that is held for trust on behalf of tribes is subject to federal and tribal law exclusively.

While this Project would not fall under jurisdiction of the CESA once the Project site is taken into federal trust, avoidance of impacts to all species should be considered to protect the natural resources on the Project site pursuant to NEPA procedures for due diligence. Typically, within their jurisdictional lands CDFW is responsible for administering CESA and issuing incidental take permits for a state listed threatened and/or endangered species only if specific criteria are met (i.e., the effects of the authorized take are minimized and fully mitigated). Accordingly, mitigation measures that are required are typically commensurate with the impact on each species. Consequently, should impacts to a species be expected, listed under CESA and/or the federal Endangered Species Act, it is prudent to acknowledge these potential impacts and find ways to minimize or avoid the impacts completely during the NEPA process. While no additional requirements exist for CESA-listed species, impacts to federally-listed species and/or designated critical habitat would require permitting with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (NMFS) separately from the NEPA process.

6.0 SUMMARY OF CONSTRAINTS AND OTHER RECOMMENDATIONS

Based on Sequoia's assessment, there is potential for impacts to occur to species covered under the CESA. Any work plans involving Pruitt Creek and the associated riparian corridor have a possibility for directly and/or indirectly affecting the habitat. These impacts may not rise to the standard of 'take' under the CESA; however, they should still be considered during environmental review. Impacts to the creek and riparian habitat would likely require permitting and consultation with the U.S. Army Corps of Engineers, which may place avoidance and minimization measures on the riparian area.

Suitable habitat for adult CCC coho salmon exists on the Project site when flows are sufficient. There are no documented occurrences of this species on the Project site; however, occurrences have been documented in Mark West Creek, a higher order tributary to the Russian River that is assumed to be hydrologically connected to Pruitt Creek during periods of sufficient flow. The intermittent flow of Pruitt Creek is likely a determining factor for the lack of access and associated occurrences in the creek. For this anadromous species, the connectivity of tributaries in their natal watershed at the time of migration determines where they will occur. Pruitt Creek is disconnected from Mark West Creek for extended times throughout the year, but there is potential for CCC coho salmon to reach Pruitt Creek at sufficient flows. There is potential for occurrence on the Project site and potential for direct and indirect impacts to this species from Project activities. Due to the federal status of the CCC coho salmon and the presence of Essential Fish Habitat, a formal Section 7 and Essential Fish Habitat consultation will be

initiated with the NMFS by the Bureau of Indian Affairs to evaluate impacts to CCC coho at a federal level. CESA-level concerns acknowledged in this memorandum will be addressed thoroughly in that process.

If you have any questions or concerns, please do not hesitate to contact me at the email or phone number listed below. Thank you for the opportunity to support you on this Project.

Sincerely,

Claire Buchanan | Project Manager
Sequoia Ecological Consulting, Inc.
Mobile: 916.834.2129 | Main: 925.855.5500 | Fax: 510.439.1104
cbuchanan@sequoiaeco.com
www.sequoiaeco.com

7.0 REFERENCES

Anderson, P. R. 1968. The reproductive and developmental history of the California tiger salamander. Masters thesis, Department of Biology, Fresno State College, Fresno, California. 82 pages.

Austin C.C. and H.B. Shaffer. 1992. Short-, medium- and long-term repeatability of locomotor performance in the tiger salamander Ambystoma californiense. Functional Ecology 6(2): 145-153.

Baldwin, D.H, D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (editors). 2012. The Jepson Manual Vascular Plants of California: Second Edition. University of California Press, Berkeley. 1568 pps.

Barry, S.J. and H.B. Shaffer. 1994. The status of the California Tiger Salamander (Ambystoma californiense) at Lagunita: a 50-year update. Journal of Herpetology 28: 159-164

California Department of Fish and Game (CDFG). 2004. Recovery Strategy for California Coho salmon. Report to the California Fish and Game Commission.

California Department of Fish & Wildlife (CDFW). 2021. Special Animals List. California Natural Diversity Database. Wildlife and Habitat Data Analysis Branch. Updated October 2021.

California Natural Diversity Data Base (CNDDB). 2022. RareFind 5. Computer Printout for Special-Status Species Within a 3-Mile Radius of the Project site. California Natural Heritage Division, California Department of Fish and Wildlife, Sacramento, CA.

California Native Plant Society (CNPS). 2001. Inventory of rare and endangered plants of California (Sixth Edition). Rare plant scientific advisory committee, David P. Tibor, convening editor. California Native Plant Society. Sacramento, CA. 338 pps.

California Native Plant Society (CNPS), Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 2022 March]

Environmental Science Associates (ESA). Dunn, Leanne (2021) Memorandum - Confidential Shiloh Road Project – NEPA Biological Constraints Analysis.

Feaver, P. E. 1971. Breeding pool selection and larval mortality of three California amphibians: Ambystoma tigrinum californiense Gray, Hyla regilla Baird and Girard and Scaphiopus hammondi hammondi Girard. Master's thesis, Department of Biology, Fresno State College, Fresno California. 58 pages.

Google Earth Pro. 2022. 3D map, Buildings data layer. Website: http://www.google.com/earth/index.html [accessed 2022 March]

Jennings, Mark R. and Marc P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final Report to the California Department of Fish and Game.

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 1999. Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon; Final Rule. Federal Register 64(86):24049-24062. May 5.

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 2005. Endangered and Threatened Species: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs: Final Rule. Federal Register 70(123):37160-37204. June 28.

Shaffer, H. B., G.B. Pauly, J.C. Oliver, and P.C. Trenham. 2004. The molecular phylogenetics of endangerment: cryptic variation and historical phylogeography of the California tiger salamander, Ambystoma californiense. Molecular Ecology 13:3033-3049.

Stebbins, R. C. 2003. A Field Guide to Western Reptiles and Amphibians. 3rd Edition. Houghton Mifflin Company. New York, New York. 533 pp.

Shaffer, H. B., R. N. Fisher, and S. E. Stanley. 1993. Status report: the California tiger salamander (Ambystoma californiense). Final report for the California Department of Fish and Game. 36 pages plus figures and tables.

Storer, Tracy I. 1925. A Synopsis of the Amphibia of California. University of California Publications in Zoology. v27. The University of California Press. Berkeley, California: pp 1-43, 231-245, 330, 331, 336-339.

Trenham, P.C., and H.B. Shaffer. 2005. Amphibian Upland Habitat Use and its Consequences for Population Viability. Ecological Applications 15(4):1158–1168.

U.S. Fish & Wildlife Service (USFWS). 2005. Final Santa Rosa Plain Conservation Strategy. Sacramento Office of the U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, North Coast Regional Water Quality Control Board, County of Sonoma, Cities of Cotati, Rohnert Park, and Santa Rosa, Laguna de Santa Rosa Foundation. December 1, 2005.

U.S. Fish and Wildlife Service (USFWS). 2017. Recovery Plan for the Santa Rosa Plain (Abystoma californiense). U.S. Fish and Wildlife Service, Sacramento, California. vii + 144 pp. May 31.

U.S. Fish & Wildlife Service (USFWS). 2022a. National Wetlands Inventory (NWI). Website: https://www.fws.gov/wetlands/data/Mapper.html [accessed 2022 March]

US Fish & Wildlife Service (USFWS). 2022b. Information for Planning and Consultation (IPaC). Website: https://ecos.fws.gov/ipac/ [accessed 2022 March]

U.S. Geological Survey (USGS). 2022. National Water Information System (USGS Water Data for the Nation). Website http://waterdata.usgs.gov/nwis/ [accessed 2022 March]

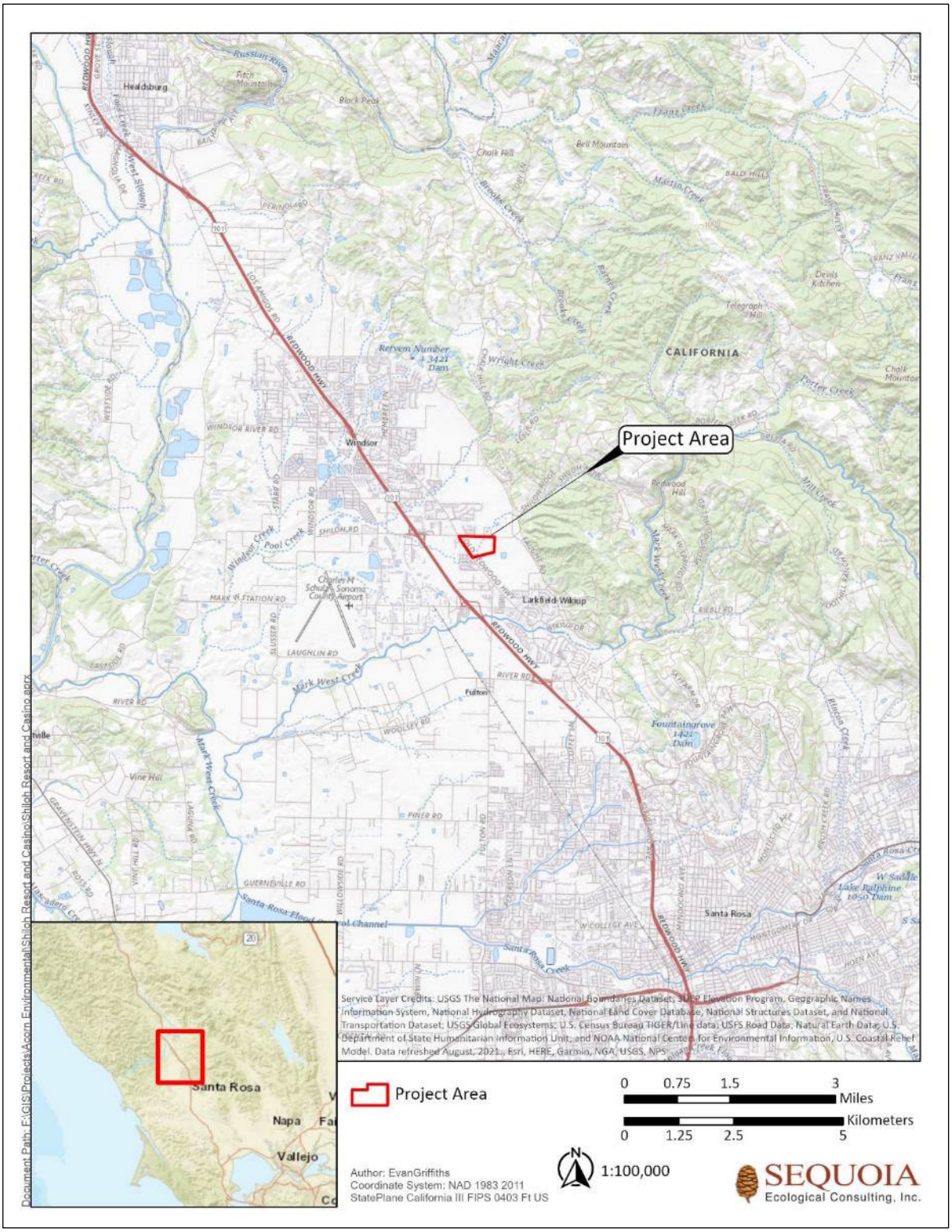


Figure 1. Regional Map of the Shiloh Resort and Casino Project Site.

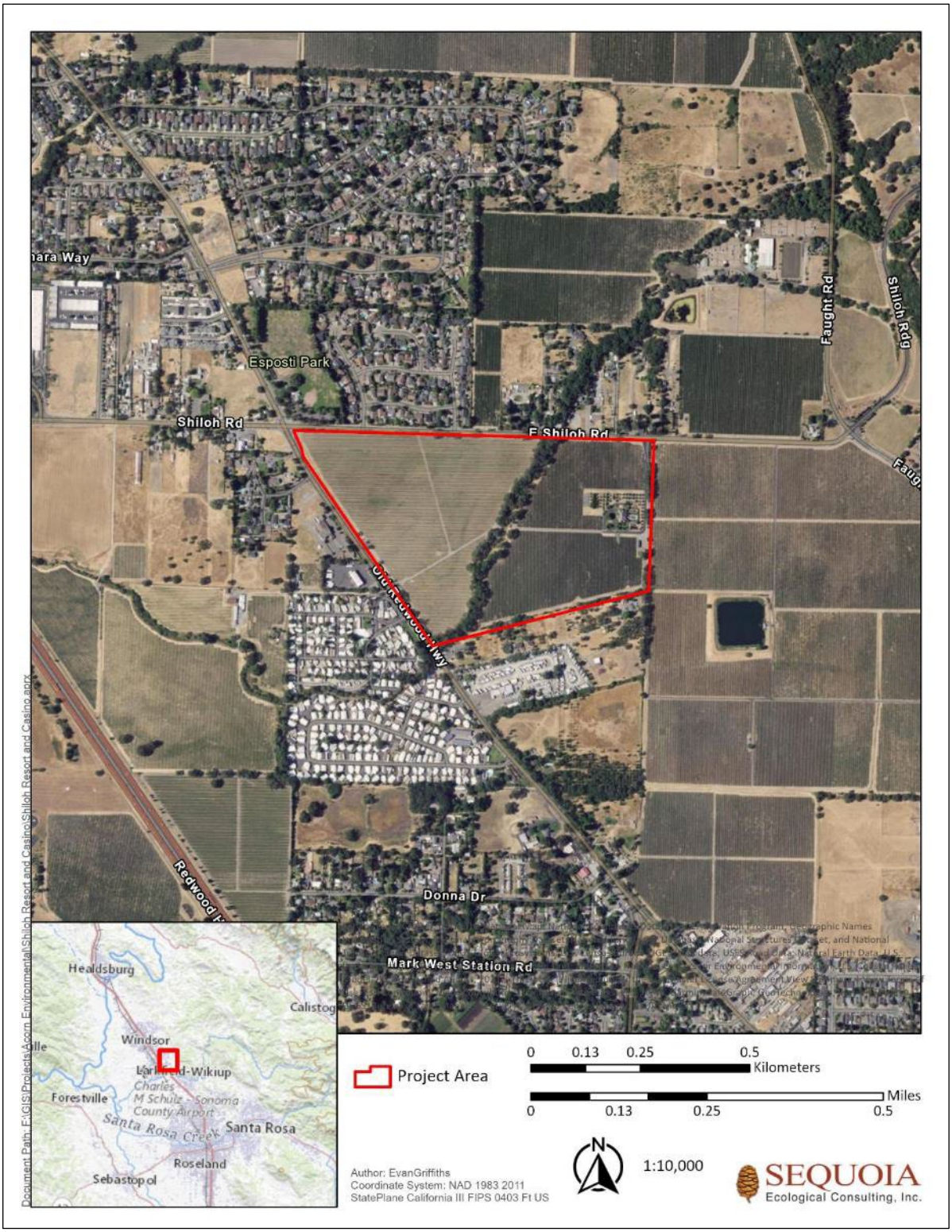


Figure 2. Location Map of the Shiloh Resort and Casino Project Site.

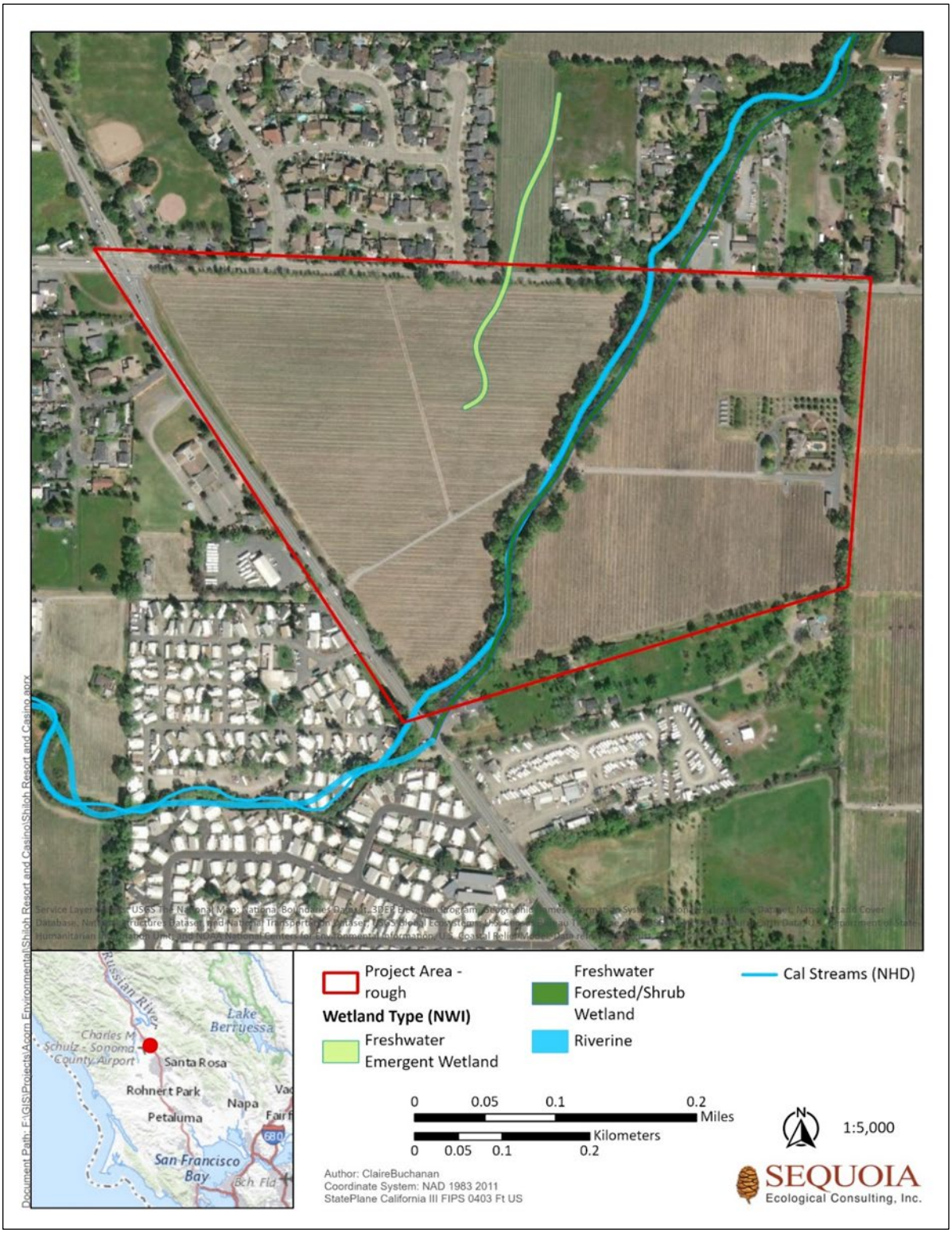


Figure 3. USFWS National Wetland Inventory Within the Vicinity of the Project Site.

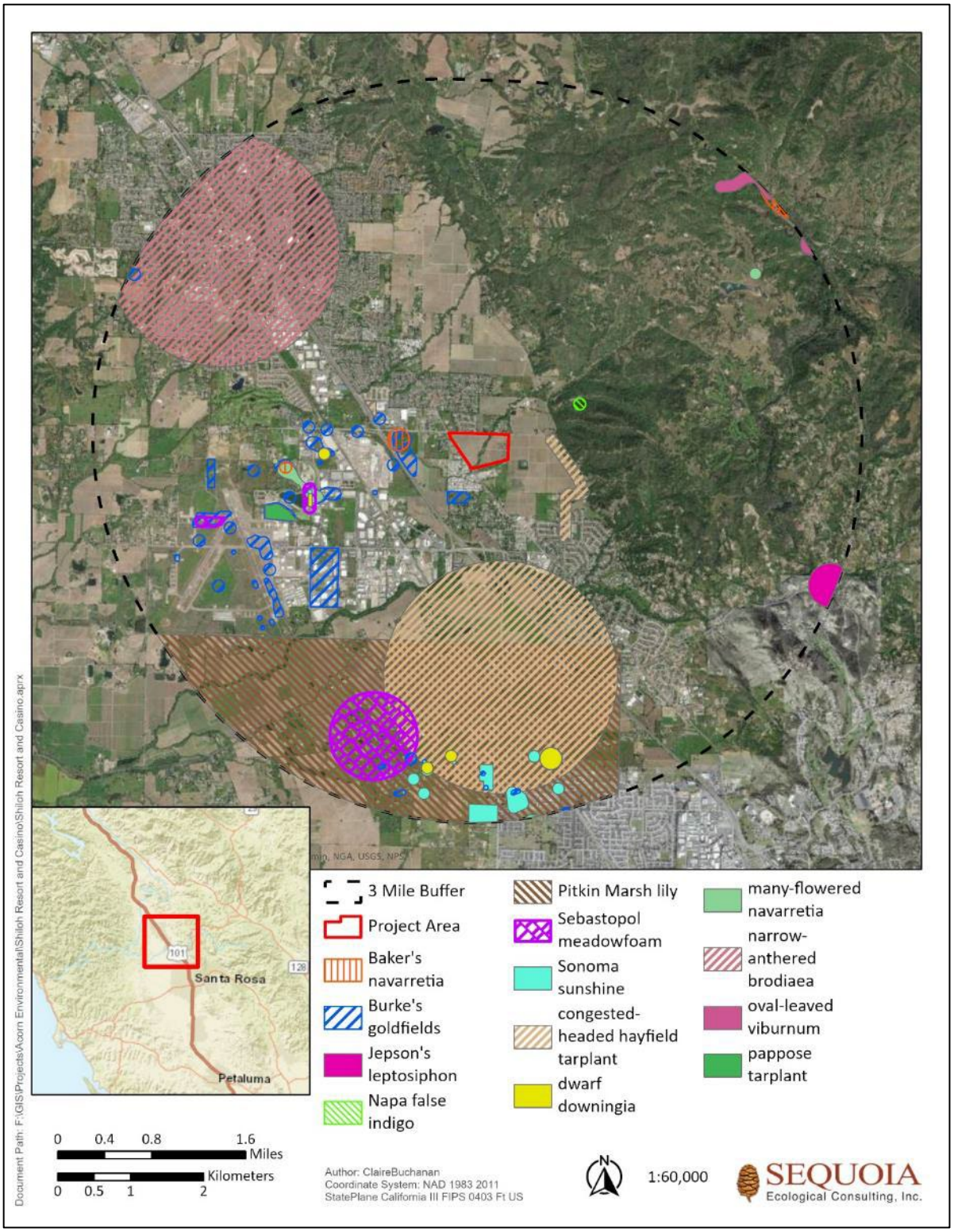


Figure 4. CESA-Listed Plant Species Occurrences Within 3 Miles of the Project Site.

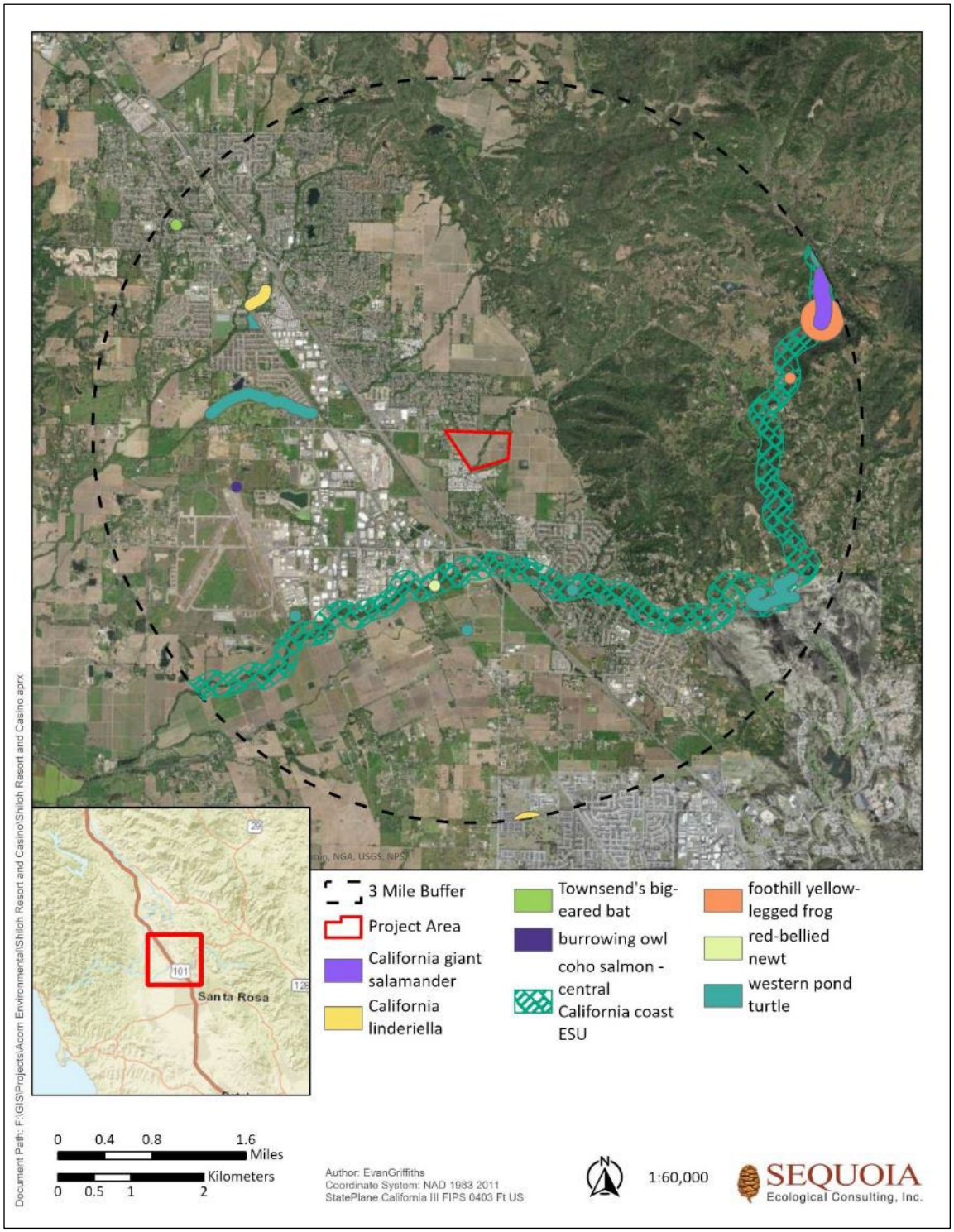


Figure 5. Special-Status Wildlife Species Occurrences Within 3 Miles of the Project Site (Note: only California tiger salamander and coho salmon are CESA-listed).

