BIOLOGICAL RESOURCES ASSESSMENT

Prepared For:

Burnt Ranch Estates Water Company
Burnt Ranch, CA 95527

Prepared By:

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Prepared: 05-20-23

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1. PROJECT INTRODUCTION

This Biological Resources Assessment is prepared in accordance with California Environmental Quality Act (CEQA) statutes for Trinity County.

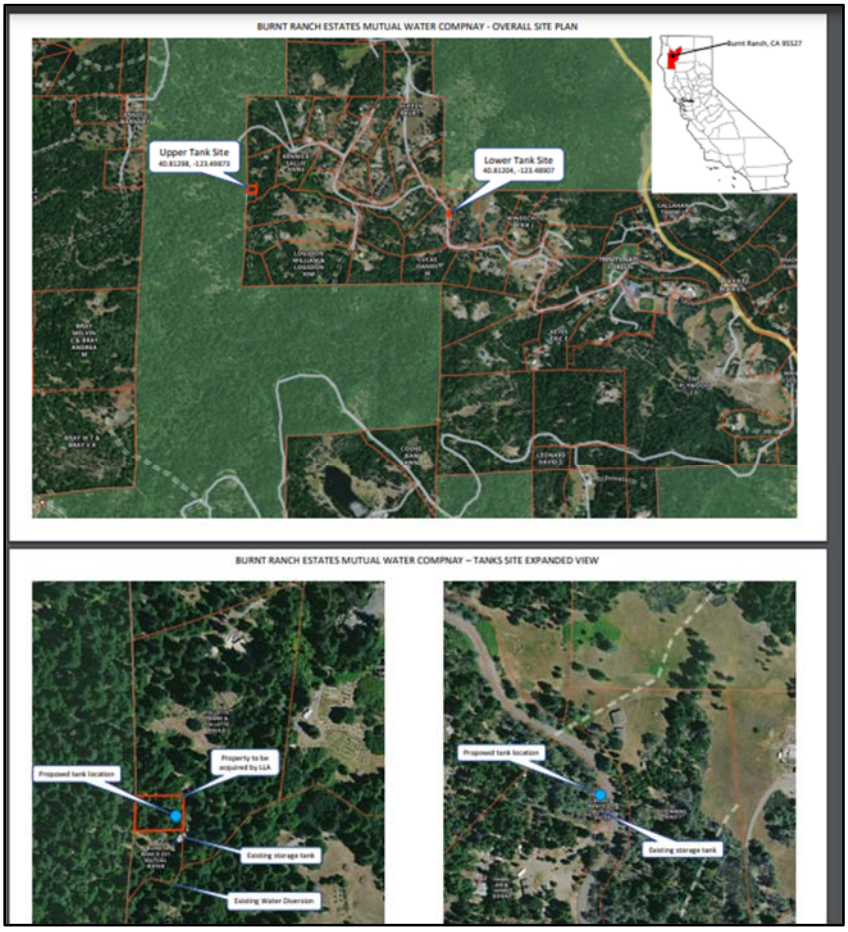
This document presents technical information for development for compliance with the California State Water Resources Control Board (SWRCB) 2011 requirements for Biological Resources Assessment.

The project is currently located in Burnt Ranch and involves two small sites for additional water tank placement, adjacent current water infrastructure.

The southmost location abuts forest service property and has an open and sparsely canopied forest component. The northmost location is already heavily disturbed and contains very little in-tact plant community. Both sites are being evaluated together.

2. PROJECT LOCATION

The project site is located on two small parcels located in Burnt Ranch, California (**Figures 1 and 2.** Vicinity Map and Project Site Location Map).



Figures 1 & 2. Vicinity and Project Locations

3. EXISTING SITE and HABITAT CONDITIONS

Existing site conditions include water lines and current water storage facilities. The sites have an elevation of approximately 2,065 and 1,990 feet respectively S and N, and receives an annual average of 46 inches of precipitation. Average July high temperatures are around 93 degrees Fahrenheit and average January low temperatures are around 31 degrees Fahrenheit.

Habitat on both sites is heavily altered. The growing area is maintained with very little vegetation. The parcel is typical of what is expected at this elevation, management, average rainfall, and aspect and land use activities.



Figure 3. Northernmost site seen from the Northeast

NRCS Soils Survey Query

A soils search was completed for the property, using the Natural Resources Conservation Service (NRCS) Soils Search online query (**Figure 4.** NRCS Site Soil Information, **Figure 5.** NRCS Soil Survey Map).

Map Unit Legend

Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (CA707)

Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (CA707)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
345	Weitchpec-Dunsmuir families association, 20 to 40 percent slopes.	20.1	100.0%
Totals for Area of Interest		**20.1**	**100.0%**

Map Unit Legend

Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (CA707)

Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (CA707)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
345	Weitchpec-Dunsmuir families association, 20 to 40 percent slopes.	2.1	100.0%
Totals for Area of Interest		**2.1**	**100.0%**

Figure 4. NRCS Site Soil Information Southernmost first



Figure 5. NRCS Soils Survey Maps, Southernmost first

BIOLOGICAL QUALIFICATIONS

Biologist, Robert Meade, earned his MS in Avian Ecology from Louisiana State University (LSU), and has been conducting biological studies for over 25 years; the last nine years in Northern California. Resume is attached for additional reference.