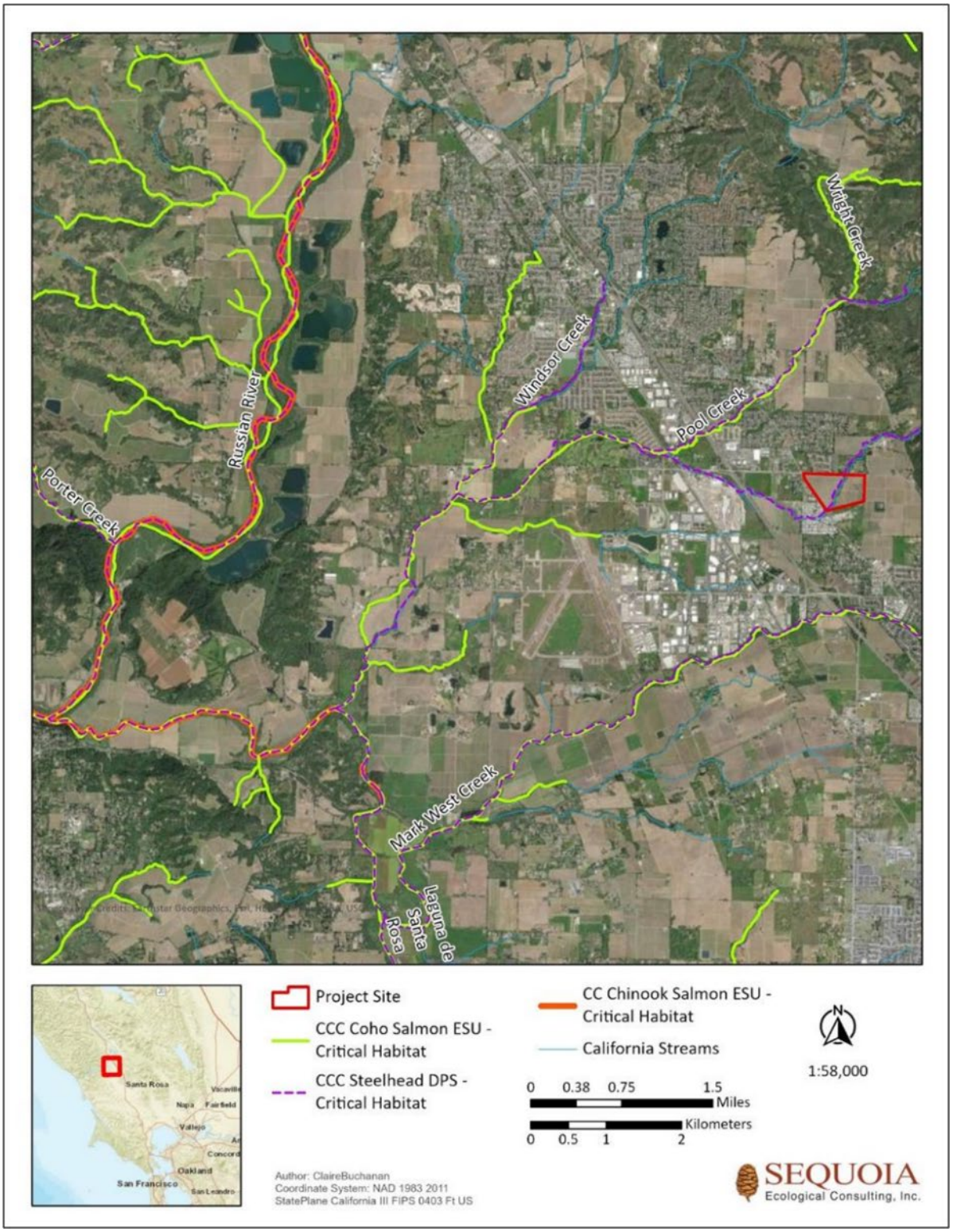


Figure 6. NMFS Critical Habitat in the Vicinity of the Proposed Shiloh Resort and Casino Project Site.

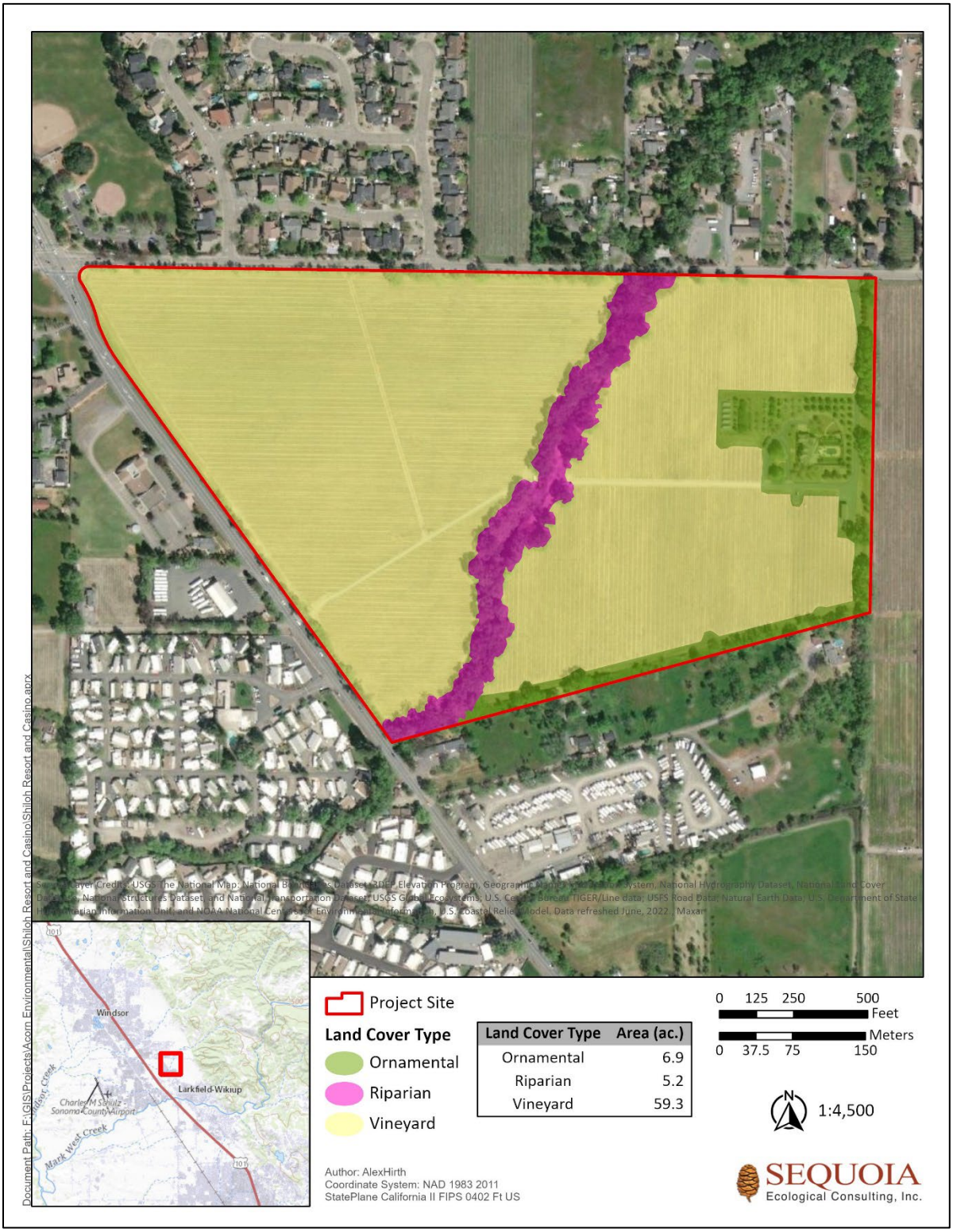


Figure 7. Land Cover Types within the Proposed Shiloh Resort and Casino Project Site.

Table 1. CESA-Listed Plant Species with Potential to Occur on the Project Site.

Scientific Name	Common Name	CESA Listing Status	Habitat Requirements	Potential for Occurrence
Amorpha californica var. *napensis*	Napa false indigo	1B.2	Occurs in chaparral at elevations below 2,600 feet.	No Potential. No chaparral occurs on the Project site.
Blennosperma bakeri	Sonoma sunshine	CE, 1B.1	Occurs in wet valley and foothill grasslands and vernal pools at elevations of 35 to 360 feet.	No Potential. No grassland or vernal pools occur on the Project site.
Brodiaea leptandra	Narrow-anthered brodiaea	1B.2	Occurs in open mixed-evergreen forest and chaparral at elevations of 130 to 4,000 feet.	No Potential. No evergreen forest or chapparal occurs on the Project site.
Centromadia parryi ssp. *parryi*	pappose tarplant	1B.2	Occurs in grassland, coastal salt marshes, alkaline springs, and seeps at elevations below 1,300 feet.	No Potential. No salt marshes or alkaline springs occur on the Project site. Grassland does not provide suitable habitat.
Downingia pusilla	dwarf downingia	2B.2	Occurs in vernal pools at elevations below 500 feet.	No Potential. No vernal pools occur on the Project site.
Gratiola heterosepala	Boggs Lake hedge-hyssop	CE, 1B.2	Occurs in shallow water and along margins of vernal pools at elevations below 5,000 feet.	No Potential. No vernal pools occur on the Project site.
Hemizonia congesta ssp. *Congesta*	congested-headed hayfield tarplant	1B.2	Occurs in grassland, barrens, chaparral, and open woodland within serpentine substrates at elevations below 1,500 feet.	No Potential. No serpentine substrates occur on the Project site.
Lasthenia burkei	Burke's goldfields	CE, 1B.1	Occurs in mesic (wet) meadows, seeps, and vernal pools at elevations of 50 to 1,970 feet.	No Potential. No mesic meadows, seeps or vernal pools occur on the Project site.
Leptosiphon jepsonii	Jepson's leptosiphon	1B.2	Occurs in open or partially shaded grassland slopes at elevations below 1,600 feet.	No Potential. No grasslands occur on the Project site.

Scientific Name	Common Name	CESA Listing Status	Habitat Requirements	Potential for Occurrence
Lilium pardalinum ssp. *Pitkinense*	Pitkin Marsh lily	CE, 1B.1	Occurs in cismontane woodland, meadows and seeps, and freshwater marshes and swamps at elevations of 115 to 215 feet.	No Potential. No meadows, seeps, or cismontane woodland occurs on the Project site.
Limnanthes vinculans	Sebastopol meadowfoam	CE, 1B.1	Occurs in meadows and seeps, valley and foothill grasslands, and vernal pools at elevations of 50 to 1,000 feet.	No Potential. No mesic habitat or vernal pools occur on the Project site.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	1B.1	Occurs in vernal pools at elevations below 5,500 feet.	No Potential. No vernal pools occur on the Project site.
Navarretia leucocephala ssp. *plieantha*	many-flowered navarretia	CE, 1B.2	Occurs in vernal pools with volcanic ash substrates at elevations of 100 to 3,115 feet.	No Potential. No vernal pools occur on the Project site
Viburnum ellipticum	oval-leaved viburnum	2B.3	Occurs in chaparral and yellow-pine forests on north-facing slopes at elevations of 1,000 to 4,500 feet.	No Potential. No suitable habitat occurs on the Project site and outside of elevation range.

Key to status:
CT=California listed as threatened species
CE=California listed as endangered species
CNPS Rare Plant Rank
1A=Plants presumed extirpated in California, and either rare or extinct elsewhere
1B=Pants rare, threatened, or endangered in California, or elsewhere
2A=Plants presumed extirpated in California but common elsewhere
2B=Plants rare, threatened, or endangered in California but more common elsewhere
Note: CNPS ranks below 2B were excluded from this analysis.

Table 2. CESA-Listed Animal Species with Potential to Occur on the Project Site.

Scientific Name	Common Name	CESA Listing Status	Habitat Requirements	Potential for Occurrence
Ambystoma californiense	California tiger salamander – Sonoma County DPS	CE	Occurs in grasslands and foothills with pools or ponds for breeding. Sonoma County DPS inhabits vernal pools and seasonal ponds, grasslands, and oak savannah.	No Potential. Project site does not provide suitable breeding aquatic habitat or upland grassland habitat and the Project site outside of known geographic range.
Aquila chrysaetos	golden eagle	FP	Occurs in grasslands, savannahs, oak and pine woodlands and agricultural fields. Nests on cliffs and in large trees in open areas.	No Potential. Project site's main land use is agricultural and the habitat, including vineyards, is not suitable for the species.
Haliaeetus leucocephalus	bald eagle	FP	Occurs in forested areas adjacent to large bodies of water including lakes, reservoirs, rivers, estuaries, and the coast.	No Potential. No suitable habitat such as old-growth forests, freshwater lakes or marshes are present within or near the Project site
Oncorhynchus kisutch	coho salmon – central California coast ESU	CE	Anadromous fish species that spans and spends a portion of its life in fresh inland streams, maturing in the open ocean. Critical habitat is designated to include all river riches accessible to listed coho within the range of the ESUs.	Moderate Potential. Pruitt Creek has suitable habitat for adult CCC Coho but lacks spawning and rearing habitat. Habitat is connected to known occurrences at moderate flows.
Strix occidentalis caurina	northern spotted owl	CT	Occurs in dense canopies of mature and old-growth forests. Nests in tree hollows.	No Potential. No suitable habitat is present within the Project site.
Syncaris pacifica	California freshwater shrimp	CE	Occurs in perennial freshwater streams with submerged undercut banks, overhanging plants, and exposed live roots of willow or alder.	No Potential. Pruitt Creek is dry at certain times of the year and therefore is not a perennial stream. The closest occurrence is over 6 miles to the northeast. This species is not expected to occur on the Project site.

Key to status:
CE=California listed as endangered species
CT=California listed as threatened species
FP=California listed as fully protected

Table 3. Plant Species Observed on the Project Site.

Scientific Name	Common Name	Family
Aesculus californica	California buckeye	Sapindaceae
Agapanthus africanus	African lily	Amarylidaceae
Anthemis cotula	stinking chamomile	Asteraceae
Arum italicum	Italian arum	Araceae
Avena barbata	slender oat	Poaceae
Avena fatua	wild oat	Poaceae
Brassica nigra	black mustard	Brassicaceae
Briza minor	little quaking grass	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft chess	Poaceae
Calandrinia menziesii	red maids	Montiaceae
Calendula arvensis	field marigold	Asteraceae
Cardamine hirstua	bittercress	Brassicaceae
Carduus pycnocephalus	Italian thistle	Asteraceae
Carex spp.	sedges	Cyperaceae
Cerastium glomeratum	mouse-ear chickweed	Monitaceae
Chlorogalum pomeridianum	soap plant	Agavaceae
Claytonia perfoliate	miner's lettuce	Montiaceae
Cotoneaster sp.	cotoneaster	Rosaceae
Cyperus eragrostis	tall flatsedge	Cyperaceae
Elymus sp.	wild rye	Poaceae
Erodium botrys	cranesbill	Geraniaceae
Erodium cicutarium	redstem filaree	Geraniaceae
Eucalyptus globulus	blue gum	Myrtaceae
Festuca myuros	six-weeks fescue	Poaceae
Festuca perennis	Italian ryegrass	Poaceae
Fraxinus latifolia	Oregon ash	Fagaceae
Galium aparine	bedstraw	Rubiaceae
Genista monspessulana	French broom	Fabaceae
Geranium dissectum	cutleaf geranium	Geraniaceae
Geranium molle	dove's-foot geranium	Geraniaceae
Geranium robertianum	Robert's geranium	Geraniaceae
Hedera helix	English ivy	Araliaceae
Hirschfeldia incana	shortpod mustard	Brassicaceae

Scientific Name	Common Name	Family
Hordeum murinum	mousetail barley	Poaceae
Hypochaeris radicata	rough cat's-ears	Asteraceae
Juncus balticus	Baltic rush	Juncaceae
Juncus effusus	bog rush	Juncaceae
Juncus xiphioides	iris-leaf rush	Juncaceae
Lepidium nitidum	shining pepperweed	Brassicaceae
Lonicera hispidula	pink honeysuckle	Caprifoliaceae
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae
Malva parviflora	cheeseweed	Malvaceae
Medicago polymorpha	California burclover	Fabaceae
Narcissus pseudonarcissus	daffodil	Amaryllidaceae
Nasturtium officinale	watercress	Brassicaceae
Oxalis pes-caprae	Bermuda buttercup	Oxalidaceae
Pinus sp.	pine	Pinaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa annua	annual bluegrass	Poaceae
Polygonum aviculare	yard knotweed	Polygonaceae
Quercus agrifolia	coast live oak	Fagaceae
Quercus lobata	valley oak	Fagaceae
Ranunculus muricatus	spiny fruit buttercup	Ranunculaceae
Rubus armeniacus	Himalayan blackberry	Rosaceae
Rumex acetosella	sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Rumex pulcher	fiddle dock	Polygonaceae
Schoenoplectus pungens	three-square bulrush	Cyperaceae
Senecio vulgaris	common groundsel	Asteraceae
Stachys bullata	hedge nettle	Lamiaceae
Symphoricarpos mollis	creeping snowberry	Caprifoliaceae
Torilis arvensis	field hedge parsley	Apiaceae
Toxicodendron diversilobum	poison oak	Anacardiaceae
Trifolium spp.	clover	Fabaceae
Typha spp.	cattails	Typhaceae
Umbellularia californica	California bay laurel	Lauraceae

Scientific Name	Common Name	Family
Vicia sativa	common vetch	Fabaceae
Vinca major	periwinkle	Apocynaceae

Table 4. Wildlife Species Observed on the Project Site.

Scientific Name	Common Name
Junco hyemalis	dark-eyed junco
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Cathartes aura	turkey vulture
Sitta carolinensis	white-breasted nuthatch
Pseudacris sierra	Sierran treefrog (= Sierran chorus frog)

Appendix G-4

Aquatic Resources Delineation Report

SEQUOIA
Ecological Consulting, Inc.

Aquatic Resources Delineation Report
Shiloh Resort and Casino Property
Larkfield-Wikiup, Sonoma County, California

April 2022

Prepared on behalf of:

Acorn Environmental
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762
Attention: Bibiana Sparks-Alvarez

Prepared by:

Sequoia Ecological Consulting, Inc.
1342 Creekside Drive
Walnut Creek, CA 94596
Contact: Ari Rogers

CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

As contracted by Acorn Environmental for the Koi Nation of Northern California (Tribe; Property Owner), Sequoia Ecological Consulting, Inc. (Sequoia) is submitting this preliminary jurisdictional determination request to the U.S. Army Corps of Engineers (USACE) for the proposed Shiloh Resort and Casino (R&C) Project (Project) site, located in Larkfield-Wikiup, Sonoma County, California (Assessor's Parcel Number 059-300-003) (Figures 1 and 2). Sequoia's delineation of "waters of the United States" followed the U.S. Environmental Protection Agency and Department of the Army's 2020 *Navigable Waters Protection Rule* and USACE's 1987 *Wetlands Delineation Manual* and 2008 *Regional Supplement for the Arid West Region*. The Applicant proposes to acquire the Project site into federal trust as the initial reservation for the Koi Nation of Northern California, which will subsequently develop a resort and casino.

This report presents the results of the delineation of potential waters of the United States by Sequoia on February 23 and 24, 2022. Sequoia respectfully requests that USACE confirm whether the areas mapped on the Project site meet criteria as "wetlands" and "other waters" subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act (CWA), through the use of a Preliminary Jurisdictional Determination (PJD). Sequoia understands that only USACE can determine the actual acreage of "waters of the United States" pursuant to Section 404 of the CWA.

1.1 Location And Setting

The Project site is located at 222 East Shiloh Road in Larkfield-Wikiup, a census-designated place in Sonoma County, California (Figures 1 and 2). The Project site is bordered by Shiloh Road on the north, existing vineyards on the east, a portion of Pruitt Creek and scattered residences on the south, and Old Redwood Highway on the west. The site is predominately occupied by vineyards bisected by an intermittent drainage, Pruitt Creek, and a single-family residence exists near the eastern property boundary. A gate on the western side of the property provides access from Old Redwood Highway and a paved driveway accessed from East Shiloh Road runs along the eastern edge of the property boundary and leads to the private dwelling.

1.2 Project Description

Sequoia understands that Acorn Environmental is preparing National Environmental Policy Act (NEPA) compliance documentation for the proposed Project on behalf of the Federal Bureau of Indian Affairs (federal Lead Agency). This confidential Project involves the acquisition of an approximately 60-acre site near the Town of Windsor into federal trust as the initial reservation for the Tribe, and the subsequent development of a resort and casino by the Tribe.

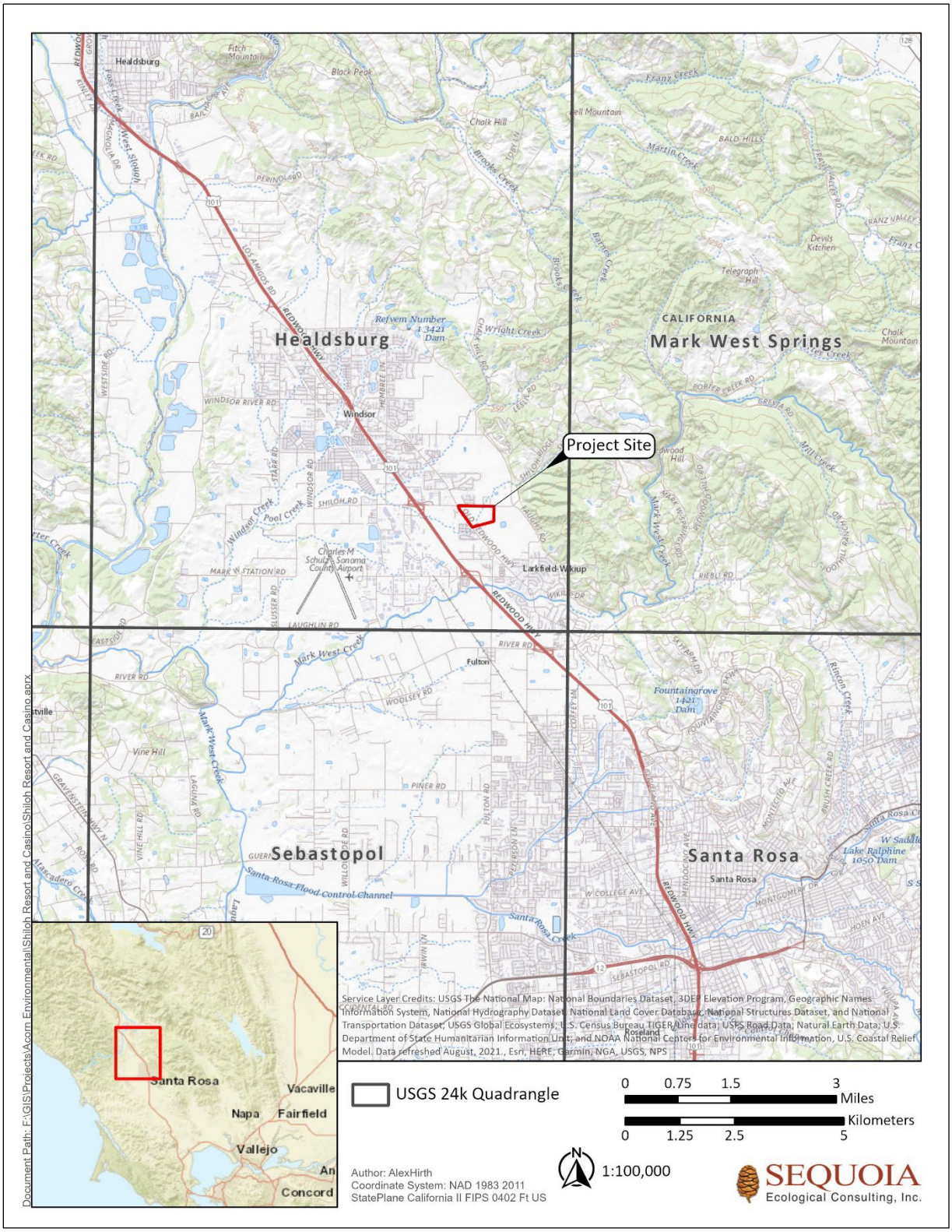


Figure 1. Regional Map of the Shiloh Resort and Casino Project Site.

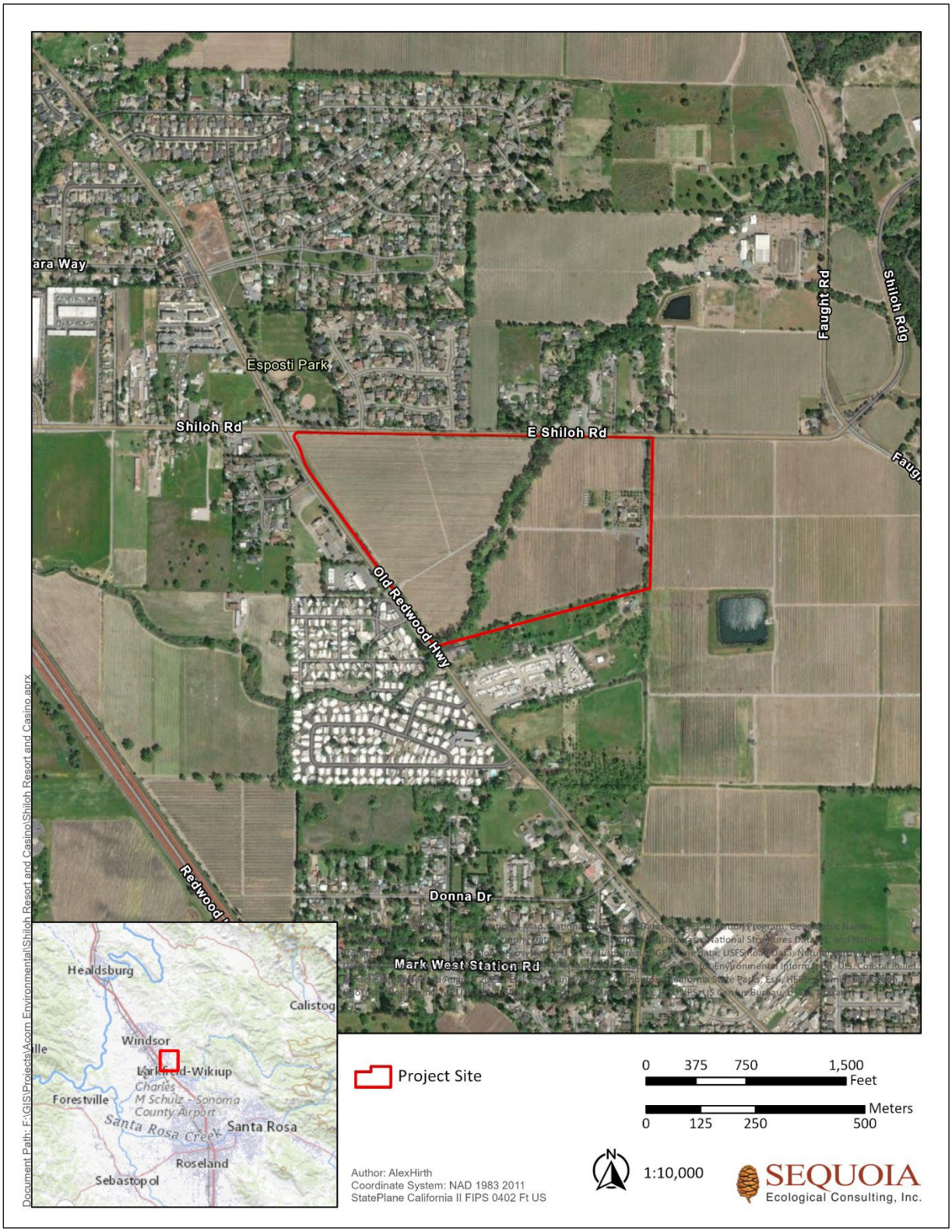


Figure 2. Location Map of the Shiloh Resort and Casino Project Site.

2.0 METHODS

Prior to the field delineation, available reference materials were reviewed, including the Natural Resource Conservation Service (NRCS) Web Soil Survey (NRCS 2022a), hydric soils lists (NRCS 2022b), the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI; USFWS 2022), the U.S. Geologic Survey (USGS) National Hydrography Dataset (NHD; USGS 2022), geologic data (California Geological Survey 2010), topographic maps, and aerial imagery. A routine-level aquatic resource delineation was conducted on the Project site on February 23 and 24, 2022.

The Project site was field-checked for indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. During the aquatic resource delineation, six sample points (three pairs) were taken on the Project site and recorded on USACE data forms provided in the *Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (Arid West Manual; USACE 2008a). USACE data forms are included in Appendix A.

This aquatic resource delineation was conducted in accordance with the *Arid West Manual* and the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE Manual; Environmental Laboratory 1987). Based on the presence or absence of field indicators—including vegetation, hydrology, and soils—the limits of potential jurisdictional wetlands and other waters of the United States were determined. Potential jurisdictional wetlands and other waters were mapped with a Trimble GPS unit (sub-meter accuracy) and overlain on a digital orthophoto using ArcGIS mapping software (Appendix B).

2.1 Hydrophytic Vegetation

Hydrophytic vegetation is defined as "the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). In order to determine if hydrophytic vegetation is present, each plant species occurring in a sample plot is identified and assigned a wetland indicator status (Table 1) based on the *National Wetland Plant List* (USACE 2020).

Table 1. Wetland Plant Indicator Status.

Wetland Indicator Status	Definition
OBL – Obligate	Occur over 99% of the time in wetlands
FACW – Facultative wetland	Occur 33 to 67% of the time in wetlands
FAC – Facultative	Occur 50% of the time in wetlands
FACU – Facultative upland	Occur 1 to 33% of the time in wetlands
UPL - Upland	Occur less than 1% of the time in wetlands
NI – Non-indicator	No classification given due to lack of information

Plants that have an indicator status of OBL, FACW, and FAC are considered to be typically adapted for life in anaerobic soils conditions, and qualify as hydrophytic species for Section 404 delineations. If more than 50 percent of the dominant plant species present in a sample plot are classified as hydrophytic species (e.g., FAC or wetter), the area has met the hydrophytic vegetation criterion. Dominant species are selected using the "50/20 rule" (USACE 2008a).

2.2 Wetland Hydrology

Wetland hydrology "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season sufficient to create anaerobic and reducing conditions" (Environmental Laboratory 1987). The jurisdictional wetland hydrology criterion is satisfied if the area supports "*14 or more consecutive days of flooding or ponding, or a water table 12 in. (30 cm) or less below the soil surface, during the growing season at a minimum frequency of 5 years in 10 (50 percent or higher probability)*" (USACE 2008a). If recorded data—such as stream, tidal gauge, or hydrologic monitoring—are lacking, field indicators are used to determine the presence of wetland hydrology. Field indicators include primary indicators, such as observed inundation or saturation, biotic crust, and oxidized rhizospheres on living roots; or secondary indicators, such as drainage patterns and FAC-neutral test. The presence of one primary indicator, or two secondary indicators, is sufficient to conclude that an area has wetland hydrology (USACE 2008a).

2.3 Hydric Soils

Hydric soils are defined by the Natural Resources Conservation Service as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil" (Federal Register 1994). Nearly all hydric soils exhibit characteristic morphologies that result from repeated periods of saturation or inundation, or both, for more than a few days. Characteristic hydric soil indicators observable in the field include: histic epipedons; sulfidic material; aquic or preaquic moisture regime; reducing conditions; iron and manganese concretions; and soil colors (gleyed soils, soils with mottles and/or low chroma matrix). Color designations are determined by comparing a soil sample with a standard Munsell soil color chart (Munsell 2012). The presence of any one of the above listed field indicators is considered sufficient to meet the hydric soil criterion.

2.4 Other Waters of the U.S.

In addition to potential jurisdictional wetlands, this study evaluated the presence of any "Waters of the U.S." other than wetlands potentially subject to jurisdiction under Section 404 of the CWA. "Other Waters" are seasonal or perennial water bodies, such as lakes, stream channels, drainages, ponds, and other surface water features that exhibit an Ordinary High Water Mark (OHWM) but lack positive indicators of one or more of the three wetland parameters (hydrophytic vegetation, wetland hydrology, hydric soils) (Federal Register 1986). In non-tidal "other waters," USACE jurisdiction extends to the

OHWM, defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressions on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris" (Federal Register 1986; USACE 2005; 2008b).

2.5 Waters of the State

All potential aquatic resources observed on the study area were delineated during the field visits. Areas that may be exempt from USACE jurisdiction (discussed in Section 5.1), but may be included as Waters of the State under the State Water Resources Control Board's (SWRCB) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (which took effect May 28, 2020) or the Porter-Cologne Water Quality Control Act, were identified during the delineation. Final regulatory jurisdiction would need to be determined by the applicable agencies.

3.0 ENVIRONMENTAL SETTING

3.1 Topography and Hydrology

The Project site is located within the Santa Rosa Plain and accordingly its topography is relatively flat overall, with gradual elevational changes trending from northeast to southwest; elevation is highest in the northeastern corner of the Project site, at 165 feet above sea level, and decreases to 137 feet above sea level in the northwestern corner and 147 feet above sea level in the southeastern corner. This topographic trend is further defined by Pruitt Creek, a blue line stream that enters the Project site from the north via a box culvert below Shiloh Road and flows diagonally south-southwest across the site (Figure 3). The southernmost extent of Pruitt Creek exits the Property boundary and continues above ground on a separate parcel before exiting via a box culvert under Old Redwood Highway. This feature is predominantly fed by offsite water sources but sheet flow runoff from precipitation or other on-site sources may contribute to the creek's hydrology. Additionally, sheet flow from direct precipitation and irrigation runoff feeds a roadside drainage ditch that flows parallel to Old Redwood Highway, along the western boundary of the Project site.

3.2 Soils

Four soil types occur within the Project site, as mapped by the NRCS (Figure 3). The mapped soil units are HtA: Huichica loam 0 to 2 percent slopes, RnA: Riverwash, HuB: Huichica loam, ponded, 0 to 5 percent slopes, and YsA: Yolo silt loam, 0 to 5 percent slopes (NRCS 2022). Test pits dug by Sequoia at each sample site confirmed that soils were consistent with the soil descriptions provided by the NRCS.

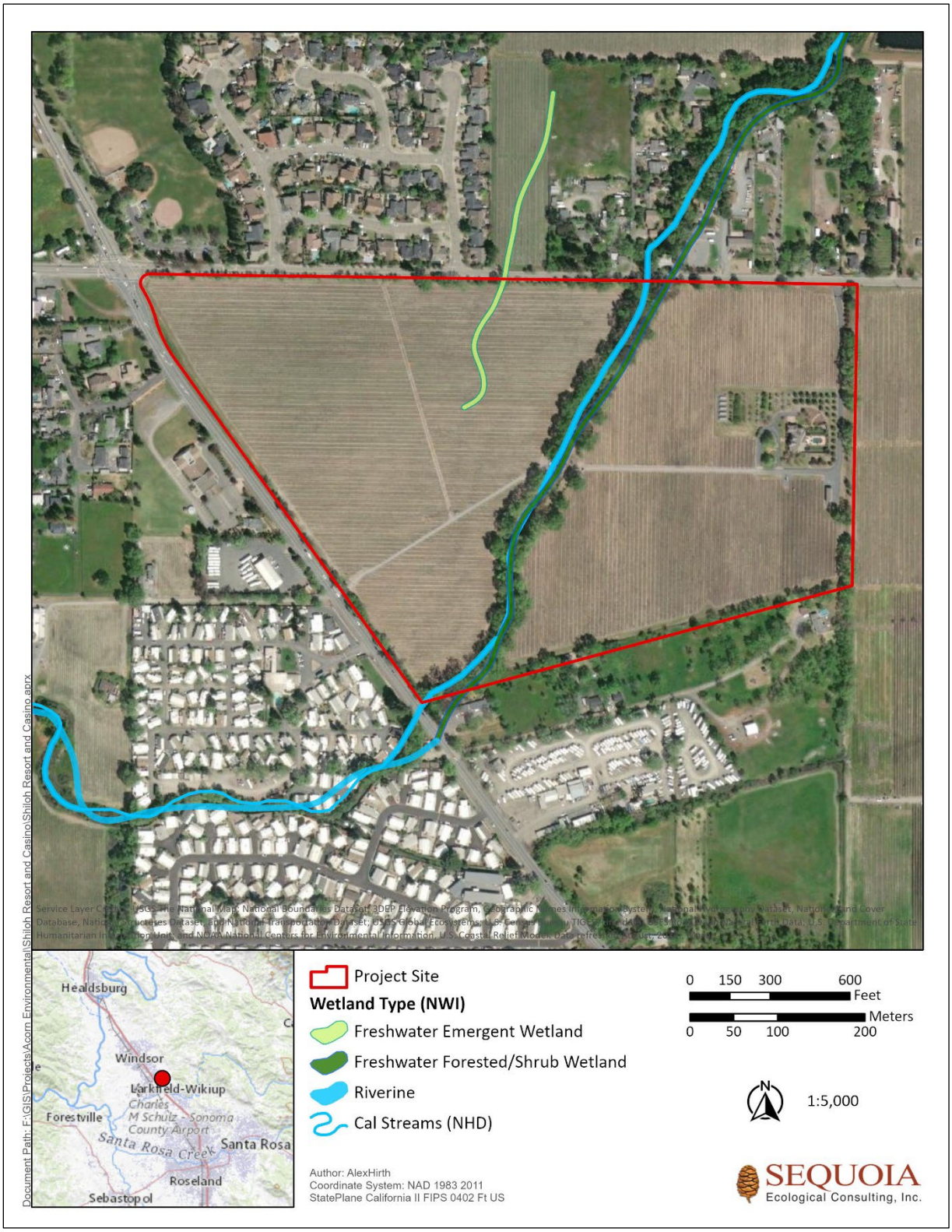


Figure 3. National Wetlands Inventory Map for the Shiloh Resort and Casino Project Site.

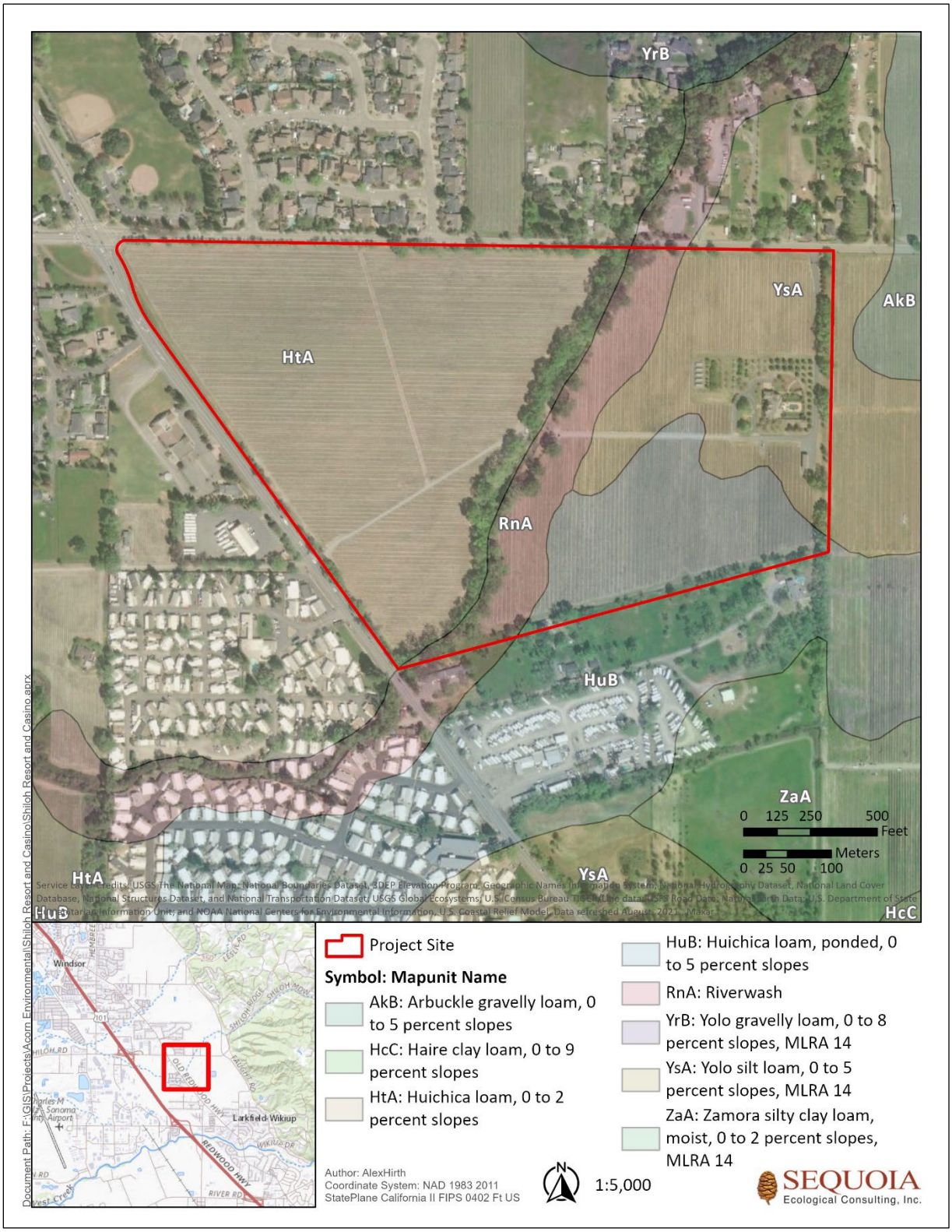


Figure 4. Soil Types Mapped within the Shiloh Resort and Casino Project Site.

3.3 Project Site Vegetation

On February 23 and 24, 2022, Sequoia staff conducted a survey of the Project site and characterized the vegetation present. During the survey, Sequoia biologists also documented plant and wildlife species observed on the Project site. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012), while nomenclature used for wildlife follows CDFW's *Complete List of Amphibian, Reptile, Bird, and Mammal Species in California* (2016). Habitat affinities were assigned following the classification of Lichvar et.al (2014), as updated in 2016. Wetland indicator species (i.e., species that can tolerate soil saturation during grow period and/or prolonged inundation) were taken into consideration when classifying vegetation types.

Four plant communities occur on the Project site (Sawyer and Keeler-Wolf 1995) and are further described below. Representative photographs of the Project site are included in Appendix C and a list of all plant species observed during the surveys can be found in Appendix D.

3.3.1 Agricultural Land

The majority of the Project site is characterized by vineyards comprised of grape arbors and associated infrastructure, including dirt roads, piping (irrigation, propane, utility, etc.), propane tanks, wash station, and electrical power poles. While the grape rows themselves are weeded and maintained, ruderal and annual vegetation grows between rows and around the vineyard perimeter; ruderal species are adapted to endure intense and/or long-term disturbance. Ruderal species observed within the Project site include non-native annual grasses such as slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceous*), as well as stinking chamomile (*Anthemis cotula*), English plantain (*Plantago lanceolata*), California burclover (*Medicago polymorpha*), common vetch (*Vicia sativa*), and filaree species (*Erodium botrys*, *E. cicutarium*).

3.3.2 Anthropogenic/Developed

Anthropogenic or developed land cover includes areas that have been manipulated, altered, or converted for human use. Vegetation associated with anthropogenic/developed habitat is typically non-native ornamental and landscaping species, as well as agricultural species. This habitat within the Project site consists of dirt access roads, a paved driveway along the eastern property boundary, and the existing private residence. Surrounding the residence are an orchard, various infrastructure such as solar panels and agricultural equipment, and outbuildings, including a large barn or garage located just south of the dwelling. Vegetation within anthropogenic/developed areas on the Project site is dominated by landscaping comprised of agricultural and ornamental species, with interspersed ruderal species and non-native grasses and forbs.

Landscaping surrounding the residence include various landscape trees and shrubs, including rose (*Rosa* sp.), mulberry (*Morus alba*), maple (*Acer* sp.), and purpleleaf plum (*Prunus cerasifera*). A grove of olive (*Olea europaea*) trees occurs on the north side of the dwelling, along with an orchard that supports

varieties of edible fig (*Ficus carica*), citrus (*Citrus* sp.), apple (*Malus domestica*), apricot (*Prunus armeniaca*), pear (*Pyrus* sp.), peach (*Prunus persica*), nectarine (*Prunus persica*), and various species of plum, pluot, and cherry (*Prunus* sp.). Additional small, planted orchard trees and two large valley oaks (*Quercus lobata*) are located the vicinity of the barn. Ruderal species, similar to those found between the vineyard rows, and non-native grasses and forbs also occur around the residence and other anthropogenic/developed areas on site. Non-native annual grasses and forbs are species that mature in spring and early summer, before spreading seed and dying in late summer and fall. Grasses and forb species observed in anthropogenic/developed areas on the Project site include slender wild oat, ripgut brome, soft chess, Mediterranean barley (*Hordeum marianum*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), and filaree species.

3.3.3 Riparian Woodland

Riparian woodlands are diverse habitats that support numerous plant species that can include grasses, annual and perennial forbs, vines, shrubs, and trees. A variety of plants creates a complex layering of understory and overstory, which in turn provides habitat to numerous wildlife species. When found within the bed, channel, or bank of any river, stream, or lake, riparian vegetation is also protected under Section §1602 of the California Fish and Game Code (CFGC); and CDFW has included riparian communities in the California Natural Diversity Database (CNDDB). Accordingly, Sequoia mapped the extent of the riparian woodland, referred to as the riparian dripline, and top-of-bank (TOB) in order to determine the potential limits of CDFW jurisdiction pursuant to CFGC Section §1602.

The extent of this habitat type within the Project site is limited to the riparian corridor surrounding Pruitt Creek, which is bisected by an existing dirt road crossing. The canopy in the portion of the riparian corridor north of the crossing is dominated by eucalyptus (*Eucalyptus sp.*) and valley oak trees, while native trees such as Oregon ash (*Fraxinus latifolia*), buckeye (*Aesculus californica*) and California bay-laurel (*Umbellularia californica*) are more prevalent in the southern half of the riparian corridor. Coast live oak (*Quercus agrifolia*) trees characterize the terrace floodplain adjacent to the creek through the upper extent of the riparian woodland is characterized. Understory riparian vegetation composition is consistent throughout the entire riparian corridor and is comprised of a mix of native and non-native species of shrubs, herbs, and grasses. Native species observed include poison oak (*Toxicodendron diversilobum*), pink honeysuckle (*Lonicera hispidula*), creeping snowberry (*Symphoricarpos mollis*), soap plant (*Chlorogalum pomeridianum*), and miner's lettuce (*Claytonia perfoliata*). Non-native understory species include French broom (*Genista monspessulana*), Himalayan blackberry (*Rubus armeniacus*), black mustard, curly dock (*Rumex crispus*), English ivy (*Hedera helix*), and periwinkle (*Vinca major*). Hydrophytic plant species were also identified within, along the margins of, or directly adjacent to the wetted channel and include bog rush (*Juncus effusus*), tall flatsedge (*Cyperus eragrostis*), three-square bulrush (*Schoenoplectus pungens*), and iris-leaf rush (*Juncus xiphioides*).

Evidence of human use and/or disturbance were observed throughout the riparian corridor, most notably in the area with the dirt low-flow crossing; two pipes embedded in a stone and cement masonry

structure cross the creek from top-of-bank to top-of-bank near a kiosk sign just north of the crossing. Other human infrastructure and debris within the riparian corridor includes pieces of concrete that have been scattered or imbedded in the bed and banks of the creek, pole-mounted bird or bat boxes, a bee swarm box attached to a tree, and a wooden and metal fence that spans the creek on the southern property line.

3.3.4 Seasonal Wetlands

Seasonal wetlands are habitats that dry down in the summer and fall months, but generally in the rainy, winter months become saturated and inundated for several weeks to months. Seasonal wetlands often hold water due to soil permeability and/or the presence of topographically low, depressional areas. Soils with a high clay content or within depressional areas, or soils that have been compacted by human activities, often hold and trap seasonal rainfall over short to long durations of the winter and spring. These areas often become dominated by hydrophytic plant species that are reliant and/or dependent on regular saturation or inundation. Roadside drainage ditches are man-made features that catch sheet flow or convey stormwater flows.

Seasonal wetlands occur on the western edge of the Project site, between the perimeter fencing along Old Redwood Highway and the grape arbors (Appendix B). While cover within these seasonal wetlands was dominated by bare ground and algal matting, the vegetation present consisted almost exclusively of hydrophytic species, including iris-leaf rush (OBL), annual bluegrass (*Poa annua*; FAC), yard knotweed (*Polygonum aviculare*; FAC), and hyssop loosestrife (*Lythrum hyssopifolia*; OBL).

The roadside drainage ditches that flow along Old Redwood Highway is characterized by a mix of hydrophytic species, such as tall flatsedge (FACW), curly dock (FAC), and bog rush (FACW), and ruderal and non-native annual species consistent with the adjacent uplands, such as wild oat, ripgut brome, and common vetch.

4.0 RESULTS

Aquatic resources delineated on the Project site during the February 2022 delineation fall into three categories: (1) Seasonal Wetlands; (2) Intermittent Drainage; and (3) Roadside Drainage Ditches. Seasonal Wetlands were delineated in areas supporting positive indicators of all three wetland parameters. Pruitt Creek, a tributary that contributes surface water flow to a Traditional Navigable Water (TNW; including through culverts)—but lacks at least one wetland parameter and supports a bed, bank, and OHWM—was delineated as an Intermittent Drainage, as field conditions and/or background sources (NWI, NHD, USGS topographic maps, or other sources) indicate intermittent flow during a typical year. Roadside Drainage Ditches were delineated in ditches apparently constructed in uplands for roadside drainage that do not occur in a wetland or replace a natural tributary.

Where observable in the field, culverts were mapped to help determine the hydrologic connections between

aquatic resources and observed or presumed downstream waters which discharge into a TNW. However, some culverts are presumably present but were not mapped during the delineation because they were buried or otherwise not observable, or were located off the Project site. Additionally, the extent of the riparian dripline and TOB contour were mapped.

Aquatic resources identified during the February 2022 delineation are discussed below and are listed in Table 4. Delineation datasheets are included in Appendix A and a map of aquatic resources is included in Appendix B. Photographs of representative aquatic resources and delineation sample points are included in Appendix C. A list of plant species observed on the Project site, and their wetland indicator status, is included in Appendix D.

Table 2. Potential Aquatic Resources Delineated on the Project Site.

Feature Name	Area (ft^2)	Length (ft)	Acre(s)	Avg Width (ft)	Sample Point	Bed/Bank /OHWM	Hydrology/ Observed Outlet	Lat/Long	Potential Agency Jurisdiction
Seasonal Wetlands									
SW-01	73.4	10	0.002	10	1A/1B	Yes	Seasonal	38.521599, -122.775482	USACE (?) /State
SW-02	164.5	15	0.004	12	2A/2B	Yes	Seasonal	38.523142, -122.776893	USACE (?) /State
SW-03	192.8	21	0.004	8.5	NA	Yes	Seasonal	38.523288, -122.777046	USACE (?) /State
SW-04	404.0	25	0.009	17	NA	Yes	Seasonal	38.523451, -122.777169	USACE (?) /State
Intermittent Drainage									
ID-01	28,100	1,790	0.644	15	3A/3B	Yes	Intermittent /Channel and culvert	38.523686, -122.773475	USACE /State
Roadside Ditches									
RD-01	2,870	1,305	0.066	1.5	NA	Yes	Ephemeral/ Culvert	38.52416, -122.777946	State (?)
RD-02	1,460	444	0.033	2	NA	Yes	Ephemeral/ Culvert	38.52191, -122.775839	USACE (?) /State

4.1 Seasonal Wetlands

Four areas were delineated on the study area that have positive indicators of all three wetland parameters and seasonal hydrology (Table 2; Appendix A, B). Seasonal Wetlands primarily occur on hillside seeps and adjacent swales, channels, and ditches that appear to receive hydrologic input from direct precipitation, groundwater discharge, and/or surface runoff from the adjacent slope or contributing drainages.