4. OBSERVATIONS

LISTED, PROPOSED, AND CANDIDATE SPECIES POTENTIALLY PRESENT

A list of threatened, endangered, and sensitive species list for the surrounding area including Burnt Ranch; which was reviewed to evaluate their potential to be present on the proposed project area. The list was created using the California Natural Diversity Database (CNDDB), United States Fish and Wildlife Service (USFWS) Red Bluff Office T/E Species query, National Oceanic and Atmospheric Administration (NOAA) Fisheries list, and United States Geological Surveys (USGS) Quadrangle Species List.

WILDLIFE and BIOLOGICAL EVALUATION

A wildlife evaluation was conducted to determine if habitat potentially capable of supporting endangered, threatened, proposed, or candidate species is present, or may be present, in the study area. The wildlife evaluation was conducted in two stages. First, historical occurrence databases were queried to identify federally listed, proposed, and candidate animal species previously reported in the vicinity of the study area, and/or potentially affected by construction within this project. These records include CNDDB records (CDFW, 2023), and critical habitat GIS data maintained by the National Marine Fisheries Service (NMFS, 2023) and USFWS (USFWS, 2023), all listed above. The second stage of the project consisted of a habitat and species study within and just beyond the bounds of the imprint of the study area. Based on the results of the records review and this field evaluation, the potential for federally listed, proposed, and candidate animal species to utilize habitats in the study area was determined to be minimal. A field study was completed on April 22, 2023, by Robert Meade and Mikayla Loucks. The results of the survey are discussed below.

BOTANICAL EVALUATION

A botanical evaluation was conducted to determine if habitat potentially capable of supporting federally listed, proposed, or candidate plant species exists in the study area. The botanical evaluation was completed in two stages. First, historical occurrence databases were queried to identify state or federally listed, proposed, and candidate species previously reported in the vicinity of the study area, and/or species that could potentially be affected by the construction within this project. These records included the USFWS species list for the quadrangle, CNDDB records (CDFW, 2023), and critical habitat geographic information system (GIS) data maintained by the USFWS (USFWS, 2023). The second stage of the study consisted of a field visit and survey of the natural environment in and near the project footprint. The survey generally followed the CDFW *Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities, 2009*. Botanical threatened and endangered species (TES) were the most likely life forms to be discovered on or near the parcel.

SURVEY TIMELINE

A total of one hour at approximately 10:00a.m. on April 22, 2023, was spent on the site evaluating the areas of potential impact. Conditions were clear, approximately 65 degrees and light breeze. An hour was adequate time to evaluate the relatively homogenous, natural habitat, and limited land uses on property for botanicals, birds, mammals, habitats

and make in-depth biological evaluations for the site, as again, the site is relatively homogenous. The site has been intensively managed, leading to even less than normal diversity. Additionally, there was no reason to suspect that any rare plants would be present, as there was no habitat thereof. One site visit was deemed sufficient.

AGENCY COORDINATION

Owing again to the context of the site itself, consultations with regulatory agencies for fish, wildlife, and/or botanical species are a result of the proposed project, or as a result of the biological and botanical surveys were deemed to be unnecessary.

DESCRIPTION OF EXISTING BIOLOGICAL AND PHYSICAL CONDITIONS

The small parcels contain buildings and water handling facilities. This area is a patchwork of residences and areas converted to farming/ranching. The climate of this area of Trinity County is usually hot, dry summers and wet and cool winters. Annual precipitation is approximately 46" per year.

5. RESULTS: BIOLOGICAL RESOURCES, IMPACTS, AND MITIGATION

FEDERAL and STATE WILDLIFE SPECIES

LISTED, PROPOSED AND CANDIDATE SPECIES

The USFWS and California State species list for the Ironside Mountain and Hennessy Peak Quadrangles list the following federal and state listed, proposed, or candidate, critical habitat animal species as potentially being affected by work proposed in the quadrangle.

Animals

Discussion

For all the above USFWS listed species, USFWS has nearby "critical habitat" and/or occurrences for these species also state listed species. There is no critical habitat for any of these species on the property.

Bald Eagle (*Haliaeetus leucocephalus*) (SE)

Primarily piscivorous or a scavenger, this species is primarily associated with larger rivers and lakes in N California. Large trees with open or broken off tops are typical nesting sites.

No potential nest trees were observed on the site. No habitat for the species exists on the site. No impacts to the species will occur as a result of this activity.

Humboldt Marten (*Martes americana humboldtensis*) (FE)

Conditions preferred by this species are very similar to that of the Pacific fisher and is described below in the fisher section.

The area is highly dissected by residences and agricultural operations. There is not old growth timber present. No impacts are expected.

California Wolverine (*Gulo gulo*) (ST)
Prefers a variety of coniferous and mixed conifer forest in the North Coast Mountains. Prefers dense forest for denning sites. It is very intolerant of human activities.