Seasonal Wetlands, generally classified as Freshwater Emergent Wetlands in the Cowardin Classification System/NWI (USFWS 2022), are dominated by wetland-classified shrubs and herbaceous species. The

Seasonal Wetlands are shallow depressions situated in topographic low spots along a narrow right-of-way used as an access road for vineyard operations. Land cover in Seasonal Wetlands within the Project site was dominated by bare ground and biotic crust, namely algal mats; however, the vegetation present was dominated by hydrophytic species such as iris-leaved rush, hyssop loosestrife, annual bluegrass, and yard knotweed (Sample Points 1B and 2B; Appendix A). Hydric soil indicators are present, including Redox Dark Surface (F6) and Redox Depressions (F8), as well as Group B wetland hydrology indicators, which serve as evidence of recent inundation and include Surface Soil Cracks (B6), Water-Stained Leaves (B9), and Algal Mats/Biotic Crust (B4/B12). Furthermore, topographical trends and patterns in the land cover/vegetation indicate the Seasonal Wetlands are hydrologically connected to, if not a direct water source for the southernmost Roadside Drainage Ditches (RD-02) that flows along Old Redwood Highway into Pruitt Creek, and ultimately the Russian River, Sonoma Creek, or the Petaluma River. Adjacent uplands occur on berms, slopes, and roads or other development above the wetland, are typically dominated by upland-classified plant species, and lack wetland hydrology and hydric soil indicators. Sample points taken within the adjacent uplands (Sample Points 1A and 1B; Appendix A) contained Oxidized Rhizospheres Among Living Roots, a Group C hydrologic indicator serving as evidence of current or recent soil saturation, and hydric soil indicators (Redox Dark Surface) but lacked a dominance of hydrophytic vegetation.

The presence of hydrologic and hydric soil indicators within adjacent uplands is presumably the result of runoff from irrigation infrastructure associated with the vineyard, such as hoses, piping, emitters, and control valves. The presence of this infrastructure, coupled with evidence of recent saturation and/or inundation between and around the grape rows suggests that irrigation runoff is contributing to the hydrology of the general area. The prevalence of redoximorphic features observed within upland soil samples provides further evidence that saturation and/or inundation occurs often and long enough for anerobic conditions to develop ubiquitously within surrounding soils. Therefore, it is presumed that the hydrology of the Seasonal Wetlands is at least partially influenced by agricultural activities.

4.2 Intermittent Drainage

One Intermittent Drainage (i.e., Pruitt Creek) was delineated on the Project site (Table 4; Appendix A, B). Intermittent Drainages are natural tributaries to downstream TNWs (either through direct discharge or culvert/storm drain networks) and support a bed, bank, and OHWM, but lack one or more wetland parameters.

Pruitt Creek is mapped as “Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC)” and “Palustrine, Forested, Emergent, Persistent, Seasonally Flooded (PFO/EM1C) Freshwater Forested/Shrub Wetland” in the NWI (USFWS 2022). The Drainage was considered intermittent because: (1) the channel had pooled and flowing water that appeared to be the result of seasonal and recent rains and not perennial hydrology; (2) the channel had significant OHWM indicators such as natural line impressed on the bank, shelving, changes in soil character, presence of litter and debris, and matted and bent vegetation to indicate seasonal flow; and/or (3) background sources (the NWI, NHD, USGS topographic

maps, and other sources) indicated seasonal flow. A sample point (Sample Point 3B; Appendix A) taken within a vegetated shelf immediately adjacent to the wetted channel contained a dominance of hydrophytic vegetation, namely three-square bulrush (OBL), and primary (Saturation [A6] and Water-Stained Leaves [B9]) and secondary (Drift Deposits [B3] and Drainage Patterns [B10]) indicators of wetland hydrology but lacked hydric soil indicators. The absence of redoximorphic features may be explained by the abundance of sand and gravel in the soil matrix precluding the development of these features, the proximity of flowing water resulting in features being stripped or removed from the matrix, or a combination of these factors. The paired upland sample point (Sample Point 3A; Appendix A) was taken in the adjacent low terrace east of the creek channel and lacked all three wetland criteria.

Pruitt Creek features a defined bed and bank and contained water during the February 2022 survey. The creek's active floodplain is characterized by a gravel- and sand-lined low-flow channel at its center and a mix of vegetated shelves, gravel/sand bars, and cobble point bars along the lateral extents, between TOB and the wetted channel. Width varies between 3 and 10 feet for the wetted channel and approximately 10 to 30 or more feet for the active floodplain. Water depth within the channel ranges from 6 to 8 inches to 3 or 4 feet. Riffles, shallows, and pools were observed throughout the meandering channel but were predominately in the southern portion of the Drainage. Several low terraces, one of which appears to feature a paleo channel or ephemeral swale, are present in the northern portion of the Drainage and are situated at or above OHWM but below TOB. The active floodplain width at TOB ranges between approximately 30 to 60 feet, with the upper extent reaching nearly 100 feet in some areas when including adjacent low terraces. The low-flow channel bed is lined with small cobble, gravel, sand, and dirt, with interspersed vegetation and leafy and woody debris. Creek banks vary from being highly vegetated to bare dirt, and range from heavily incised cut banks to gradual slopes.

Pruitt Creek enters the Project site from the north via a box culvert underneath East Shiloh Road and flows to southwest through the center of the Project site, where it is bisected by a dirt low flow crossing. The Drainage continues to the southwestern corner of the Project site where it flows offsite through an adjacent property to the south and into a box culvert below Old Redwood Highway. Once offsite, Pruitt Creek eventually drains into Pool Creek, which flows into Windsor Creek, then into Mark West Creek, and finally into the Russian River.

4.3 Roadside Drainage Ditches

Two Roadside Drainage Ditches were delineated on the western edge of the Project site, along Old Redwood Highway (Table 4; Appendix B, D). Roadside Drainage Ditches appeared to be excavated in uplands for roadside drainage, and (based on conditions observed in the field and a review of the NWI, NHD, USGS topographic maps, and other sources) are not natural tributaries to downstream TNWs. Roadside Drainage Ditches were dry during the delineation and support a marginal bed and bank in some areas but are generally swale-like, as well as OHWM, including presence of leaf litter, matted or absent vegetation, and scour. These ditches appeared to be excavated in uplands (rather than wetlands) and are not replacing any natural drainages or wetlands, nor did they appear to be fed by seeps or

hydrologic sources other than direct precipitation and runoff from the roadside and Seasonal Wetlands. Group B wetland hydrology indicators, which serve as evidence of recent inundation, were observed in the Roadside Drainage Ditches, and include Water-Stained Leaves (B9) and Algal Mats (B4). Additionally, hydrophytic species such as bog rush (FACW), curly dock (FAC), and tall flatsedge (FACW) were present but not dominant within the Roadside Drainage Ditches.

The drainage ditch is bisected by the western entrance to the Project site located off Old Redwood Highway. The associated driveway embankment does not feature a culvert, drain, or other artificial structure that would convey water between the northern and southern extent of the ditch. Therefore, the Roadside Drainage Ditches are not only physically disjunct, but also lack direct hydrological surface connection. It is presumed that hydrologic connectivity between the Roadside Ditches, if any, would be limited to subsurface water flow or seepage. Two culverts associated with the northern Roadside Drainage Ditch (RD-01) were identified and mapped, one on the northernmost end below the intersection of East Shiloh Road and Old Redwood Highway, and a lateral culvert that enters the western side of the ditch from below Old Redwood Highway (Appendix B). The southern Roadside Drainage Ditch (RD-02) appears to be split by a small berm associated with a Sonoma County bus stop; however, a 12-inch corrugated metal pipe is present below the berm and allows for direct surface connection between the two sections of the southern Roadside Drainage Ditch. The southern Drainage Roadside Ditch appears to lead directly to Pruitt Creek at its outlet below Old Redwood Highway, in the southwestern corner of the Project site.

5.0 AGENCY JURISDICTION

5.1 Potential USACE Jurisdiction

On January 23, 2020, the U.S. Environmental Protection Agency (USEPA) and the USACE finalized the Navigable Waters Protection Rule to define "waters of the U.S." The rule took effect on June 22, 2020. On August 30, 2021, the U.S. District Court for the District of Arizona vacated and remanded the Navigable Waters Protection Rule in the case of *Pascua Yaqui Tribe v. U.S. Environmental Protection Agency.*

According to the EPA (USEPA 2021): "*In light of this order, the agencies have halted implementation of the Navigable Waters Protection Rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice. The agencies continue to review the order and consider next steps. This includes working expeditiously to move forward with the rulemakings announced on June 9, 2021, in order to better protect our nation's vital water resources that support public health, environmental protection, agricultural activity, and economic growth. The agencies remain committed to crafting a durable definition of "waters of the United States" that is informed by diverse perspectives and based on an inclusive foundation*.

The agencies are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice … The term waters of the United States means:

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*
3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
    a. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
    b. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
    c. *Which are used or could be used for industrial purposes by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under this definition;*
5. *Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;*
6. *The territorial sea;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.*

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA" (USEPA 2021).

According to guidance present prior to the pre-2015 regulatory regime (USEPA 2008):

"*The agencies will assert jurisdiction over the following waters:*

- *Traditional navigable waters*
- *Wetlands adjacent to traditional navigable waters*
- *Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)*
- *Wetlands that directly abut such tributaries*

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:

- *Non-navigable tributaries that are not relatively permanent*
- *Wetlands adjacent to non-navigable tributaries that are not relatively permanent*
- *Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary*

The agencies generally will not assert jurisdiction over the following features:

- *Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)*
- *Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water*

The agencies will apply the significant nexus standard as follows:

- *A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters*
- *Significant nexus includes consideration of hydrologic and ecologic factors"*

Based on current guidance (USEPA 2008; 2021), the Intermittent Drainage delineated on the Project site would presumably qualify as "*non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)"* and therefore fall under USACE jurisdiction.

Four Seasonal Wetlands were delineated on the Project site. Based on current guidance (USEPA 2008; 2021) and an analysis of field and background data, the Seasonal Wetlands do not directly abut "*Non-navigable tributaries of traditional navigable waters that are relatively permanent",* but are hydrologically connected to such tributaries via the Roadside Drainage Ditches, and may qualify as "*Wetlands adjacent to non-navigable tributaries that are not relatively permanent.*" Conversely, pursuant to CWA 33 CFR § 328.3 "*artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease*" are considered non-jurisdictional. Furthermore, the effect of agricultural activities on the jurisdictional status of the Seasonal Wetlands may also be influenced by CWA 33 CFR § 323.4, which exempts "*normal and established farming, silviculture and ranching activities such as plowing, seeding, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices*" from USACE regulations and permitting. While these exemptions appear to be applicable to the Seasonal Wetlands, only the USACE can determine their pertinence and jurisdiction.

Therefore, "*The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water.*"

The northern Roadside Drainage Ditch (RD-01) does not appear to have direct surface connection to a TNW or tributary, whereas the southern Roadside Drainage (RD-02) ditch flows directly into Pruitt Creek (Appendix B). The presence/absence of a significant nexus may influence the jurisdictional determination of the Roadside Drainage Ditches but is unlikely to, as these "*Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water"* are specifically excluded from USACE jurisdiction under current guidance (USEPA 2008; 2021).

The regulatory analysis described above is preliminary. Due to recent changes based on Court decisions, regulatory jurisdiction is in flux, and therefore the USACE would need to determine its jurisdiction on the study area based on a verification of this report.

5.2 Potential State Jurisdiction

On April 2, 2019, the SWRCB adopted a *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Procedures), for inclusion in the *Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California*. The Procedures took effect May 28, 2020. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the state; (3) wetland delineation procedures; and (4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. Aquatic resources (such as ephemeral tributaries, some drainage ditches, and isolated wetlands), which may be exempt from federal jurisdiction under the Navigable Waters Protection Rule would likely be considered waters of the State under the Porter-Cologne Water Quality Control Act and/or the Procedures that took effect May 28, 2020.

Based on the Procedures, the Seasonal Wetlands and Intermittent Drainages would likely qualify as "Waters of the State" subject to jurisdiction by the SWRCB, as discussed above. The jurisdictional status of the Roadside Drainage Ditches is unclear. Agricultural ditches are excluded from the Procedures, and while the ditches on the Project site are roadside ditches they also appear to be fed, at least partially, by agricultural runoff from the on-site vineyard. Based on previous delineations conducted by Sequoia within Sonoma County (Sequoia Ecological Consulting, Inc. 2020, 2022), Roadside Drainage Ditches were excluded from State jurisdiction. Roadside Drainage Ditches delineated in this report are similar to those delineated in other reports, and State regulations have not changed since that delineation was conducted, making it unlikely that they would be considered Waters of the State. That said, the jurisdictional status of the Roadside Drainage Ditches and other potential Waters of the State would need to be determined by the SWRCB and local Regional Water Quality Control Board (RWQCB) based on a verification of this report.

Work, such as placement of fill material, occurring within USACE jurisdiction normally requires a permit under Section 404 of the federal CWA. In addition, the USACE, under Section 401 of the federal CWA, is required to meet state water quality regulations prior to granting a Section 404 permit. This is accomplished by application to the local RWQCB for Section 401 certification that requirements have been met. Streams, rivers, and lakes up to the TOB or dripline of riparian vegetation (whichever is greater) also fall within the jurisdiction of the California Department of Fish and Wildlife (CDFW). Work within CDFW jurisdiction normally requires a Streambed Alteration Agreement. These requirements typically apply to public and private projects and the description of potential State jurisdiction has been included for reference; however, in the case of the proposed Project, the property will be taken over into federal trust for the Tribe at which point State jurisdiction would no longer apply.

6.0 LIMITATIONS

The results of this delineation are preliminary. Regulatory agencies, including the USACE, SWRCB, and CDFW, make the final determination about the location and extent of wetlands and other waters on the Project site, and this delineation report should be sent to the USACE for verification. This report does not constitute authorization to conduct the Project, and all necessary permits and approvals should be obtained from regulatory agencies prior to Project implementation.

7.0 REFERENCES

Baldwin D.H, Goldman D.H., Keil D.J., Patterson R, Rosatti T.J., Wilken D.H. (ed.). 2012. The Jepson Manual Vascular Plants of California: Second Edition. University of California Press, Berkeley. 1568 pps.

California Geological Survey. 2010. Geologic map of California. Website at: http://www.conservation.ca.gov/cgs/cgs_history/Pages/2010_geologicmap.aspx.

Environmental Laboratory. 1987. U.S. Army Corps of Engineers Wetlands Delineation Manual. Technical report Y 87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi.

Federal Register. 1986. Department of the Army, Corps of Engineers, 33 CFR Parts 320 through 330, Regulatory Programs of the Corps of Engineers; Final Rule. Vol. 51, No. 219; page 41217, November 13.

_____. 1994. Changes in hydric soils of the United States. Washington, DC, July 13.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2018. The National Wetland Plant List: 2018 wetland ratings. Website at: http://wetland_plants.usace.army.mil/.

Munsell Soil Book of Color. 2012. Munsell Soil Color Charts with Genuine Munsell Color Chips. Grand Rapids, MI: Munsell Color.

Natural Resource Conservation Service (NRCS). 2022a. Web Soil Survey. Website at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

_____. 2022b. Lists of hydric soils. Website at: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

Sawyer J.O., Keeler-Wolf T. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

Sequoia Ecological Consulting, Inc (Sequoia). 2020 and 2022. Aquatic resource delineation report, Sonoma County Pavement Preservation Project, Sonoma County, California.

State Water Resources Control Board (SWRCB). 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Adopted April 2, 2019.

U.S. Army Corps of Engineers (USACE). 2005. Regulatory guidance letter 05-05: Ordinary high water mark identification. Dated December 7.

_____. 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28.Vicksburg, MS: U.S. Army Engineer Research and Development Center.

_____. 2008b. A field guide to the identification of the ordinary high water mark (OHWM) in the Arid West Region of the Western United States. Dated August.

_____. 2022. National wetland plant list, version 3.5. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

United States Environmental Protection Agency (USEPA). 2008. Clean Water Act jurisdiction following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. Dated December 2.

_____. 2021. Current implementation of Waters of the United States. Website at: https://www.epa.gov/wotus/current-implementation-waters-united-states

U.S. Geological Survey (USGS). 2022. National hydrography dataset. Website at: https://nhd.usgs.gov/.

U.S. Fish and Wildlife Service (USFWS). 2022. National Wetlands Inventory. Website at: http://www.fws.gov/wetlands

Appendix A

Wetland Delineation Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/23/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 1A

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Mediterranean CA (LRR C) Lat: 38.521638 Long: -122.775493 Datum: NAD83

Soil Map Unit Name: HtA - Huichica loam, 2 to 0 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Vicia sativa	30	x	FACU
2. Medicago polymorpha	30	x	FACU
3. Bromus hordeaceous	10		FACU
4. Ranunculus muricatus	30	x	FACW
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust None

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 30	x 2 = 60
FAC species _____	x 3 = _____
FACU species 70	x 4 = 280
UPL species _____	x 5 = _____
Column Totals: 100 (A)	340 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Vegetation dominated by facultative upland species.

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	80	7.5YR 5/6	15	C	M	loam	Redox distinct and contemporan
			GLEY1 4/N	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Redoximorphic features are abundant.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): None

Water Table Present? Yes ___ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): None

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Oxidized rhizospheres present among living roots. No soil saturation or other hydrological indicators present. Area is immediately adjacent to vineyard with irrigation system that may be creating runnoff.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/23/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 1B

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): California Lat: 38.521600 Long: -122.775482 Datum: NAD83

Soil Map Unit Name: HtA - Huichica loam, 2 to 0 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Juncus xiphiodes	10	x	OBL
2. Poa annua	10	x	FAC
3. Medicago polymorpha	2		FACU
4.			
5.			
6.			
7.			
8.			
	22 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 38 % Cover of Biotic Crust 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 10	x 1 = 10
FACW species _____	x 2 = _____
FAC species 10	x 3 = 30
FACU species 2	x 4 = 8
UPL species _____	x 5 = _____
Column Totals: 22 (A)	48 (B)

Prevalence Index = B/A = 2.18

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Area mostly devoid of vegetation, but what is present is dominated by hydrophytic species. Leaf litter and algal mats abundant.

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	96	7.5YR 5/6	5	C	M	loam	Redox distinct and contemporary
			GLEY1 4/N	1	D	M		
10-12	10YR 3/2	100					sandy loam	Inclusions of sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Redoximorphic features are distinct and contemporary.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): None

Water Table Present? Yes ___ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): None

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water stained leaves and biotic crust present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/24/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 2A

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): California Lat: 38.523176 Long: -122.776926 Datum: NAD83

Soil Map Unit Name: HtA - Huichica loam, 2 to 0 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Poa annua	10	x	FAC
2. Anthemis cotula	60	x	FACU
3. Bromus hordeaceous	10		FACU
4. Medicago polymorpha	15		FACU
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust None

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 10	x 3 =	30
FACU species 85	x 4 =	340
UPL species	x 5 =	
Column Totals: 95 (A)		370 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Vegetation dominated by facultative upland species.

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	80	7.5YR 5/6	15	C	M	loam	Redox distinct and contemporan
			GLEY1 4/N	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Redoximorphic features are abundant. Gravel and rocks are present but not restrictive.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): None

Water Table Present? Yes ___ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): None

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Oxidized rhizospheres present among living roots. No soil saturation or other hydrological indicators present. Area is immediately adjacent to vineyard with irrigation system that may be creating runnoff.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/24/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 2B

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): California Lat: 38.523176 Long: -122.776926 Datum: NAD83

Soil Map Unit Name: HtA - Huichica loam, 2 to 0 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Polygonum aviculare	2	x	FAC
2. Lythrum hyssopifolia	5	x	OBL
3. Poa annua	5		FAC
4.			
5.			
6.			
7.			
8.			
	12 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 38 % Cover of Biotic Crust 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 5	x 1 = 5
FACW species _____	x 2 = _____
FAC species 7	x 3 = 21
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: 12 (A)	26 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Area mostly devoid of vegetation, but species present are hydrophytic indicators. Leaf litter and algal mats abundant.

SOIL

Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/2	80	7.5YR 5/6	15	C	M	loam	Redox distinct and contemporan
			GLEY1 4/N	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Redoximorphic features are abundant. Intrusions of gravel and rocks are present but not restrictive.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): None

Water Table Present? Yes ___ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): None

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple primary hydrologic indicators are present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/23/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 3A

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): California Lat: 38.523713 Long: -122.773416 Datum: NAD83

Soil Map Unit Name: RnA - Riverwash NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Avena sativa	67	x	UPL
2. Bromus hordeaceous	10		FACU
3. Geranium dissectum	5		NL
4. Rumex acetosella	10		FACU
5. Cardamine hirstua	2		FACU
6. Rumex crispus	2		FAC
7. Cerastium glomeratum	2		UPL
8. Erodium botrys	2		FACU
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Vegetation dominated by facultative upland and upland species.

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	10					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock/gravel

Depth (inches): 5-12

Hydric Soil Present? Yes _____ No ✓

Remarks:

Unable to dig past 5 inches due to restrictive layer of rock and gravel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): None

Water Table Present? Yes _____ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): None

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Shiloh R&C Project City/County: Larkfield-Wikiup / Sonoma Sampling Date: 2/23/2022

Applicant/Owner: Acorn Environmental State: CA Sampling Point: 3B

Investigator(s): Ari Rogers, Claire Buchanan Section, Township, Range: S20 T8N R8W, Mount Diablo Meridian

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): California Lat: 38.523681 Long: -122.773496 Datum: NAD83

Soil Map Unit Name: RnA - Riverwash NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil ✓, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Soils naturally problematic due to location of sample point on gravel/sandbar adjacent to creek and below top-of bank.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m^2)			
1. Schoenoplectus pungens	55	x	OBL
2. Galium aparine	15		FACU
3. Vicia sativa	10		FACU
4. Avena sativa	8		UPL
5. Geranium robertianum	10		FACU
6. Torilis arvensis	2		NL
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 55	x 1 = 55
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species 35	x 4 = 140
UPL species 8	x 5 = 40
Column Totals: 98 (A)	235 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Area dominated by hydrophytic species.

SOIL

Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100					sandy loa	
8-9	-						gravel	
9-12	10YR 2/2	100					gravelly l	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

Redoximorphic features not observed, possibly because of high sand/gravel content in the matrix and proximity to flowing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): None

Water Table Present? Yes ____ No ✓ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 0-8

Wetland Hydrology Present? Yes ✓ No ____

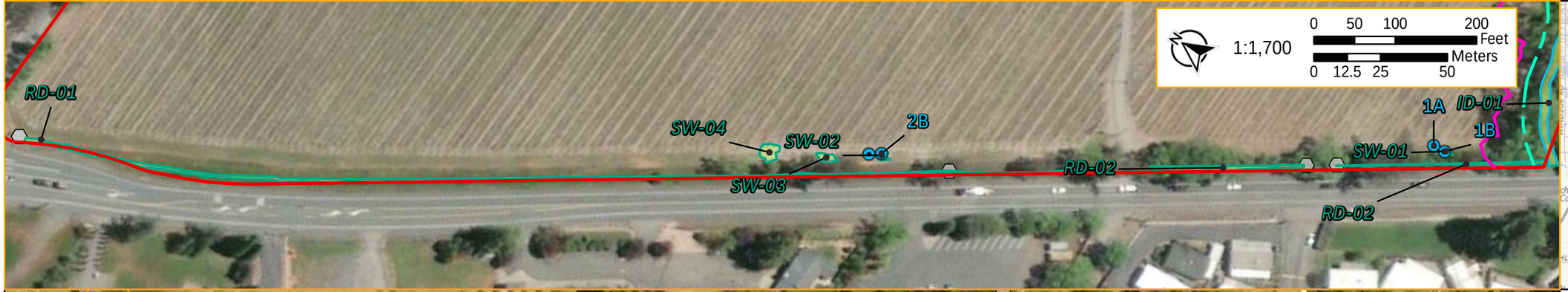
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

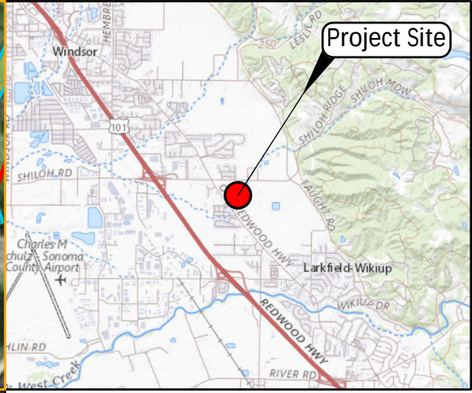
Remarks:

Area immediately adjacent to creek, below top-of-bank but on a small gravel/sand bar.

Appendix B

Draft Aquatic Resources Delineation Map





Project Site
Culvert Opening
Sample Point
Ordinary High Water Mark
Top-of-Bank
Riparian Dripline
Potential Aquatic Resource

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
ID-01	28,100	0.644
RD-01	2,870	0.066
RD-02	1,460	0.0334
SW-01	73.4	0.00169
SW-02	165	0.00378
SW-03	193	0.00442
SW-04	404	0.00927

Author: AlexHirth
Date Exported: 4/5/2022
Coordinate System: NAD 1983 2011
StatePlane California II FIPS 0402 Ft US

Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021., Maxar, Microsof

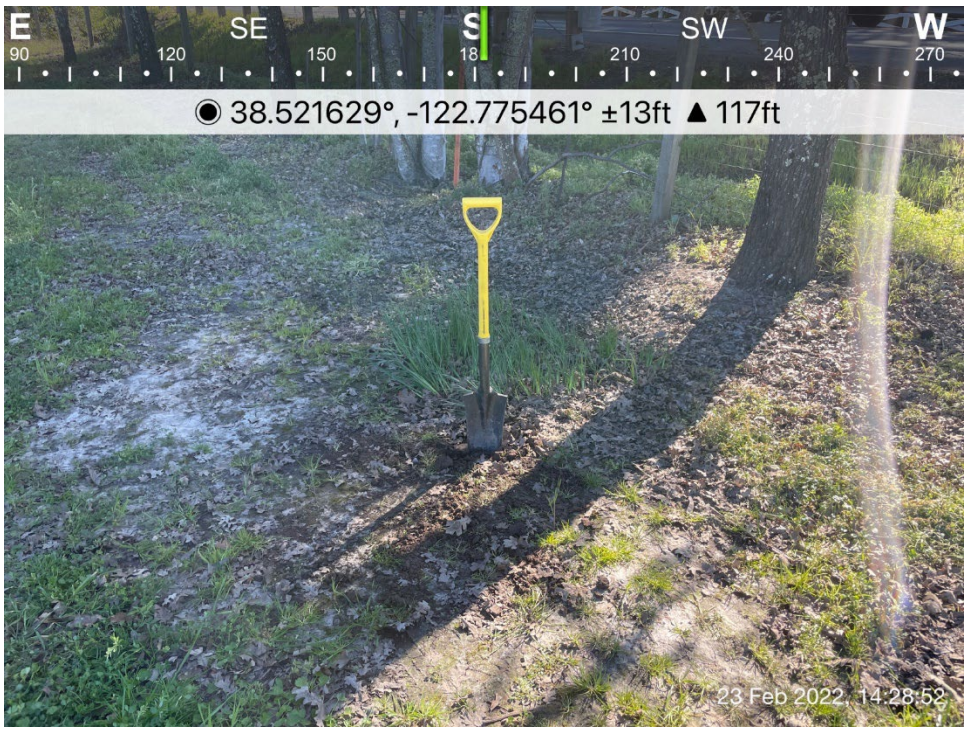
SEQUOIA
Ecological Consulting, Inc.

Document Path: F:\GIS\Projects\Acorn Environmental\Shiloh Resort and Casino\Shiloh Resort and Casino.aprx

Appendix C

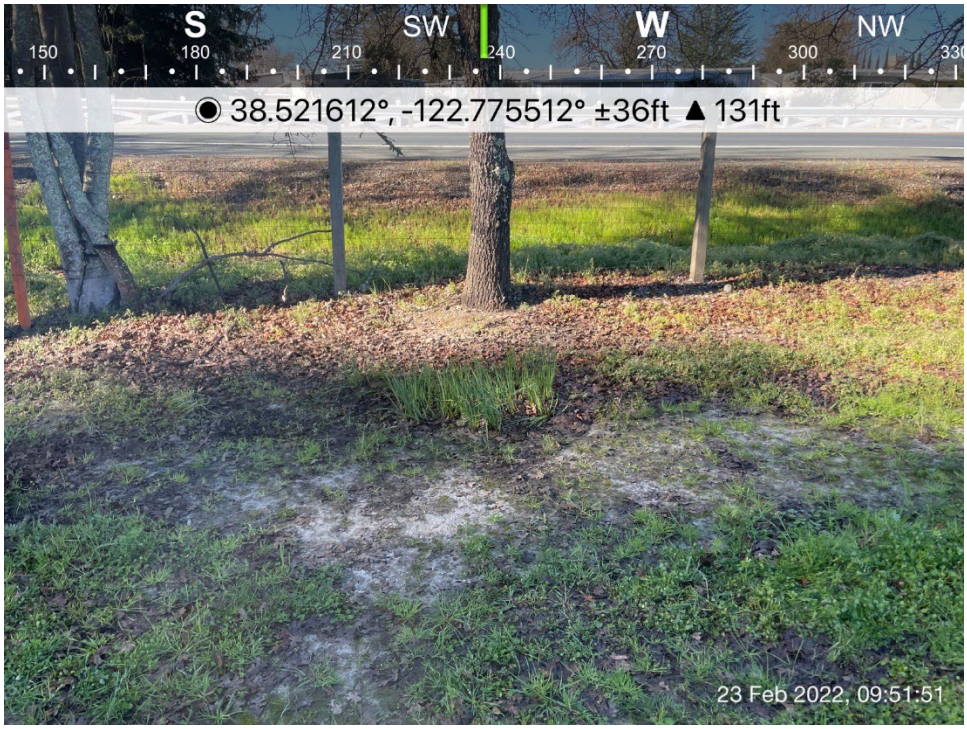
Project Site Representative Photographs

Photograph 1: Photo shows the location of upland Sample Point 1A.



Photograph 2: Photo shows the location of wetland Sample Point 1B within Seasonal Wetland SW-01.

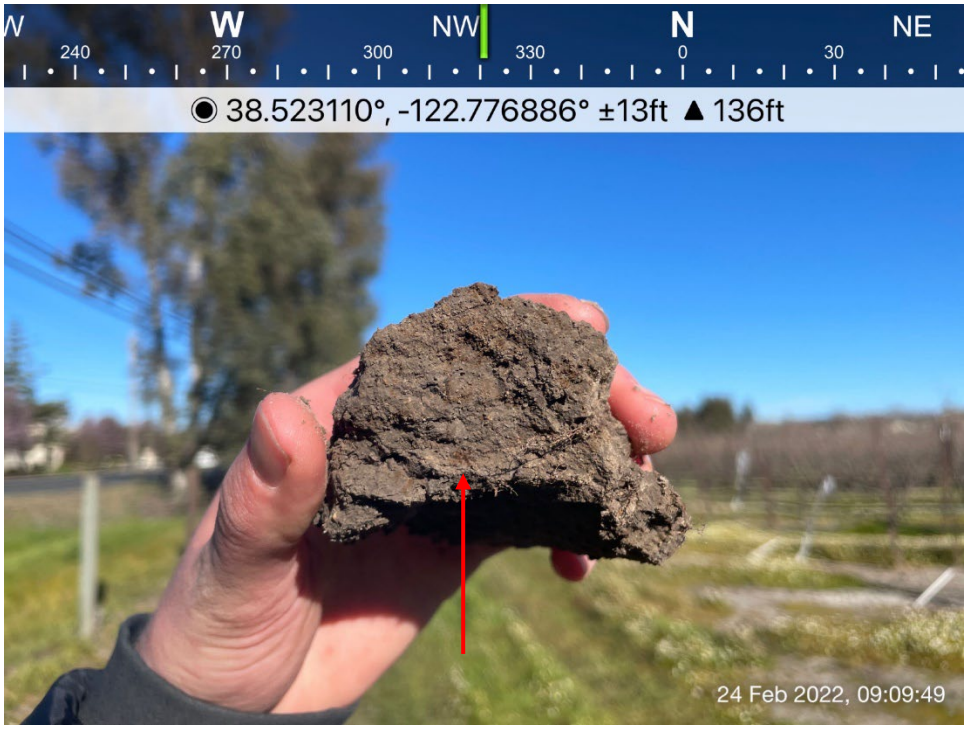
Photograph 3. Photo shows redoximorphic concentrations within the soil matrix and pore linings from Sample Point 1B.



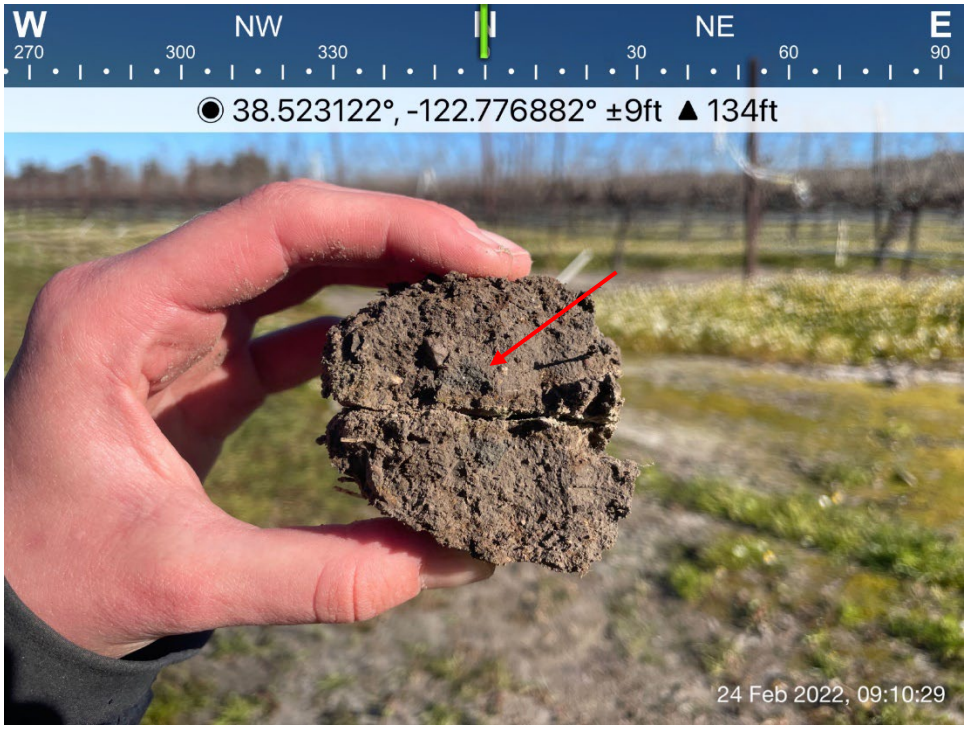
Photograph 4: Photo shows an overview of Seasonal Wetland SW-01.

Photograph 5: Photo shows wetland sample point 2B within Seasonal Wetland SW-02.

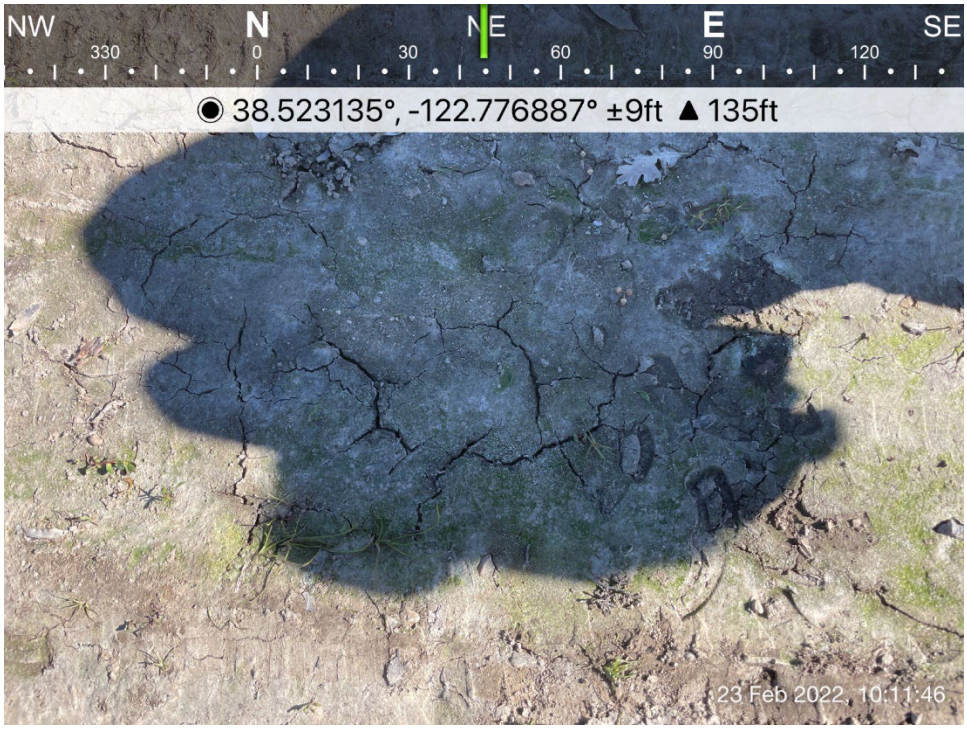
Photograph 6: Photo shows an overview of Seasonal Wetland SW-02.



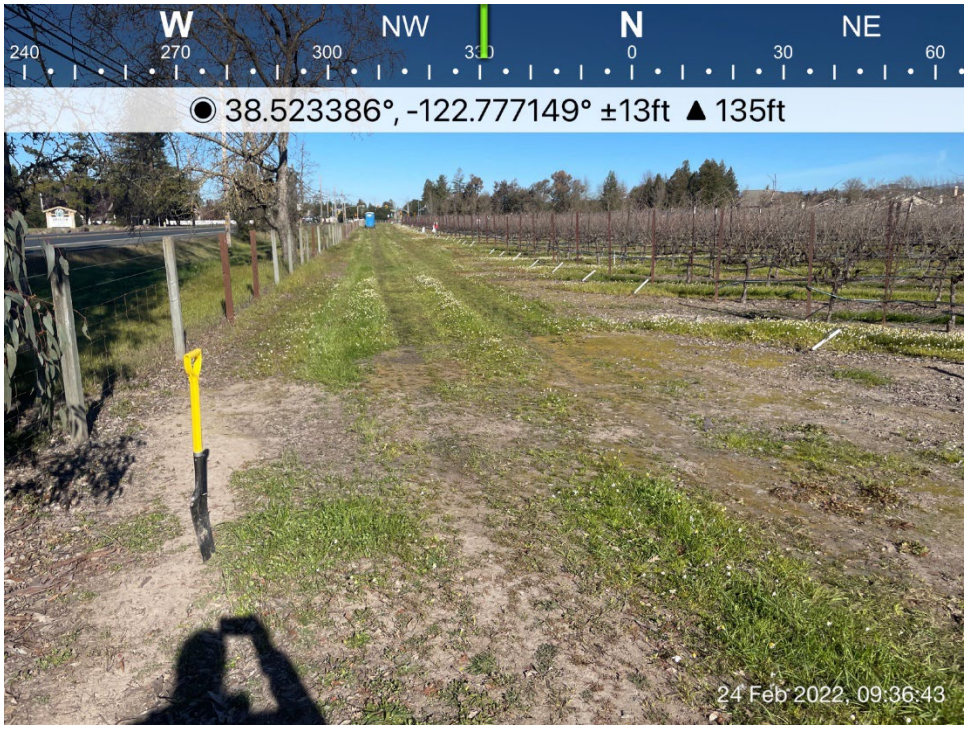
Photograph 7: Photo shows redoximorphic concentrations (red arrow) within soils from wetland Sample Point 2B.



Photograph 8: Photo shows redoximorphic depletions (red arrow) within soils from wetland Sample Point 2B.



Photograph 9: Photo shows hydrologic indicators (Surface Soil Cracks, Biotic Crust) within Seasonal Wetland SW-02.



Photograph 10: Photo shows Seasonal Wetland SW-03.

Photograph 11: Photo shows Sample Point 3B taken within a vegetated shelf adjacent to Pruitt Creek.

Photograph 12: Photo shows the soil profile from Sample Point 3B and evident Saturation, a primary hydrologic indicator.

Photograph 13: Photo shows changes in soil character (red line), an indicator of OHWM, along Pruitt Creek.

Photograph 14: Photo shows an overview of the Pruitt Creek channel and OHWM.

Photograph 13: Photo shows the swale-like roadside drainage ditch (RD-01) and OHWM.

Photograph 14: Photo shows an overview of the southern roadside drainage ditch RD-02.

Appendix D

Plant Species Observed on the Project Site

Scientific Name	Common Name	Family	Indicator Status
Aesculus californica	California buckeye	Sapindaceae	-
Agapanthus africanus	African lily	Amarylidaceae	-
Anthemis cotula	stinking chamomile	Asteraceae	FACU
Arum italicum	Italian arum	Araceae	-
Avena barbata	slender oat	Poaceae	-
Avena fatua	wild oat	Poaceae	UPL
Brassica nigra	black mustard	Brassicaceae	-
Briza minor	little quaking grass	Poaceae	FAC
Bromus diandrus	ripgut brome	Poaceae	-
Bromus hordeaceus	soft chess	Poaceae	FACU
Calandrinia menziesii	red maids	Montiaceae	FACU
Calendula arvensis	field marigold	Asteraceae	-
Cardamine hirstua	bittercress	Brassicaceae	FACU
Carduus pycnocephalus	Italian thistle	Asteraceae	-
Carex spp.	sedges	Cyperaceae	FAC
Cerastium glomeratum	mouse-ear chickweed	Monitaceae	UPL
Chlorogalum pomeridianum	soap plant	Agavaceae	-
Claytonia perfoliata	miner's lettuce	Montiaceae	FAC
Cotoneaster sp.	cotoneaster	Rosaceae	-
Cyperus eragrostis	tall flatsedge	Cyperaceae	FACW
Elymus sp.	wild rye	Poaceae	-
Erodium botrys	cranesbill	Geraniaceae	FACU
Erodium cicutarium	redstem filaree	Geraniaceae	-
Eucalyptus globulus	blue gum	Myrtaceae	-
Festuca myuros	six-weeks fescue	Poaceae	FACU
Festuca perennis	Italian ryegrass	Poaceae	FAC
Fraxinus latifolia	Oregon ash	Fagaceae	FACW
Galium aparine	bedstraw	Rubiaceae	FACU
Genista monspessulana	French broom	Fabaceae	-
Geranium dissectum	cutleaf geranium	Geraniaceae	-
Geranium molle	dove's-foot geranium	Geraniaceae	-
Geranium robertianum	Robert's geranium	Geraniaceae	FACU
Hedera helix	English ivy	Araliaceae	FACU
Hirschfeldia incana	shortpod mustard	Brassicacrae	-
Hordeum murinum	mousetail barley	Poaceae	FAC

Hypochaeris radicata	rough cat's-ears	Asteraceae	FACU
Juncus balticus	Baltic rush	Juncaceae	FACW
Juncus effusus	bog rush	Juncaceae	FACW
Juncus xiphioides	iris-leaf rush	Juncaceae	OBL
Lepidium nitidum	shining pepperweed	Brassicaceae	FAC
Lonicera hispidula	pink honeysuckle	Caprifoliaceae	FACU
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae	FAC
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae	OBL
Malva parviflora	cheeseweed	Malvaceae	-
Medicago polymorpha	California burclover	Fabaceae	FACU
Narcissus pseudonarcissus	daffodil	Amaryllidaceae	-
Nasturtium officinale	watercress	Brassicaceae	OBL
Oxalis pes-caprae	Bermuda buttercup	Oxalidaceae	-
Pinus sp.	pine	Pinaceae	-
Plantago lanceolata	English plantain	Plantaginaceae	FAC
Poa annua	annual bluegrass	Poaceae	FAC
Polygonum aviculare	yard knotweed	Polygonaceae	FAC
Quercus agrifolia	coast live oak	Fagaceae	-
Quercus lobata	valley oak	Fagaceae	FACU
Ranunculus muricatus	spiny fruit buttercup	Ranunculaceae	FACW
Rubus armeniacus	Himalayan blackberry	Rosaceae	FAC
Rumex acetosella	sheep sorrel	Polygonaceae	FACU
Rumex crispus	curly dock	Polygonaceae	FAC
Rumex pulcher	fiddle dock	Polygonaceae	FAC
Schoenoplectus pungens	three-square bulrush	Cyperaceae	OBL
Senecio vulgaris	common groundsel	Asteraceae	FACU
Stachys bullata	hedge nettle	Lamiaceae	-
Symphoricarpos mollis	creeping snowberry	Caprifoliaceae	FACU
Torilis arvensis	field hedge parsley	Apiaceae	-
Toxicodendron diversilobum	Poison oak	Anacardiaceae	FACU
Trifolium spp.	clover	Fabaceae	FAC
Typha spp.	cattails	Typhaceae	OBL
Umbellularia californica	California bay laurel	Lauraceae	FAC
Vicia sativa	common vetch	Fabaceae	FACU
Vinca major	periwinkle	Apocynaceae	FACU

Appendix G-5

Biological Resources Assessment of the Off-Site Traffic Mitigation Improvements

acorn environmental
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762
O: 916-235-8224 | w: www.acorn-env.com

Technical Memorandum: Biological Resources Assessment of the Traffic Mitigation Improvements for the Shiloh Resort and Casino Project, Sonoma County, California

February 20, 2024

Introduction

The Koi Nation of Northern California (Tribe; Property Owner) proposes to construct the Shiloh Resort and Casino in an unincorporated area of Sonoma County outside of, but contiguous to, the Town of Windsor (**Figure 1**). The Environmental Impact Statement prepared for this project identified mitigation for traffic impacts associated with that development project. The prescribed road improvements are the subject of this biological resources assessment (**Figure 2**).

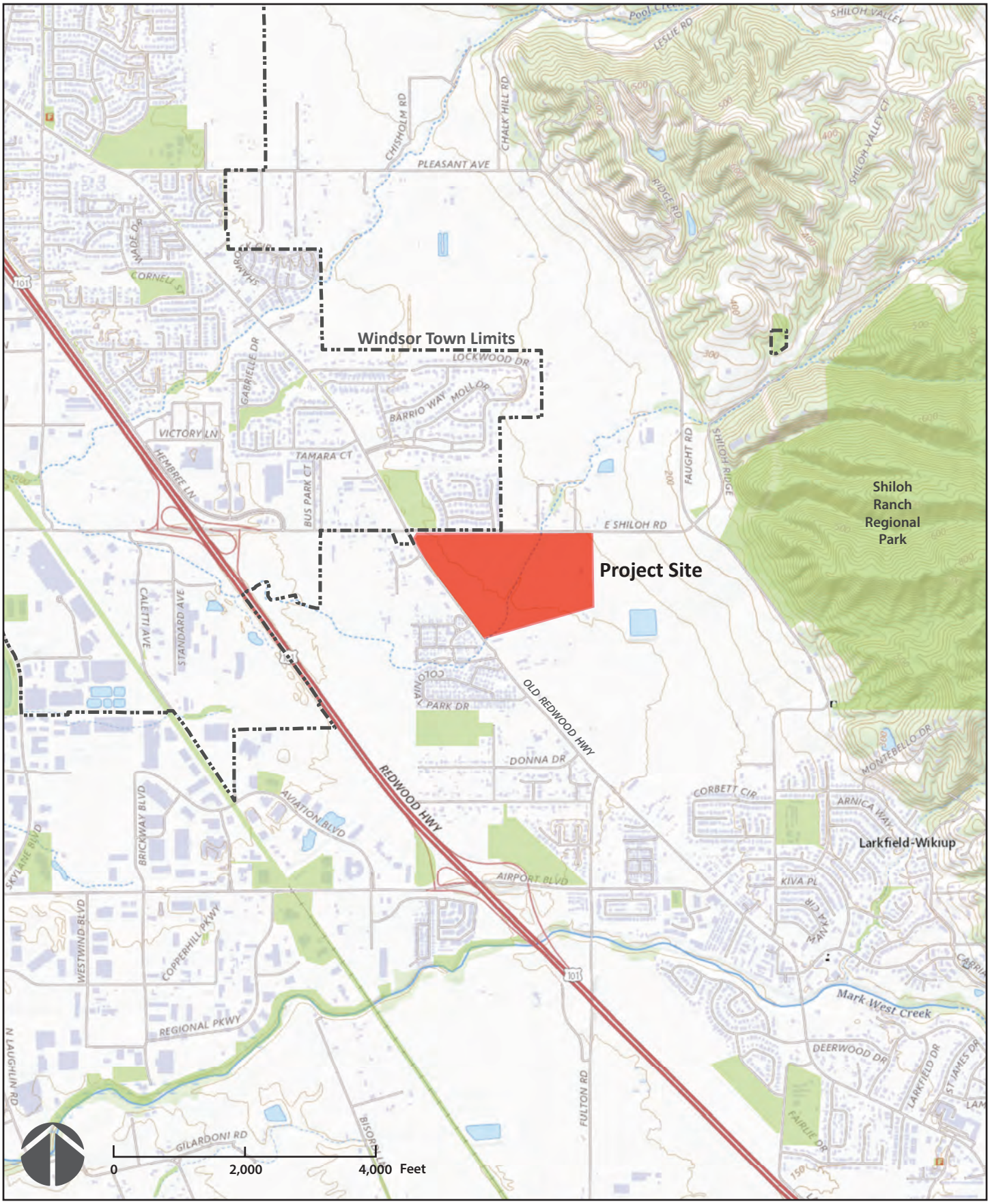
There are two project areas: a 4,800-foot segment of East Shiloh Road and its right-of-way between Caletti Avenue and Gridley Drive (about 16 acres); and a 100-foot segment of Old Redwood Highway at the Shiloh Neighborhood Church (5901 Old Redwood Highway, Santa Rosa) (about 0.2 acre). **Figure 2** shows the Traffic Mitigation Study Areas, also referred to herein as Project Area. The proposed traffic mitigation will be constructed in two phases at these two locations:

Opening Year 2028 Improvements

- Signalize western Shiloh Resort and Casino entrance on Shiloh Road
- Signalize Shiloh Resort and Casino entrance on Old Redwood Highway

Cumulative Year 2040 Improvements

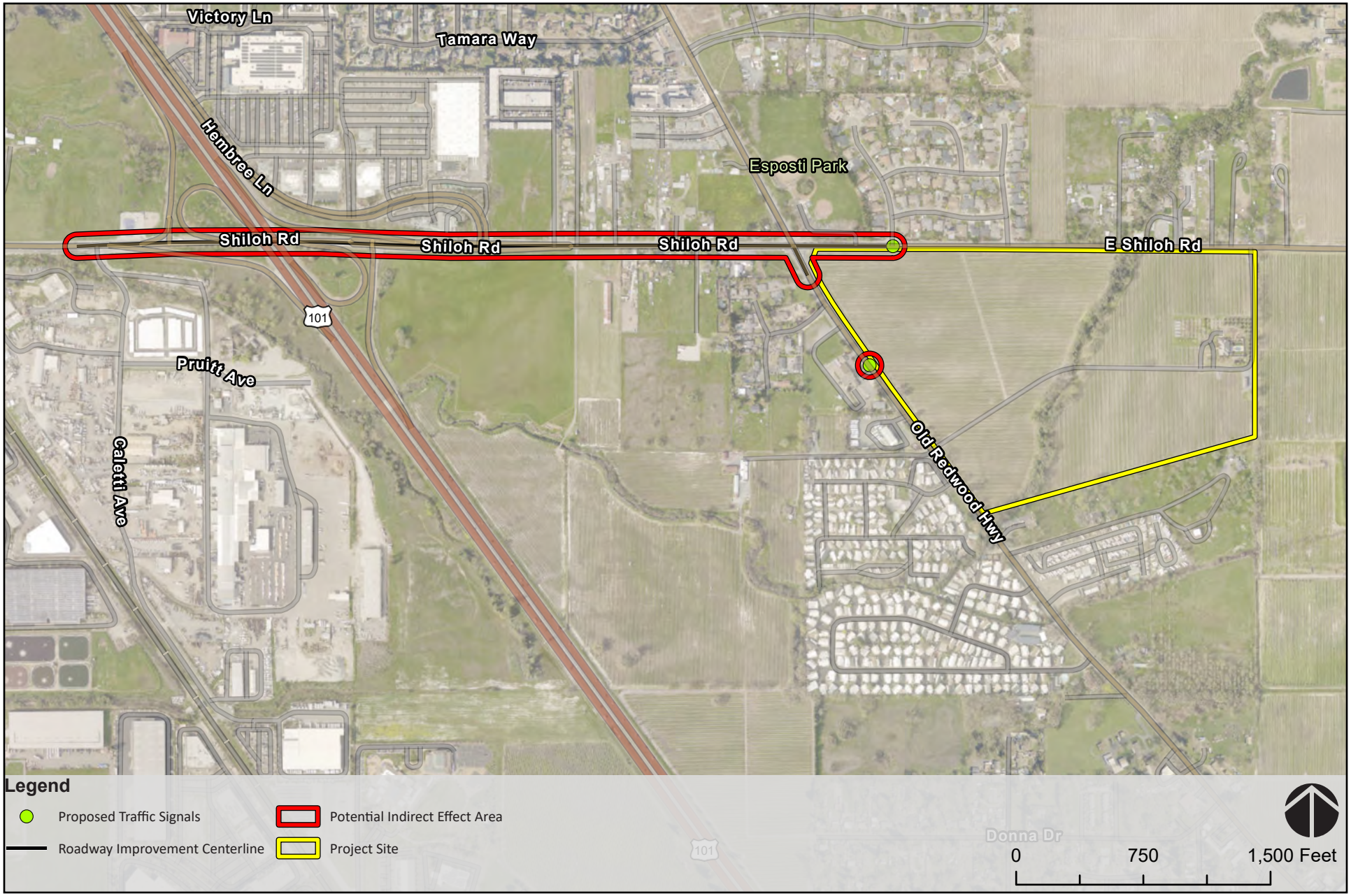
- Widen Shiloh Road between Caletti Avenue and Gridley Drive from two lanes to four lanes.
- Improvements to widen the intersection of Shiloh Road and Old Redwood Highway



Source: USGS The National Map (June 2020)

FIGURE 1

SITE AND VICINITY



Source: Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Pictometry International, Maxar

FIGURE 2

TRFFIC MITIGATION STUDY AREA

Methods

Database Queries

A list of special-status plant and animal species that have occurred within the Project Area and vicinity was compiled based upon the following:

- Informal consultation with USFWS by generating an electronic Species List via Information for Planning and Conservation (USFWS, 2024a; **Attachment A**);
- A spatial query of the California Natural Diversity Database (CNDDB) using a 9-quadrangle buffer surrounding the United States Geologic Service (USGS) 7.5 degree-minute topographic quadrangles of the Project Area (CDFW, 2024; see **Figure 3**);
- USFWS National Wetland Inventory (NWI) digital maps (USFWS, 2024b)

Biological Field Survey

A biological field survey was performed on February 3, 2024, by consulting biologist Kristen Ahrens, M.S. Weather conditions were cool and sunny. Survey efforts emphasized the search for any special-status species or habitats that had documented occurrences, in databases queried, within the survey area or vicinity. Field glasses were used to assist in the ocular surveys. Wildlife signs—tracks, feathers and shedding, burrows, scat, etc.—were interpreted to detect species not actually seen. All visible fauna and flora observed were recorded in a field notebook and identified to the appropriate taxon. Where detected, the location of any special-status species was georeferenced with a geographic positioning system receiver with accuracy of 1 meter or better.

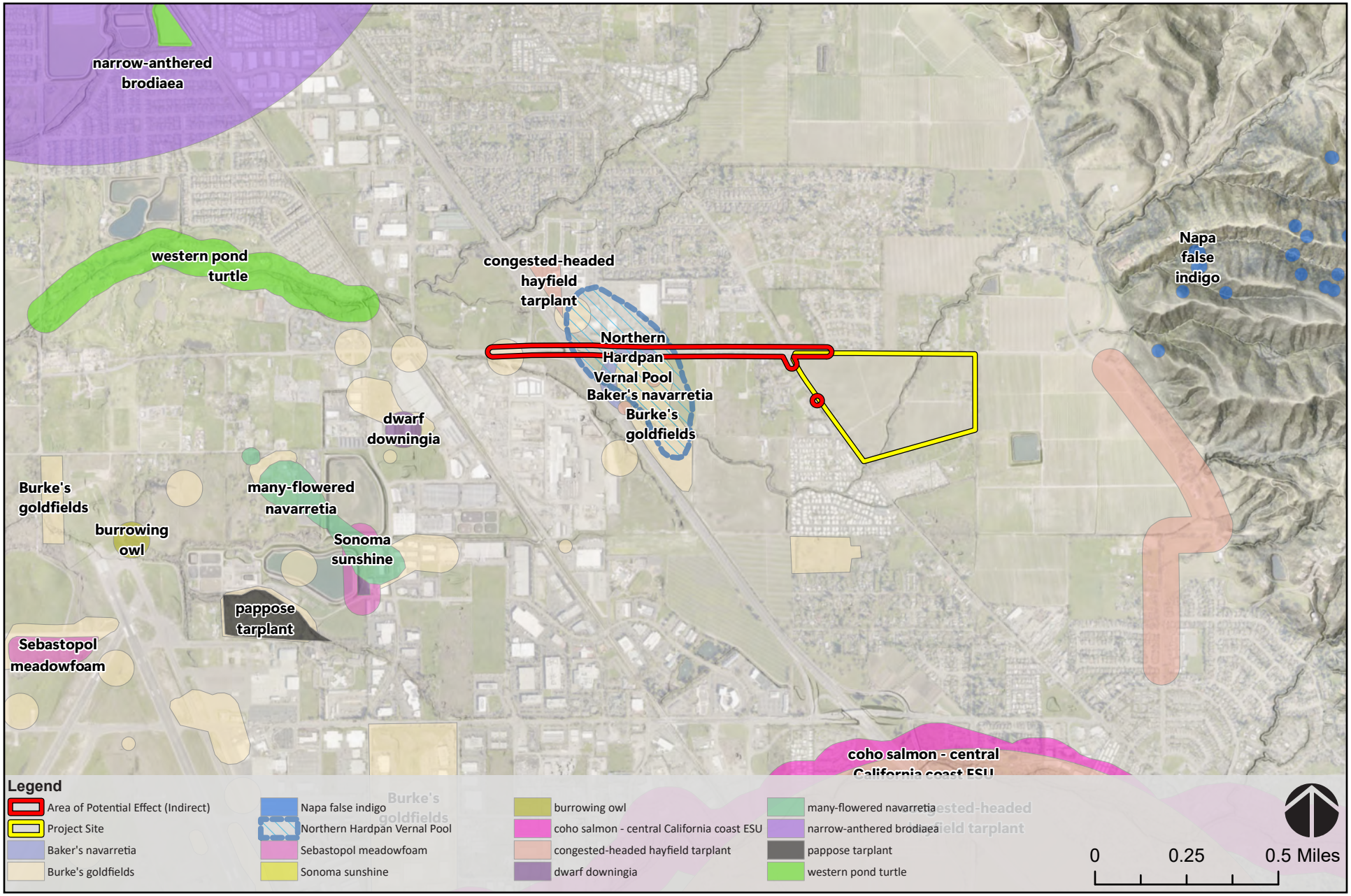
Habitat Mapping

Habitat types occurring in the Project Area were mapped on aerial photographs, and information on habitat conditions and the suitability of the habitats to support special-status species was also recorded. The Project Area was also informally assessed for the presence of potentially jurisdictional water features, including riparian zones, isolated wetlands and vernal pools, and other biologically-sensitive aquatic habitats.

Results

Environmental Setting

The Project Area is located within the Inner North Coast Range geographic subregion, which is contained within the Northwestern California geographic subdivision of the larger California Floristic Province (Baldwin et al. 2012). This region has a Mediterranean-type climate, characterized by distinct seasons of hot, dry summers and wet, moderately-cold winters. The Project Area and vicinity are in climate Zone 14 “Northern California’s Inland Areas with Some Ocean Influence”, with maritime air moderating temperatures that would otherwise be hotter in summer and colder in the winter (Sunset, 2024). The Project Area is located in the Santa Rosa Plain, which are a part of the Coastal Range. The topography is relatively flat, with the exception of Pruit Creek which has incised a channel and the overpass which has elevated a section of Shiloh Road.



Source: Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Pictometry International, Maxar

FIGURE 3

CNDDB SPECIES

Four soil types occur within the Project Area, as mapped by the National Resource Conservation Service (NRCS: HtA: Huichica loam 0 to 2 percent slopes, RnA: Riverwash, HuB: Huichica loam, ponded, 0 to 5 percent slopes, and YsA: Yolo silt loam, 0 to 5 percent slopes (NRCS 2024).

The Project Area consists of paved roads and their associated rights-of-way, which have road embankments, drainage ditches, and vegetation that is regularly mowed or trimmed. The surrounding land uses are residential development, the Highway 101 transportation corridor, agricultural fields and vineyards, and community facilities such as a park and a church.

Critical Habitat, Special-status Habitat, and Essential Fish Habitat

The Project Area is not located within any USFWS-designated critical habitat. However, USFWS-designated critical habitat for California tiger salamander is located 0.6 miles to the west of the Project Area. The Project Area is also located near Core Areas and Management Areas outlined in the Recovery Plan for the Santa Rosa Plain (USFWS 2016). The four federally-listed species managed within the Santa Rosa Plain are California tiger salamander and three endangered plant species (Sonoma sunshine, Burke's goldfields, and Sebastopol meadowfoam). These plant species are found only in vernal pools and seasonal wetlands, while California tiger salamander utilize these wetlands during breeding season and surrounding uplands year-round (USFWS 2016).

The Project Area is located within mapped areas of the Santa Rosa Plain Conservation Strategy (USFWS 2005). The Project Area is designated as "Areas not mapped (major road rights-of-way)," which indicates that there is no habitat for these four federally-listed species because these areas are urbanized with transportation land uses. Adjacent properties that are urbanized with residential and agricultural uses are mapped as "No Effect" or "Not Likely to Adversely Affect" the four federally-listed species. However, the Project Area is adjacent to some areas that have relatively natural habitats with water resources, and these areas are mapped as "Likely to Adversely Affect" California tiger salamander, Sebastopol meadowfoam, Sonoma sunshine, or Burke's goldfields.

The CNDDB was queried, and any reported occurrences of special-status habitats were plotted in relation to the Project Area boundary using GIS software (**Figure 3**). According to the CNDDB, the Project Area is located within the general recorded area of one special-status habitat: Northern Hardpan Vernal Pool. The CNDDB reported that this special-status habitat, situated in an agricultural field, was extirpated by a land use change to more intensive agricultural activities. Our field survey did not detect any vernal pools in the Project Area. The CNDDB also reports two other special-status habitats to occur in the vicinity—Valley Needlegrass Grassland and Coastal and Valley Freshwater Marsh. These conspicuous habitat types do not occur in the Project Area.

Pruitt Creek is designated critical habitat for Steelhead (Central California Coast distinct population segment of *Oncorhynchus mykiss*)(NOAA 2024a). Pruitt Creek is located near the western boundary of the Project Area. Pruitt Creek is also designated as Essential Fish Habitat (pursuant to the Magnuson-Stevens Fishery Conservation and Management Act)f or the federally-endangered Coho salmon (Central California Coast evolutionary significant unit of *Oncorhynchus kisutch*) and the federally-threatened Chinook salmon (California coastal evolutionary significant unit of *Oncorhynchus tshawytscha*) (NOAA 2024b). Note that the proposed road improvements do not involve any work in, or adjacent to, Pruitt Creek.

Listed Species and Special-status Species Reported in Databases

A USFWS species list was generated online using the USFWS' IPaC Trust Resource Report System (**Attachment A**); the following listed species and species proposed for listing are reported in the vicinity:

- Northern Spotted Owl (*Strix occidentalis caurina*) Threatened
- Green Sea Turtle (*Chelonia mydas*) Threatened
- Northwestern Pond Turtle (*Actinemys marmorata*) Proposed Threatened
- California Red-legged Frog (*Rana draytonii*) Threatened.
- Goldfields (*Lasthenia burkei*) Endangered
- Many-flowered Navarretia (*Navarretia leucocephala* ssp. *plieantha*) Endangered
- Sebastopol Meadowfoam (*Limnanthes vinculans*) Endangered
- Sonoma Sunshine (*Blennosperma bakeri*) Endangered

The CNDDB was queried, and any reported occurrences of special-status species were plotted in relation to the Project Area boundary using GIS software (**Figure 3**). According to the CNDDB, the Project Area is located within the general recorded areas of 2 special-status species: Burke's goldfields (*Lasthenia burkei*) and Baker's navarretia (*Navarretia leucocephala* ssp*. bakeri*). Burke's goldfields were reported to occur in vernal pools and seasonal marshes near the Project Area; however, the Project Area does not contain these habitats. The Project Area contains only road ditches that carry ephemeral flows and do not hold water seasonally. The CNDDB reported that the Baker's navarretia population, situated in an agricultural field, was extirpated by a land use change to more intensive agricultural activities in the 1990s.

Habitat Types within the Project Areas

General vegetation communities occurring in the Project Areas were mapped (see **Figure 4**). The Project Area contains only one habitat type—urbanized. The Project Area consists of natural habitats that have been transformed into paved roads and road beds, with associated drainage features such as gutters, road relief ditches, drop inlets, and pipe culverts. The ground cover in ruderal areas is subject to regular maintenance activities such as mowing, trimming, and herbicide applications. The plant composition in these ruderal areas consist of non-native annual grasses and weedy forbs, such as slender wild oat (*Avena* barbata), soft chess (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marianum*), English plantain (*Plantago lanceolata*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), California burclover (*Medicago polymorpha*), common vetch (*Vicia sativa*), and filaree species (*Erodium botrys*, *E. cicutarium*). There are a few native trees present, such as valley oaks (*Quercus lobata*), Coast live oak (*Quercus agrifolia*), and Oregon ash (*Fraxinus latifolia*). Some ornamental vegetation also exists in the Project Areas at the boundaries with residences, and species include fruit trees (*Prunus*, *Citrus*, *Pyrus*), eucalyptus (*Eucalyptus*), olive (*Olea europaea*), rose (*Rosa* sp.), cactus (*Opuntia*), and agave (*Agave*).

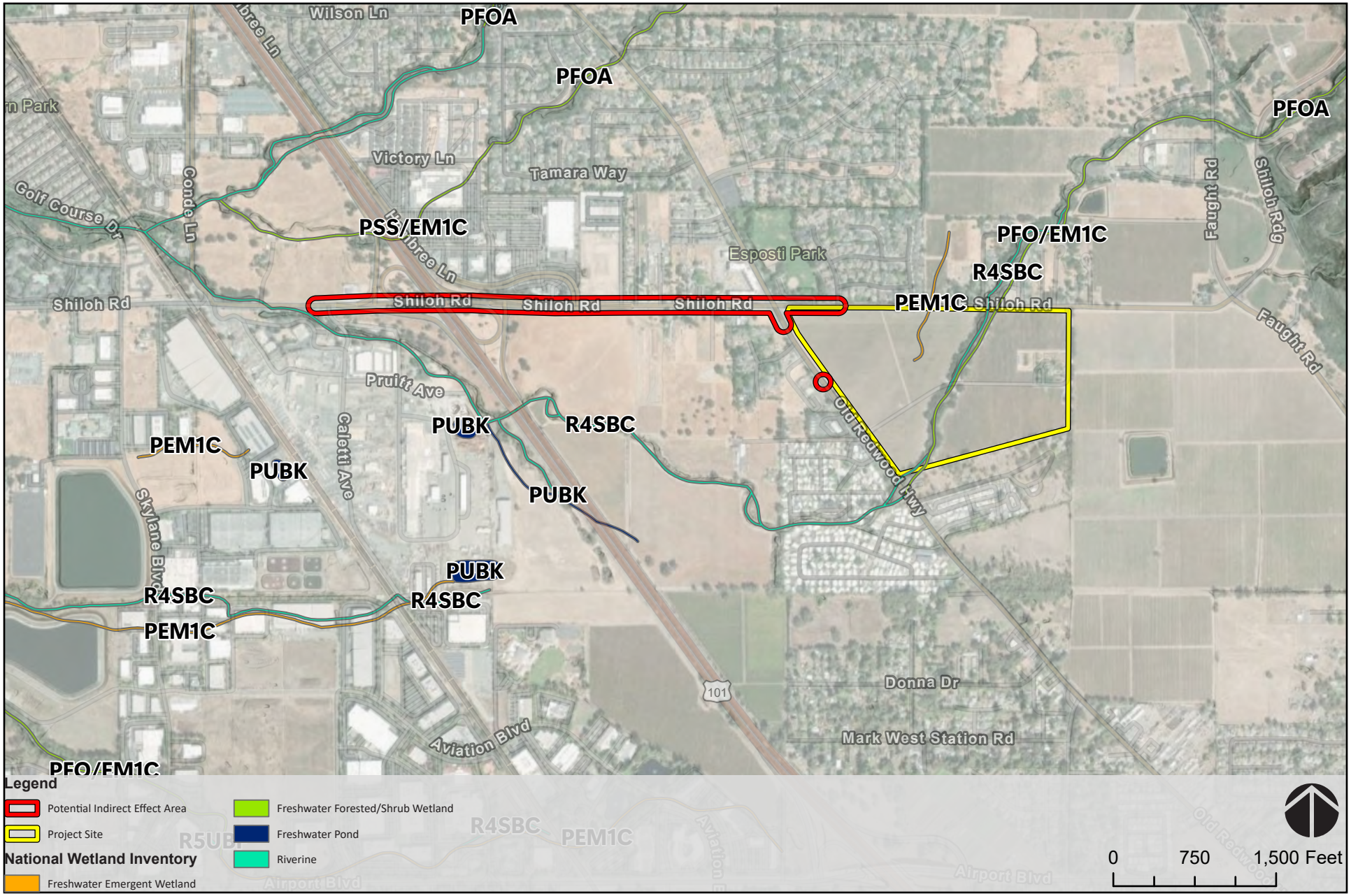
Surface Water Resources

The USFWS National Wetland Inventory reported no water features within the Project Area, although one riverine feature (Pruitt Creek) is adjacent to the west end of the proposed road improvements (see **Figure 5**). A preliminary assessment for the presence of potentially jurisdictional water resources within the Project Area was also conducted during the field survey. The field survey confirmed that the Project Area contains no channels or wetlands; instead, surface flows collect in roadside ditches. These ditches are upland swales that do not meet the relatively permanent standard for flow as defined by USACE jurisdictional guidance, and they lack channel indicators. These ditches appeared to be excavated in

Source: Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Pictometry International, Maxar

FIGURE 4

HABITAT TYPES



Source: Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and

FIGURE 5

NATIONAL WETLAND INVENTORY

uplands (rather than wetlands) and are not replacing any natural drainages or wetlands, nor did they appear to be fed by seeps or water sources other than direct precipitation and runoff from paved surfaces. These ditches are dominated by upland grasses and forbs, although wetland vegetation is sometimes present, such as bog rush (Schoenus nigricans), curly dock (*Rumex crispus*), and tall flatsedge (*Cyperus eragrostis*). In contrast, wetlands that occur downstream, but outside of, the Project Area have standing water with wetland indicator species such as iris-leaf rush (*Juncus xiphioides*), yard knotweed (*Polygonum aviculare*), and hyssop loosestrife (*Lythrum hyssopifolia*).

Impact Assessment and Recommendations

Potential Impacts to Federally-Listed Species and Special-status Species

Direct impacts could occur from the removal of known populations of federally-listed species or special-status species, or the destruction of their habitat. However, the CNDDB does not report any federally-listed species or special-status species in the Project Area and field surveys did not detect these species. The Project Area contains only urbanized habitat; project implementation will not remove any suitable habitat for federally-listed species or special-status species.

There are four federally-listed plant species that occur in the vicinity of the Project Area: Burke's goldfields, Sebastopol meadowfoam, Sonoma sunshine, and many-flowered navarretia. All these species occur in specialized habitats (marshes, vernal pools, seeps, etc.) which do not occur in the Project Area. Accordingly, implementation of the proposed roadway improvements will have no direct effects on federally-listed plants. State-listed and special-status plant species were also assessed (such as many-flowered navarretia and congested-headed hayfield tarplant), and it was determined that the requisite habitats for these plants do not occur in the Project Area. Adherence to State and federal requirements that protect special status species would ensure that impacts to special-status plant species from construction of off-site improvements would be less than significant.

There are six federally-listed wildlife species that occur in the vicinity of the Project Area: northern spotted owl, northwestern pond turtle, California freshwater shrimp, California red-legged frog, and California tiger salamander. Northern Spotted Owls require old growth forests and younger forests with remnants of larger trees; the Project Area has no forests at all. Northwestern pond turtle requires ponds and other perennial water bodies; the Project Area has no aquatic habitat at all. California freshwater shrimp occurs in slow flowing streams with certain substrates; there is no aquatic habitat at all in the Project Area. California red-legged frog and California tiger salamander require perennial waterbodies for breeding and riparian corridors for foraging and dispersal; there are no aquatic or riparian habitats at all in the Project Area. Accordingly, implementation of the proposed roadway improvements will have no direct effect on federally-listed animals. State-listed and special-status animal species were also assessed, and it was determined that the requisite habitats for these animals do not occur in the Project Area. Adherence to State and federal requirements that protect special status species would ensure that impacts to special-status animal species from construction of off-site improvements would be less than significant.

Indirect impacts could occur from the proposed roadway improvements by the degradation of off-site suitable habitat for federally-listed species or special-status species. Downstream of the Project Area, there are various seasonal wetlands and channels and other sensitive habitats that provide suitable conditions for vernal pool plants and animals and other protected species dependent upon aquatic habitats. Both the construction phase and the operational phase of the proposed roadway improvements could degrade downstream sensitive habitats. However, in accordance with the federal Clean Water Act

(CWA), any construction over one acre in area would be required to comply with the National Pollutant Discharge Elimination System (NPDES) permit program. A Stormwater Pollution Prevention Plan (SWPPP) would be developed, including soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff. Under the Clean Water Act, sites less than one acre would still be prohibited from discharging sediments and other pollutants to off-site waterways. With compliance with the CWA, standard construction practices and specifications required by the jurisdictional agencies, and the NPDES General Construction Permit for activities over one acre in size, indirect effects on special-status species would be less than significant.

Sensitive Habitats

No direct impacts to sensitive habitats are expected from project implementation because there are no sensitive habitats in the Project Area. Indirect impacts could occur from project implementation by the degradation of off-site sensitive habitats; avoidance and minimization measures have been prescribed to protect these habitat. Implementation of the proposed roadway improvements may require tree removal that would be subject to the Sonoma County Tree Protection Ordinance. The issuance of a tree permit may require tree protection and avoidance, tree replanting, and/or payment of a fee for tree removal (County of Sonoma 2024). Adherence to State and federal requirements that protect special status species and the Sonoma County Tree Protection Ordinance would ensure that impacts to sensitive habitats from construction of off-site improvements would be less than significant.

Nesting Birds

The Project Area contains suitable nesting habitat for various bird species because of the presence of some trees, shrubs, tall grass, and poles. California Fish and Game Code protects all nesting birds and their nests, and migratory birds are also protected under the Migratory Bird Treaty Act of 1918. If construction activities are conducted during the nesting season, nesting birds could be directly impacted by tree removal and indirectly impacted by noise, vibration, and other construction-related disturbance. Adherence to State and federal requirements that protect nesting birds would ensure that impacts to nesting birds from construction of off-site improvements would be less than significant.

Water Resources

The Project Area does not contain any channels or wetlands, so no direct impacts to water resources will occur from project implementation. Downstream of the Project Area, there are various seasonal wetlands and channels. Indirect impacts could occur during both the construction phase and the operational phase of the proposed roadway improvements. During construction, downstream water resources could be degraded by storm water transport of sediment from disturbed soils or by accidental release of hazardous materials or petroleum products from sources such as heavy equipment servicing or refueling. In the operational phase, road-associated pollutants (automotive lubricants and engine coolants, landscape maintenance chemicals, etc.) can be transported to receiving waterbodies. However, as discussed above under Water Resources, with adherence to the CWA, NPDES General Construction Permit for activities over one acre in size, California Title 22 standards, and standards for drainage facilities, indirect effects to water quality would be less than significant.

References

CDFW, 2024. California Natural Diversity Database (CNDDB). Queried via subscription. Limited public access available online at: https://wildlife.ca.gov/Data/CNDDB. Accessed February 15, 2024.

County of Sonoma. Accessed 2024. Comprehensive Tree Ordinance. Permit Sonoma, Regulations. https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/

Natural Resources Conservation Service (NRCS). 2024. Web Soil Survey version 3.3. National Cooperative Soil Survey, U.S. Department of Agriculture. NRCS Soils Website (Internet database and digital maps) available at https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Sunset Western Garden Collection. 2024. Sunset Climate Zones. Sunset Publishing Corporation. Available on the Internet at: https://www.sunsetwesterngardencollection.com/climate-zones.

U.S. Fish & Wildlife Service (USFWS). 2005. Final Santa Rosa Plain Conservation Strategy. Sacramento Office of the U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, North Coast Regional Water Quality Control Board, County of Sonoma, Cities of Cotati, Rohnert Park, and Santa Rosa, Laguna de Santa Rosa Foundation. December 1.

USFWS. 2016. Recovery Plan for the Santa Rosa Plain: Blennosperma bakeri (Sonoma sunshine); Lasthenia burkei (Burke's goldfields); Limnanthes vinculans (Sebastopol meadowfoam); California Tiger Salamander Sonoma County Distinct Population Segment (Ambystoma californiense). Sacramento, CA: U.S. Fish and Wildlife Service, Pacific Southwest Region, Region 8.

USFWS, 2024a. Information for Planning and Consultation. Available online at: https://ipac.ecosphere.fws.gov/location/index. Accessed February 15, 2024.

USFWS, 2024b. National Wetlands Inventory. Available online at: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed February 15, 2024.

U.S. National Oceanic and Atmospheric Administration (NOAA). 2024a. NOAA Fisheries National ESA Critical Habitat Mapper, available on the Internet at: https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper

U.S. National Oceanic and Atmospheric Administration. 2024b. NOAA Fisheries Essential Fish Habitat Mapper, available on the Internet at: https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper

Attachment A: USFWS Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: February 15, 2024
Project Code: 2024-0049997
Project Name: Traffic Improvements for Shiloh Resort and Casino Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2024-0049997
Project Name: Traffic Improvements for Shiloh Resort and Casino Project
Project Type: Road/Hwy - New Construction
Project Description: Traffic Improvements (road widening and addition of traffic signals) for Shiloh Resort and Casino project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.5244867,-122.77831943664962,14z

Counties: Sonoma County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

REPTILES

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Many-flowered Navarretia *Navarretia leucocephala ssp. plieantha* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2491	Endangered
Sebastopol Meadowfoam *Limnanthes vinculans* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/404	Endangered
Sonoma Sunshine *Blennosperma bakeri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1260	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Acorn Environmental
Name: G.O. Graening
Address: 343 Carpenter Hill Road
City: Folsom
State: CA
Zip: 95630
Email ggraening@gmail.com
Phone: 9164525442

Appendix G-6

Jurisdictional Determination Technical Memorandum

SEQUOIA
Ecological Consulting, Inc.

Date: December 13, 2023

To: Bryan Matsumoto | Senior Project Manager
USACE, Regulatory Division, North Branch
450 Golden Gate Avenue, 4th Floor, Room 1111
San Francisco, California 94102-3404

From: Ari Rogers
Ecologist | Project Manager
Sequoia Ecological Consulting, Inc.

RE: **Jurisdictional Determination Technical Memorandum**
Shiloh Resort and Casino Project (SPN-2022-00162)
Windsor/Sonoma County, California

1.0 INTRODUCTION AND BACKGROUND

As contracted by Acorn Environmental on behalf of the Koi Nation of Northern California (Tribe; Property Owner), Sequoia Ecological Consulting, Inc. (Sequoia) is submitting this technical memorandum to the U.S. Army Corps of Engineers (USACE) for the proposed Shiloh Resort and Casino Project (Project) site (SPN-2022-00162), located in Sonoma County, California (Assessor's Parcel Number 059-300-003) (Figures 1 and 2). The Property Owner proposes to acquire the project site into federal trust as the initial reservation for the Koi Nation of Northern California, which will subsequently develop a resort and casino.

Sequoia performed a wetland delineation in February 2022 and provided USACE with the associated report and Preliminary Jurisdictional Determination (PJD) request in April 2022. Sequoia's delineation of "waters of the United States" (WOTUS) followed the USACE's 1987 *Wetlands Delineation Manual* and 2008 *Regional Supplement for the Arid West Region*. At the request of the USACE, Sequoia performed a follow-up site visit in July 2023 to inspect an area that was presenting as a dark spot on aerial imagery; additional data and sample points were collected and the area was determined to be upland based on the absence of positive wetland indictors of all three parameters (hydrology, soil, vegetation) and indicators of ordinary high water mark (OHWM). On October 27, 2023, Sequoia and Acorn Environmental attended a delineation verification site visit with USACE's San Francisco District Senior Project Manager Bryan Matsumoto to review aquatic features identified on site and discuss jurisdiction in light of the 2023 conforming rule issued after the Supreme Court decision in *Sackett v. EPA*.

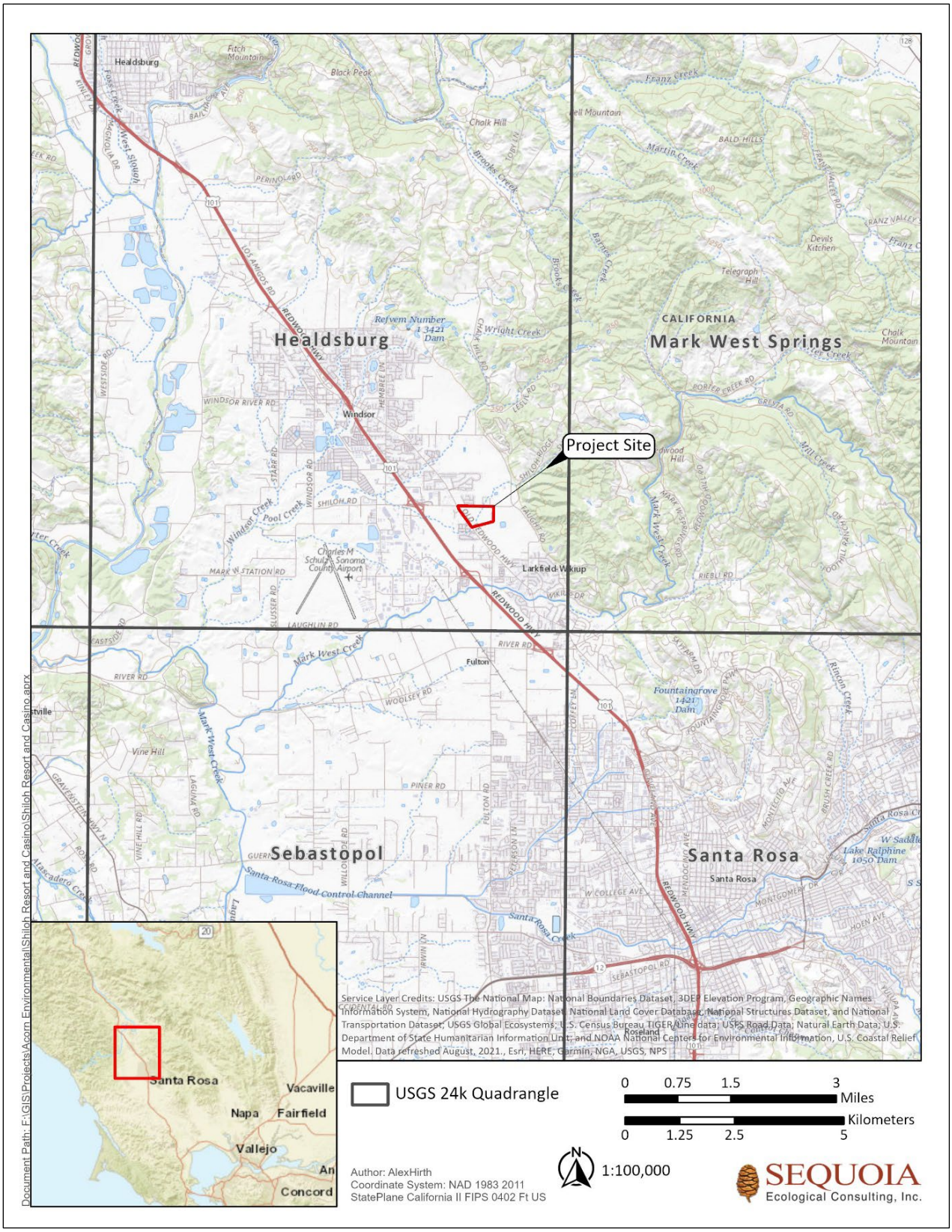


Figure 1. Regional Map of the Shiloh Resort and Casino Project Site

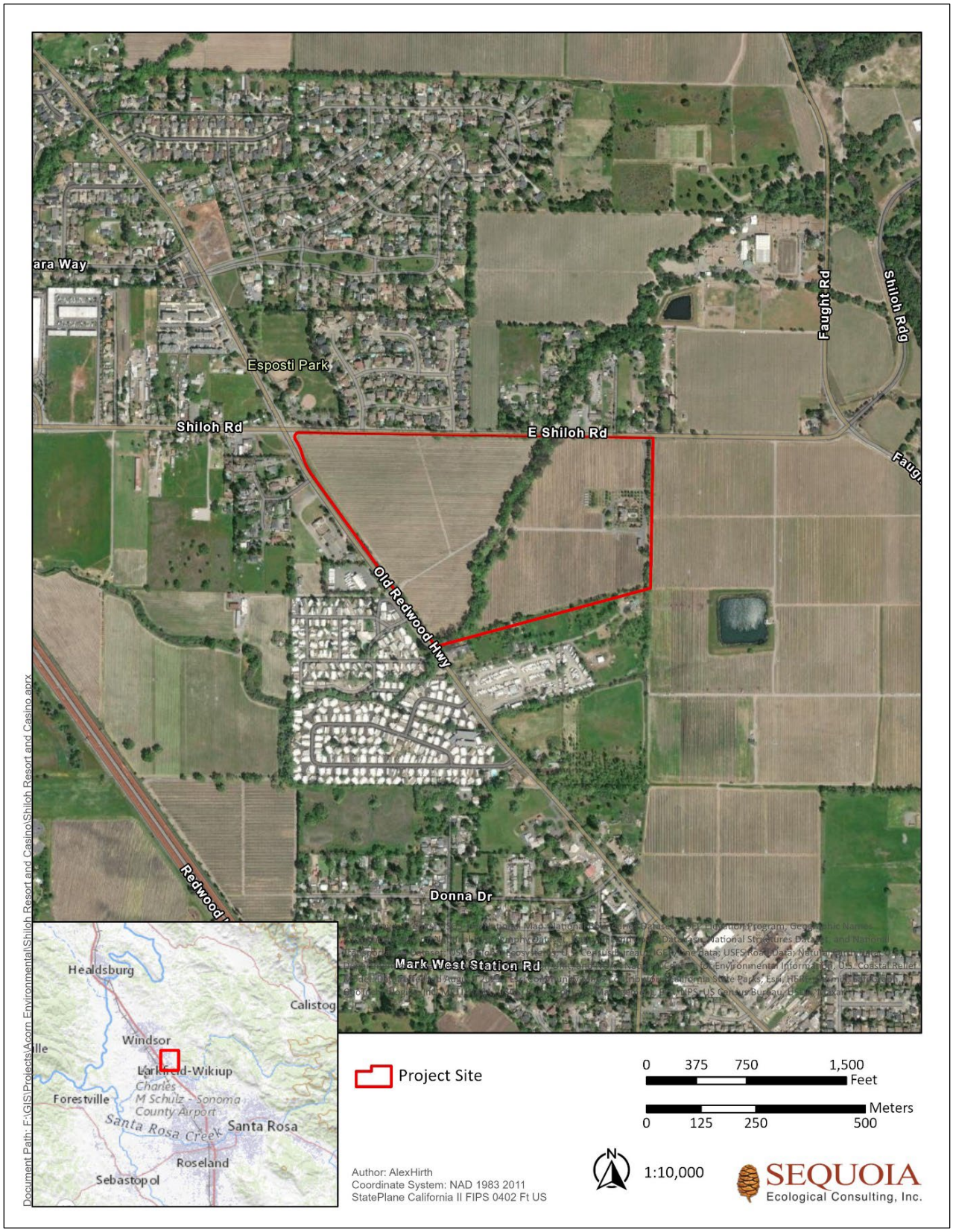


Figure 2. Location Map of the Shiloh Resort and Casino Project Site

This memorandum presents the results of the October 2023 delineation verification site visit and subsequent jurisdictional determinations specified by Mr. Matsumoto. The draft Aquatic Resources Delineation (ARD) map was updated following the site visit and the revised version is included as Appendix A to this memo. Sequoia respectfully requests that USACE confirm the jurisdiction of aquatic features mapped on the project site pursuant to Section 404 of the Clean Water Act (CWA), through the use of an Approved Jurisdictional Determination (AJD), not a PJD as previously requested due to the presence of non-jurisdictional and exempt aquatic features.

2.0 SUMMARY OF SITE VISIT

On October 27, 2023, a delineation verification site visit was performed by Ari Rogers (Sequoia), Bryan Matsumoto (USACE San Francisco District), and Darin Beltran (Koi Nation). The attendees of the site visit are hereafter collectively referred to as surveyors. The surveyors met at 9:30 a.m. and after reviewing the draft ARD map, traversed the property and inspected various aquatic features. The surveyors began with the string of seasonal wetlands (SW-01 through SW-04) and roadside drainage ditches (RD-01 and RD-02) on the western property boundary, then visited the area assessed during Sequoia's follow-up visit in July 2023. Afterwards, the surveyors viewed the Pruitt Creek channel at the low-flow crossing and the in-stream seasonal wetland (SW-05). Finally, the surveyors inspected several areas where dark spots were observed on aerial imagery, immediately adjacent to the main access road between Pruitt Creek and the existing residence. One new aquatic feature (SW-09) was identified during the site visit and is discussed further below.

3.0 JURISDICTIONAL DETERMINATIONS

The jurisdictional determination provided by Mr. Matsumoto based on the delineation verification site visit are discussed below. The jurisdictional and non-jurisdictional aquatic features within the project site are depicted in the revised ARD map (Appendix A) and summarized in Table 1.

Table 1. Jurisdictional and Non-Jurisdictional Aquatic Features on the Project Site

Aquatic Feature Name	Aquatic Feature Type	Area (sq. ft.)	Area (ac.)	Notes
Jurisdictional Features				
ID-01	Intermittent drainage	28,200	0.648	Pruitt Creek
SW-01	Seasonal wetland	73.4	0.00169	
SW-05	Seasonal wetland	552	0.0127	In-stream wetland
SW-06	Seasonal wetland	119	0.00272	In-stream wetland
SW-07	Seasonal wetland	149	0.00341	In-stream wetland
SW-08	Seasonal wetland	646	0.0148	In-stream wetland
Non-Jurisdictional Features				
RD-01	Roadside drainage	3,110	0.0713	Not relatively permanent
RD-01	Roadside drainage	1,470	0.0339	Not relatively permanent
SW-02	Seasonal wetland	165	0.00378	Non-adjacent
SW-03	Seasonal wetland	193	0.00442	Non-adjacent
SW-04	Seasonal wetland	404	0.00927	Non-adjacent
SW-09	Seasonal wetland	1,780	0.0408	Artificially irrigated

3.1 Jurisdictional Features

No new jurisdictional features were identified during the October 27, 2023 delineation verification field visit; however, four (4) in-channel seasonal wetlands (SW-05 through SW-08) were included in the revised ARD map at the request of Mr. Matsumoto. These features were identified and mapped during Sequoia's initial wetland delineation in February 2022 but because of their location within the Pruitt Creek channel (some at or below OHWM) were previously incorporated into the ID-01 polygon on the draft ARD map, rather than being shown as individual wetland features. Per Mr. Matsumoto's direction, these four in-channel features were separated out from the ID-01 polygon and are depicted as seasonal wetlands in the revised ARD map (Appendix A). SW-01 was confirmed to fall under USACE jurisdiction during the October 2023 site visit based on the presence of all three wetland parameters and direct surface connection to Pruitt Creek via roadside ditch RD-02. Pruitt Creek was also determined to be jurisdictional as a relatively permanent tributary to WOTUS.

3.2 Non-Jurisdictional Seasonal Wetlands

Three (3) seasonal wetlands identified during the initial February 2022 delineation were determined to be non-jurisdictional during the October 2023 verification site visit: SW-02, SW-03, and SW-04. During the verification site visit, the surveyors inspected for signs of hydrologic connectivity between these seasonal wetlands and the nearby roadside drainage ditch, such as drift marks, swales, or flow lines, but none were observed. Accordingly, it was determined that these features, while meeting all three wetland parameters, do not have direct surface connection to WOTUS and are therefore non-adjacent wetlands that are non-jurisdictional pursuant to the CWA and 2023 conforming rule.

During the verification site visit on October 27, 2023, a previously undocumented aquatic feature was identified along the main access road near the existing residence. The feature was determined to be a seasonal wetland (SW-09) based on the presence of hydrophytic indicator plant species such as tall flatsedge (*Cyperus eragrostis*, FACW), and approximately 4 to 6 inches of standing water that extended from the access road into several vineyard rows. These conditions were not seen during Sequoia's initial wetland delineation in February 2022 nor the follow-up visit in July 2023, suggesting that the pooling water was a recent occurrence. The presence of relatively young plants, still in vegetative phenology despite the timing of the site visit (late October), within the seasonal wetland further supported this hypothesis. A small (approximately 6-inch diameter) culvert with an outlet at the edge of SW-09 was also observed, spanning beneath the access road and leading toward the residence. The feature was mapped during the October 2023 site visit and is shown on the revised ARD map (Appendix A). The presence of standing water considering the site visit was timed at the end of the summer dry season, before winter rains had begun, suggested that an artificial water source was feeding the wetland. This was confirmed by the vineyard manager who explained that the area was fed by nuisance irrigation water and sprinkler runoff, via the culvert beneath the access road. For this reason, SW-09 was determined to be excluded from USACE jurisdiction as an artificially irrigated feature that would revert to dry land if irrigation ceased (33 CFR § 328.3 (b)(4) exclusion).

3.3 Roadside Drainage Ditch

The two roadside drainage ditches (RD-01 and RD-02) are non-relatively permanent drainages, meaning they do not meet the definition of WOTUS (33 CFR § 328.3) and are therefore excluded from jurisdiction. Mr. Matsumoto assessed the potential applicability of the roadside ditch exclusion but determined that these features do not meet the criteria; roadside ditches must be features excavated in dry land with a non-relatively permanent flow that drain *only* uplands. Considering the roadside ditch was observed to have direct surface connection to and consequently drain SW-01, it therefore does not drain only uplands. For these reasons, RD-01 and RD-02 were determined to be non-relatively permanent, non-WOTUS features that are excluded from USACE jurisdiction pursuant to the CWA.

4.0 CONCLUSION

This concludes Sequoia's jurisdictional determination technical memorandum for the Shiloh Resort and Casino Project (SPN-2022-00162). Jurisdictional determinations were provided by USACE's Senior Project Manager Bryan Matsumoto and are summarized above and depicted in the revised ARD map (Appendix A). Sequoia respectfully requests that USACE confirm the jurisdiction of aquatic features mapped on the project site pursuant to Section 404 of the CWA, through the use of an AJD. Sequoia did not prepare any additional Arid West data sheets after discussion with USACE but are providing updated ORM Upload Sheet and shapefiles for the final aquatic features and jurisdictional determinations to support this request.

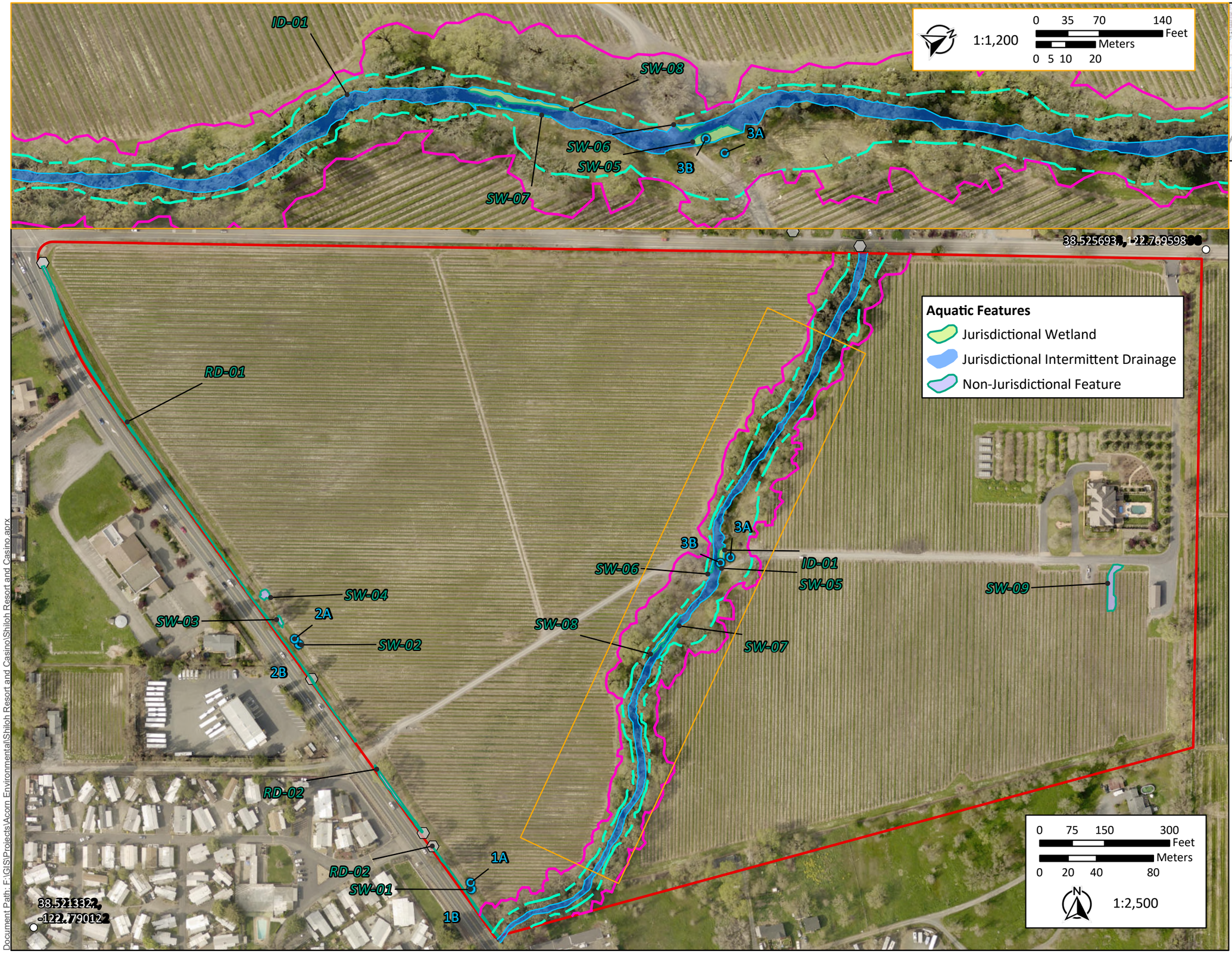
If you have any questions or concerns regarding this report, please do not hesitate to contact me at the email or phone number listed below. Thank you for the opportunity to support you on this Project.

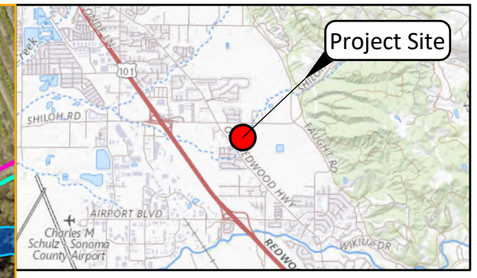
Sincerely,

Ari Rogers | Ecologist and Project Manager
Sequoia Ecological Consulting, Inc.
Mobile: 512.940.4049 | Main: 925.855.5500 | Fax: 510.439.1104
arogers@sequoiaeco.com
www.sequoiaeco.com

Appendix A

Revised Aquatic Resources Delineation Map





Project Site

Culvert Opening

Sample Point

Ordinary High Water Mark

Top-of-Bank

Riparian Dripline

Table 1. Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
ID-01	28,200	0.648
SW-01	73.4	0.00169
SW-05	552	0.0127
SW-06	119	0.00272
SW-07	149	0.00341
SW-08	646	0.0148

Table 2. Non-Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
RD-01	3,110	0.0713
RD-02	1,470	0.0339
SW-02	165	0.00378
SW-03	193	0.00442
SW-04	404	0.00927
SW-09	1,780	0.0408

Author: AlexHirth
Date Exported: 12/12/2023
Coordinate System: NAD 1983 2011
StatePlane California II FIPS 0402 Ft US

Service Layer Credits: Pictometry International, Maxar, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

SEQUOIA Ecological Consulting, Inc.

Document Path: F:\GIS\Projects\Acorn Environmental\Shiloh Resort and Casino\Shiloh Resort and Casino.aprx

Appendix G-7

Section 7 Endangered Species Act Correspondence

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Pacific Regional Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825

IN REPLY REFER TO:
TR-4516-P5 J51 639T Informal Consultation Request

Memorandum

To: Michael Fris, Field Supervisor, U.S. Fish and Wildlife Service (USFWS), Sacramento Fish and Wildlife Office, Ecological Services

From: Amy Dutschke, Regional Director

Subject: "Not likely to Adversely Affect" Determination for California Red-legged Frog, Shiloh Resort and Casino Project, Koi Nation

The Bureau of Indian Affairs (BIA), Pacific Region, Division of Environmental, Cultural Resource Management and Safety, Endangered Species (ES) Section respectfully requests to initiate informal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, for the Koi Nation (Tribe) Shiloh Resort and Casino Project near the Town of Windsor in Sonoma County, California. The Proposed Action includes the conveyance of approximately 68.6 acres into federal trust status for the benefit of the Tribe.

Enclosed for your review is the Biological Assessment (BA) for the Koi Nation Shiloh Resort and Casino Project. The Proposed Project (Alternative A) consists of the acquisition of a 68.6-acre site (Project Site; Action Area) into federal trust status for the Tribe. The proposed project includes development of the site with a resort and casino facility, hotel, parking garage, and supporting infrastructure, including inter-related and interdependent actions such as off-site roadway improvements and use of recycled water for off-site irrigation.

As part of the BA, a summary of federally listed special-status species with the potential to occur within the region was obtained from USFWS, the California Natural Diversity Database and the California Native Plant Society, Inventory of Rare and Endangered Plants. The USFWS list is included as Appendix A of the BA. The Project Site does not fall within the USFWS designated or proposed Critical Habitat. The Project Site does not provide suitable habitat for federally listed plants. As discussed in detail below, the Project Site provides suitable habitat for California red-legged frog (CRLF) and, although suitable habitat for California tiger salamander (CTS) was not observed on site, an analysis and impact statement are provided in the BA due to the proximity of critical habitat and regional importance of this species.

CRLF: There are no known occurrences of CRLF within 3 miles of the Project Site. The Project Site contains a portion of Pruitt Creek, which does not provide sufficient water for breeding

habitat but does provide suitable non-breeding aquatic habitat and dispersal habitat for CRLF. However, the Project Site lacks suitable upland habitat given the lack of suitable refugia and ongoing disturbance. Given the lack of nearby occurrences, lack of breeding habitat, and ongoing disturbance on site, there is a low potential for CRLF to occur on the Project Site. Potential impacts to this species would be limited to habitat degradation should impaired waters be released into Pruitt Creek during construction, and direct mortality during work near Pruitt Creek and its associated habitat. The BA includes conservation measures including environmental awareness training for construction personnel, preconstruction surveys and groundbreaking monitoring with a halt-work for potential listed species presence, and proper trash removal. Additionally, a Stormwater Pollution Prevention Plan would be developed with wildlife-friendly Best Management Practices, and work within Pruitt Creek would be limited to the dry conditions. With implementation of conservation measures, the BA determined that the Proposed Project may affect, but is unlikely to adversely affect CRLF.

CTS: A detailed analysis of potential for CTS to occur is provided in the BA due to the presence of nearby critical habitat and the regional importance of this species. As discussed within the BA, the Project Site lacks suitable habitat for CTS, including breeding habitat, upland habitat, and dispersal habitat. Due to a lack of suitable habitat, the BA determined that CTS does not have the potential to occur on the Project Site. Therefore, the BA determined that the Proposed Project would have no effect on CTS.

The ES Section has determined that the proposed action may affect, but is not likely to adversely affect candidate, threatened, or endangered species or their critical habitat, based on the surveys conducted and the conservation measures that are proposed, and hereby requests your concurrence with this finding.

If you have any questions regarding this determination, please contact Peter DeJongh, Regional Biologist, at (916) 704-0857, or Felix Kitto, Deputy Regional Director, Indian Services at felix.kitto@bia.gov.

AMY DUTSCHKE

Digitally signed by AMY DUTSCHKE
Date: 2024.02.06 08:20:17 -08'00'

Attachments

Re: Section 7 Acknowledgement for Koi Nation Shiloh Casino Project

Fris, Michael <michael_fris@fws.gov> Wed, May 22, 2024 at 4:32 PM
To: "DeJongh, Peter C" <peter.dejongh@bia.gov>
Cc: "Freeman, Arwen L" <arwen_freeman@fws.gov>, Ryan Lee Sawyer <rsawyer@acorn-env.com>, "darinbeltran@koination.com" <darinbeltran@koination.com>, "Broussard, Chad N" <Chad.Broussard@bia.gov>, "Kitto, Felix F" <Felix.Kitto@bia.gov>, "Snyder, Jacilyn" <Jacilyn.Snyder@bia.gov>, Jennifer Wade <jwade@acorn-env.com>

Hi Peter,

We have reviewed the No Effect Determination Letter and the revised April 2024 Biological Assessment. I concur with Arwen's recommendation and technical assistance. We acknowledge your determination of No Effect to California red-legged frog and no further consultation actions are necessary.

Thanks.

Mike

Michael Fris (he/him)

Field Supervisor

Sacramento Fish and Wildlife Office

916-414-6700

C: 916-425-0099

[Quoted text hidden]

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Pacific Regional Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825

IN REPLY REFER TO:
TR-4313_P5 J51 639T
Informal Consultation Initiation Memorandum

Memorandum

To: Lisa Van Atta, Assistant Regional Administrator, National Oceanic and Atmospheric Administration – Fisheries, West Coast Regional Office, California Coastal Office

From: Amy Dutschke, Regional Director

Subject: "Not likely to Adversely Affect" Determination for Steelhead, Coho Salmon, Chinook Salmon, and Essential Fish Habitat, Shiloh Resort and Casino Project, Koi Nation

The Bureau of Indian Affairs (BIA), Pacific Region, Division of Environmental, Cultural Resource Management and Safety, Endangered Species (ES) Section respectfully requests to initiate informal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, and the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended, for the Koi Nation (Tribe) Shiloh Resort and Casino Project near the Town of Windsor in Sonoma County, California. The Proposed Action includes the conveyance of approximately 68.6 acres into federal trust status for the benefit of the Tribe.

Enclosed for your review is the Biological Assessment (BA) for the Koi Nation Shiloh Resort and Casino Project. The Proposed Project (Alternative A) consists of the acquisition of a 68.6-acre site (Project Site; Action Area) into federal trust status for the Tribe, and the development of the site with a resort and casino facility, hotel, parking garage, and supporting infrastructure, including inter-related and interdependent actions such as off-site roadway improvements and use of recycled water for off-site irrigation.

As part of the BA, a summary of federally listed special-status species with the potential to occur within the region was obtained from United States Fish and Wildlife Service (USFWS), the California Natural Diversity Database (CNDDB), the CalFish website, and the National Marine Fisheries Service (NMFS) website. Critical habitat was identified in the Russian River Basin

both overlapping and within 5 miles of the Project Site. The Project Site falls within critical habitat for the steelhead Central California Coast (CCC) Distinct Population Segment (DPS). Additionally, critical habitat for coho salmon CCC Evolutionary Significant Unit (ESU) is approximately 0.85 miles northwest of the Project Site, and critical habitat for Chinook salmon California Coast (CC) ESU is approximately 4.35 miles west of the Project Site. Additionally, the Project Site falls within Essential Fish Habitat (EFH) identified for the Russian River watershed, as defined by the Magnuson-Stevens Fisheries Conservation and Management Act, for Pacific salmon, specifically for Chinook and coho salmon. A summary of species that may occur on the Project Site and subject to NMFS jurisdiction is provided below.

Steelhead CCC DPS: There are no known occurrences of this species within 3 miles of the Project Site. The Project Site contains a portion of Pruitt Creek, which is a Class I creek capable of supporting fish. Pruitt Creek generally does not have flows high enough or depth deep enough to support salmonids. Due to low flows and shallow depths, temperatures within Pruitt Creek are generally too high for salmonids. During certain parts of certain seasons, weather and environmental conditions can align to provide marginally suitable habitat for steelhead. However, suitable spawning and juvenile rearing habitat is lacking. Therefore, there is limited potential for steelhead to occur on the Project Site or immediately downstream.

Coho salmon CCC ESU: As discussed above, the Project Site contains a portion of Pruitt Creek, which can support fish species. The nearest occurrence of this species in relation to the Project Site is 0.75 miles south of the Project Site within Mark West Creek, which is hydrologically connected downstream of Pruitt Creek by approximately nine river miles. As discussed above, Pruitt Creek offers minimal salmonid habitat for limited periods of time and only during years where hydrological conditions align.

Chinook Salmon CC ESU: There are no known occurrences of this species within 3 miles of the Project Site. As discussed above, the Project Site contains a portion of Pruitt Creek, which can support fish species. Pruitt Creek offers minimal salmonid habitat for limited periods of time and only during years where hydrological conditions align.

The Proposed Project has the potential to impact these species via reduced habitat quality through removal of shady riparian vegetation, release of impaired waters into Pruitt Creek during construction, or through possible generation of soil erosion or unstable grading during construction activities. Additionally, impacts could occur during operation of the Proposed Project through wastewater discharge into Pruitt Creek. Conservation measures are included in the BA to avoid and minimize the potential for harm to these species during project related activities and include limiting ground disturbance to the dry season, implementing proper trash removal, minimizing riparian habitat impacts, demarcating avoided habitat during construction, and preparing a Stormwater Pollution Prevention Plan, erosion control plan, and a spill prevention and response plan. Additionally, wastewater discharge would require compliance with a National Pollutant Discharge Elimination System (NPDES) permit, and a water quality monitoring protocol and schedule will be established.

The ES Section has determined that with conservation measures included in the BA, the Proposed Action **May Affect, but is Not Likely to Adversely Affect** federally listed fish species, critical habitat, or EFH and hereby requests your concurrence with this finding.

Please contact Peter DeJongh, Regional Biologist, Bureau of Indian Affairs, at (916) 978–6044, or Felix Kitto, Deputy Regional Director, Indian Services at felix.kitto@bia.gov if you have any questions or need additional information for your review.

Sincerely,

AMY DUTSCHKE

Digitally signed by AMY DUTSCHKE
Date: 2024.07.11 08:02:09 -07'00'

Regional Director

Attachments:

Biological Assessment, Proposed Shiloh Resort and Casino Project. Sonoma County, California

Draft Environmental Impact Statement, Koi Nation of Northern California Shiloh Resort and Casino Project. Sonoma County, California

Appendix G-8

Approved Jurisdictional Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CA 94102

CESPN-RGN 07 JUN 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Approved Jurisdictional Determination in accordance with the "Revised Definition of 'Waters of the United States'"; (88 FR 3004 (January 18, 2023) as amended by the "Revised Definition of 'Waters of the United States'; Conforming" (8 September 2023) ,[1] SPN-2022-00162[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4]

On January 18, 2023, the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") published the "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule"). On September 8, 2023, the agencies published the "Revised Definition of 'Waters of the United States'; Conforming", which amended the 2023 Rule to conform to the 2023 Supreme Court decision in *Sackett v. EPA*, 598 U.S., 143 S. Ct. 1322 (2023) ("*Sackett*").

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. For the purposes of this AJD, we have relied on Section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the 2023 Rule as amended,

[1] While the Revised Definition of "Waters of the United States"; Conforming had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, the territorial seas, or interstate water that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).
[3] 33 CFR 331.2.
[4] Regulatory Guidance Letter 05-02.
[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

as well as other applicable guidance, relevant case law, and longstanding practice in evaluating jurisdiction.

1. SUMMARY OF CONCLUSIONS.

    a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

        i. ID-01, jurisdictional, Section 404

        ii. RD-01, non-jurisdictional

        iii. RD-02, non-jurisdictional

        iv. SW-01, jurisdictional, Section 404

        v. SW-02, non-jurisdictional

        vi. SW-03, non-jurisdictional

        vii. SW-04, non-jurisdictional

        viii. SW-05, jurisdictional, Section 404

        ix. SW-06, jurisdictional, Section 404

        x. SW-07, jurisdictional, Section 404

        xi. SW-08, jurisdictional, Section 404

        xii. SW-09, non-jurisdictional

2. REFERENCES.

    a. "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule")

    b. "Revised Definition of 'Waters of the United States'; Conforming" 88 FR 61964 (September 8, 2023)

    c. *Sackett v. EPA*, 598 U.S. 651, 143 S. Ct. 1322 (2023)

d. San Francisco District List of Navigable Waterways (August 2, 1971)

3. REVIEW AREA. The approximately 67-acre review area is located at 222 East Shiloh Road in the City of Santa Rosa, Sonoma County, California (Lat: 38.5239°, Long: -122.7739°). The review area is bordered by Shiloh Road on the north, existing vineyards on the east, a portion of Pruitt Creek and scattered residences on the south, and Old Redwood Highway on the west. The review area is predominately occupied by vineyards bisected by an intermittent drainage, Pruitt Creek, and a single-family residence exists near the eastern property boundary. No previous jurisdictional determinations have been completed within the review area.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), THE TERRITORIAL SEAS, OR INTERSTATE WATER TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The Russian River is the nearest downstream TNW. The Russian River is listed as a navigable water on the August 2, 1971, List of Navigable Waters for the San Francisco District. In addition, it is known to be tidal in its lower reaches prior to discharging into the Pacific Ocean, and is currently and historically used for commerce.[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, THE TERRITORIAL SEAS, OR INTERSTATE WATER. SW-01 has a continuous surface connection through an upland swale for five feet, before draining into the roadside ditch along Old Redwood Highway. The drainage ditch flows south for approximately 125 feet where is drains into Pruitt Creek. Pruitt Creek flows approximately 1.6 miles northwest where it converges with Pool Creek. Pool Creek flows approximately two miles west where it converges with Windsor Creek. Windsor Creek flows approximately 2.33 miles south where it converges with the Laguna de Santa Rosa. The Laguna de Santa Rosa flows 2.9 miles to the west where it converges with the Russian River.

   SW-05, -06, -07, and -08 are fully located within the ordinary high water mark of Pruitt Creek. As stated above, Pruitt Creek flows approximately 1.6 miles northwest where it converges with Pool Creek. Pool Creek flows approximately two miles west where it converges with Windsor Creek. Windsor Creek flows approximately 2.33 miles south where it converges with the Laguna de Santa Rosa. The Laguna de Santa Rosa flows 2.9 miles to the west where it converges with the Russian River.

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the 2023 Rule as amended, consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the 2023 Rule as amended. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

    a. Traditional Navigable Waters (TNWs) (a)(1)(i): N/A

    b. The Territorial Seas (a)(1)(ii): N/A

    c. Interstate Waters (a)(1)(iii): N/A

    d. Impoundments (a)(2): N/A

    e. Tributaries (a)(3):

        Pruitt Creek (0.648 acre): The Pruitt Creek tributary reach essentially includes the entire reach of the creek stretching from the hills to the east downstream to the confluence with Pool Creek, which is approximately 5.6 miles. Pruitt Creek has flowing or standing water continuously during certain times of the year (prior

[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

personal observations) with an observable and obvious ordinary high water mark. The creek is considered "intermittent" on the National Hydrography Dataset (NHD), and California Aquatic Resources Inventory (CARI) which includes data from the NHD and National Wetlands Inventory (NWI). Based on the above, it meets the relatively permanent standard and is considered a relatively permanent tributary of the Russian River, an (a)(1) water.

f. Adjacent Wetlands (a)(4):

SW-01 (73.4 square feet): This feature is a small seasonal wetland. As stated above in Section 5, SW-01 has a continuous surface connection to Pruitt Creek through an upland swale for five feet, before draining into the roadside ditch along Old Redwood Highway. The drainage ditch flows south for approximately 125 feet where is drains into Pruitt Creek, an (a)(3) tributary. The upland swale is a discrete low spot with no ordinary high water mark and that does not meet the wetland criteria, but did appear to allow for a direct hydrologic/physical connection during certain times of the year.

SW-05 (552 square feet), -06 (119 square feet), -07 (149 square feet), and -08 (646 square feet): These are separate but small riverine wetlands that are located within the ordinary high water mark of Pruitt Creek and are therefore considered to have a continuous surface connection to Pruitt Creek, an (a)(3) tributary.

g. Additional Waters (a)(5): N/A

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified in the 2023 Rule as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). Include the type of excluded aquatic resource or feature, the size of the aquatic resource or feature within the review area and describe how it was determined to meet one of the exclusions listed in 33 CFR 328.3(b).[9]

SW-09 (0.0408 acre): This wetland is an artificially irrigated area that would revert to dry land if the irrigation ceased, thus is considered a (b)(4) exclusion. The wetland developed through artificial water sources, including irrigation water from the vineyard and sprinkler runoff from a culvert beneath an access road.

[9] 88 FR 3004 (January 18, 2023)

b. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

RD-01 (0.0713 acre) and RD-02 (0.0339 acre): These features constitute the roadside ditch along Old Redwood Highway on the west side of the review area. This linear feature runs immediately next to Old Redwood Highway and spans from Shiloh Road, the northern boundary of the review area, to Pruitt Creek, the southwestern corner of the review area. It is two to three feet wide at the ordinary high water mark, but is not shown on the NHD or CARI maps as a tributary. There is also no evidence from historic imagery going back as far as 1952 or historic aquatic resource data that the feature was ever a re-routed natural tributary. Based on the above information and knowledge of the area, the onset of flow would coincide with distinct rainfall events and be driven primarily by storm runoff. Flow is likely to only persist from a few hours to days at a time.

SW-02 (165 square feet), -03 (193 square feet), -04 (404 square feet): These three seasonal wetland features are located on the western boundary of the site with no observed outlets. None of these features have a continuous surface connection to an (a)(1) to (a)(3) water.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. *Aquatic Resources Delineation Report, Shiloh Resort and Casino Property, Larkfield-Wikiup, Sonoma County, California*, April 2022

b. *Jurisdictional Determination and Technical Memorandum, Shiloh Resort and Casino Project (SPN-2022-00162), Windsor/Sonoma County, California*, March 22, 2024

c. Site Visit, October 27, 2023

d. Regulatory Viewer, various

e. Google Earth Imagery, various

f. EcoAtlas, March 2, 2023

g. Historic Aerials, various

h. CESPN-RGN Santa Rosa Plain Aerials, 2010

10. OTHER SUPPORTING INFORMATION. N/A

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

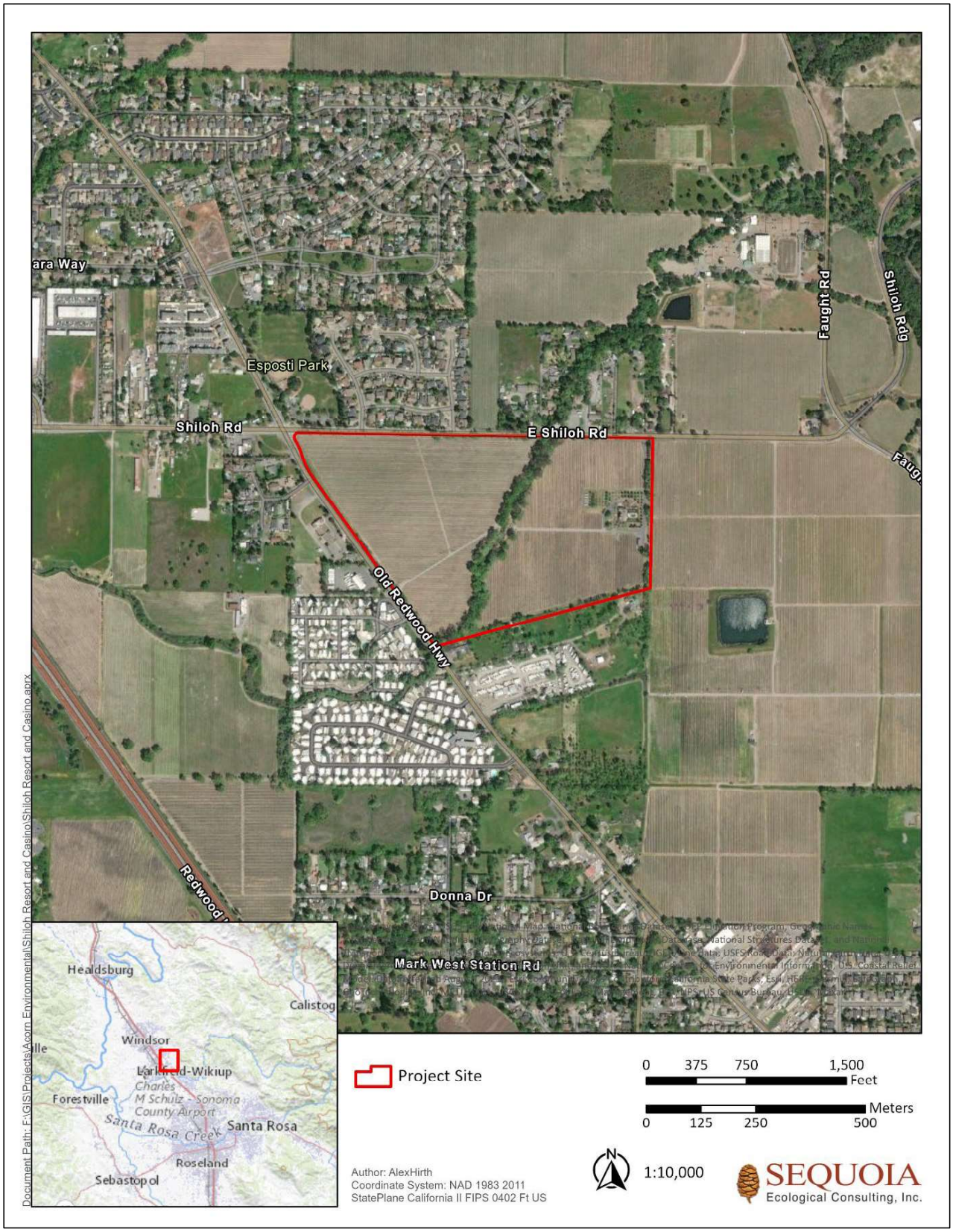
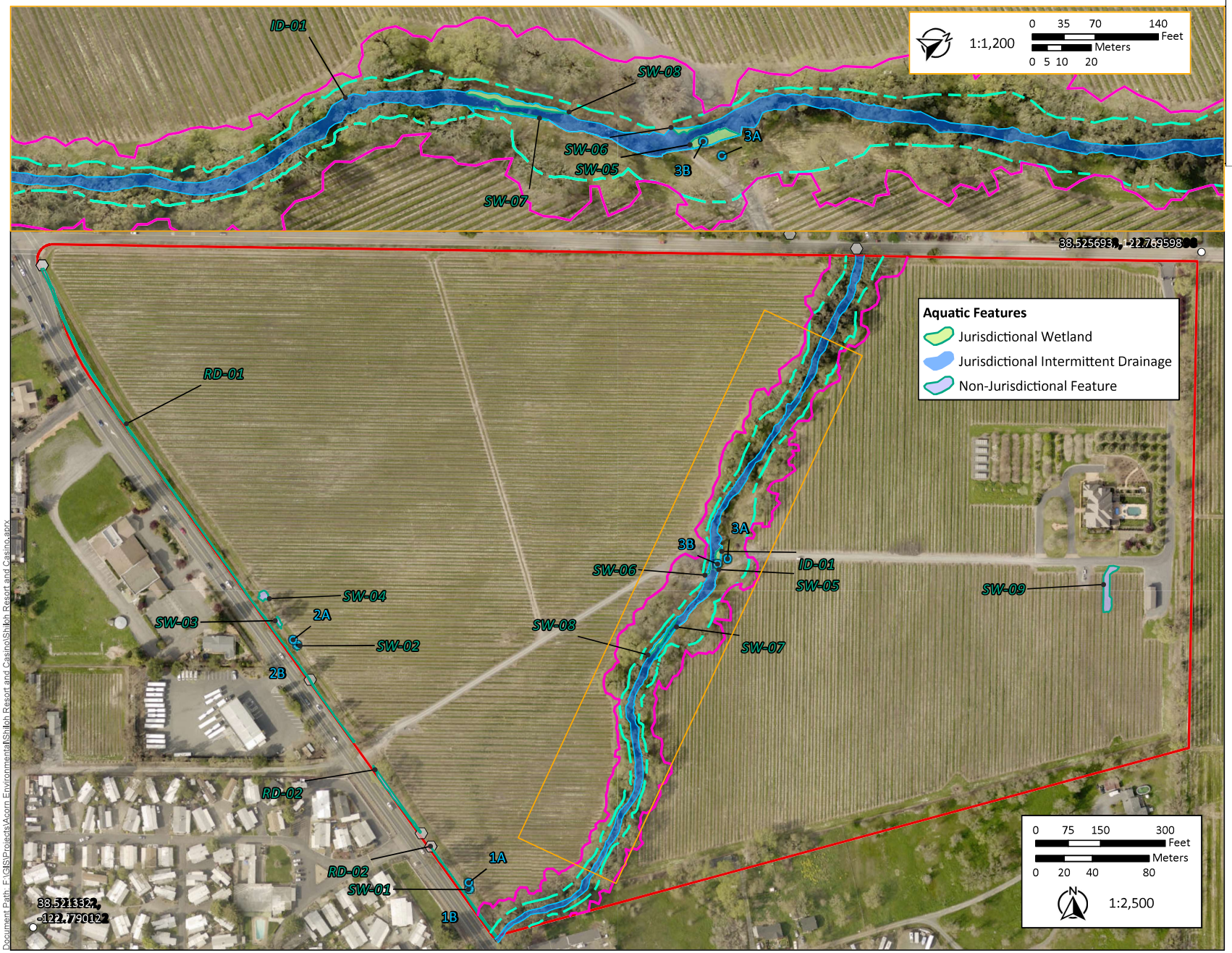


Figure 2. Location Map of the Shiloh Resort and Casino Project Site



Document Path: F:\GIS\Projects\Acorn Environmental\Shiloh Resort and Casino\Shiloh Resort and Casino.aprx

U.S. Army Corps of Engineers
San Francisco District
Regulatory Division

Approved Jurisdictional Determination, pursuant to Section 404 Clean Water Act

Shiloh Resort and Casino Property – 222 E. Shiloh Road
Santa Rosa, Sonoma County
(Lat: 38.5239°, Long: -122.7739°)

Accurate as depicted on the map.

Section 404 jurisdiction verified only within the designated Project Site.

SPN-2022-00162 Date: **June 7, 2024** 2 sheets total

- Project Site
- Culvert Opening
- Sample Point
- Ordinary High Water Mark
- Top-of-Bank
- Riparian Dripline

Table 1. Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
ID-01	28,200	0.648
SW-01	73.4	0.00169
SW-05	552	0.0127
SW-06	119	0.00272
SW-07	149	0.00341
SW-08	646	0.0148

Table 2. Non-Jurisdictional Features

Aquatic Feature Name	Area (sq. ft.)	Area (ac.)
RD-01	3,110	0.0713
RD-02	1,470	0.0339
SW-02	165	0.00378
SW-03	193	0.00442
SW-04	404	0.00927
SW-09	1,780	0.0408

Author: AlexHirth
Date Exported: 12/12/2023
Coordinate System: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US

Service Layer Credits: Pictometry International, Maxar, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

SEQUOIA Ecological Consulting, Inc.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

June 10, 2024

Regulatory Division

Subject: Approved Jurisdictional Determination; File Number SPN-2022-00162

Ms. Ari Rogers
Sequoia Ecological Consulting, Inc
1342 Creekside Drive
Walnut Creek, California 94596
arogers@sequoiaeco.com

Dear Ms. Rogers:

This correspondence is in reference to your submittal of March 25, 2024, on behalf of the Koi Nation of Northern California, requesting an approved jurisdictional determination of the extent of navigable waters of the United States and waters of the United States occurring on an approximately 67-acre site located at 222 East Shiloh Road in the City of Santa Rosa, Sonoma County, California; Latitude 38.5239°, Longitude -122.7739°.

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq*.). Waters of the United States generally include: the territorial seas; waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; interstate waters; tributaries of jurisdictional waters; lakes and ponds; impoundments of jurisdictional waters; and adjacent wetlands.

The enclosed delineation map titled “Approved Jurisdictional Determination, pursuant to Section 404 Clean Water Act, Shiloh Resort and Casino Property - 222 E. Shiloh Road, Santa Rosa, Sonoma County,” in two sheets date certified June 7, 2024, accurately depicts the extent and location of wetlands, and other waters of the United States within the project site that are subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. As detailed in the enclosed memorandum for record, this approved jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of October 27, 2023, a review of available digital photographic imagery, and a review of other data included in your submittal and is in accordance with 40 C.F.R. § 120.2. This approved jurisdictional determination will expire in three years from the date of this letter unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

The enclosed delineation map further depicts the extent and location of wetlands and other waters within the project site that are **not** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. Waters of the United States do not generally include: waste treatment systems; prior converted cropland; ditches excavated wholly in and draining only dry land; artificially irrigated areas that would revert to dry land the irrigation ceased; artificial lakes and ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing; artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons; water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; swales and erosional features characterized by low volume, infrequent, or short duration flow (33 C.F.R. § 328.3).

The delineation included herein has been conducted to identify the location and extent of the aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of an NRCS Certified Wetland Determination with the local USDA service center, prior to starting work.

The exclusion of an aquatic resource within the project site from the definition of a jurisdictional water of the United States does not obviate any requirement to obtain other Federal, State, or local approvals necessitated by law. Any impacts to federally-listed threatened or endangered species and/or designated critical habitat may be subject to regulation by the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under Section 10 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq*.). If “waters of the state” are potentially present, the site may be subject to regulation by the California Regional Water Quality Control Board, North Coast Region, under the Porter-Cologne Water Quality Control Act, as amended (California Water Code § 1300 *et seq*.). You are, therefore, urged to contact these agencies directly to determine the need for other authorizations or permits.

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. pt. 331 and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form. If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not

provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within 60 days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

You may refer any questions on this matter to Bryan Matsumoto of the Regulatory staff by telephone at (415) 503-6786 or by e-mail at Bryan.T.Matsumoto@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. The Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: https://www.spn.usace.army.mil/Missions/Regulatory/.

Sincerely,

William M. Connor
2024.06.10
11:54:28 -07'00'

William Connor
North Branch Chief
Regulatory Division

Enclosures

cc:
CA RWQCB, Kaete King, kaete.king@waterboards.ca.gov
U.S. EPA, Russell Huddleston, huddleston.russell@epa.gov

Appendix H

Confidential Cultural Resources Information

Confidential Cultural Resources Information Bound Separately*

*The Cultural Resources Information has been bound separately to protect potentially sensitive information about the location and nature of cultural resources.