Given the highly dissected habitat, it is very unlikely that the species would be present. There will be no tree removal. No impacts will occur.

Northern Spotted Owl (*Strix occidentalis caurina*) (FT/ST)
A medium sized chocolate brown owl with dark eyes, the northern spotted owl (NSO) is a nocturnal owl that captures its prey by perch and pounce stealth, eating mostly small forest rodents. Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and use trees with broken tops. These forests have been largely reduced as a result of western forest logging in their range. As a result of this habitat loss, their numbers have significantly diminished by approximately half since the early 1980's to around 2000 pairs, with 560 pairs in northern California.

The closest NSO observation is 0.98 miles from the site. However, the site will need very little tree removal and grading. The trees to be removed are very low seral state, small and comprise no potential NSO habitat. Potential noise impacts are negligible, given the distance to the nearest sighting and the nature of the topography and its partially forested nature.

No habitat for the species on site. No impact to NSO nor its critical habitat.

Yellow-Billed Cuckoo (*Coccyzus americanus*) (FT)
This bird is a medium sized bird with plumage that is grayish-brown above and white below, with red primary flight feathers. The tail feathers are boldly patterned with black and white below. The legs are short and bluish-gray. Adults have a narrow, yellow eye ring. Western yellow-billed cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods and willows). Dense understory foliage appears to be an important factor in nest site selection.

No habitat for this species on the parcel. No impacts will occur.

Willow flycatcher (*Empidonax traillii*) (SE)
As is implied by the name, this bird is dependent primarily on extensive willow areas for breeding.

Extremely marginal habitat may be present in the riparian corridor of McDonald Creek, adjacent the southernmost location. No impacts in the marginal habitat and no impacts will occur.

Gray Wolf (*Canis lupus*) (FE)
Recently repopulating into the northern California counties and is dual listed. They use a variety of habitats and range over large areas.

No impacts to habit nor to the species, as the site is already in operation.

Western Bumble Bee (*Bombus occidentalis*) or other **Bumblebees** (FC/ST)
This wide-ranging species is generally well suited to native plant communities. The decline of this species has been tied to management for non-native plant communities and pesticide use among other factors.

Ground vegetation on the site is sparse and largely ruderal grasses. No impacts to western bumblebee nor other bumblebees are anticipated.

Trinity Bristle Snail (*Monadenia setosa*) (ST)
This species has very specific habitat requirements, as it is a Pleistocene relic. It requires virtually complete canopy closure, deeply fractured rock for aestivation, deep, deciduous leaf litter and a cool and humid forest floor condition. Not always, but most often they are found in north facing aspects often with a perennial stream nearby.

Both sites are very open and, while north facing in aspect, dry microclimates. Neither site has all required habitat requirements. Given the lack of appropriate habitat conditions, neither the species nor its habitat will be impacted. No impact.

Fairy Shrimp Conservancy (*Branchinecta conservation*) (FE)
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) (FT)
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*) (FE)
These three species are vernal pool species and there are no vernal pools on property.

FISHERY SPECIES

SONCC Coho (*Oncorhyncus kisutch)* (FT/ST) *Essential Fish Habitat, Critical Habitat*
Chinook Salmon (*Oncorhyncus tshawyacha)* (FC/SC) *Essential Fish Habitat*
Summer-run Steelhead (*Oncorhyncus mykiss irideus*) (SC)
These three anadromous fish species run up the main stem Trinity River and some tributaries. Given that the project will not impact streams or riparian areas and that the area is already graded and in use, there will be no effect on either species as a result from the project.

OTHER SPECIES OF CONCERN

Golden Eagle (*Aquila chrysaetos*)
Golden eagles are wide ranging and use a variety of habitats.

No nests were observed nor were any potential nest trees observed on the site. No impacts are anticipated.

Osprey (*Pandion haliaetus*)
This species hunts fish from rivers and lakes. It nests on nearby broken-topped conifer trees or power poles. This species prefers placing nests near bodies of water with active

fish habitat, and it is also uninhibited by placing its nest in disturbed areas.

No existing known nests, territories, or individuals of this species will be impacted by this project. No habitat is present on the subject tract. No potential nests nor nest trees were observed on the site.

Other Birds of Prey
No sign of breeding nor nests of other birds of prey were observed on the subject tract.

Foothill Yellow-Legged Frog (*Rana boylii*); **Tailed Frog/Cascades Frog**
Foothill yellow-legged frogs are primarily stream dwelling and can be found mostly near water with rocky substrate, as found in riffles, and on open, sunny banks. They are a small to medium sized frog (1" to 3" across) with yellow upper thighs on the undersides of their legs. They live in mostly mountain and foothill creeks through most of California, and are found in mostly undisturbed riparian areas with rocky or open sandy banks where they can bask and hunt.

McDonald Creek is potential habitat for this species. However, tree removal and/or grading will not be undertaken within the creek. There will be no impacts to rare amphibian species.

Western Pond Turtle (*Emys marmorata*)
Western pond turtles can be found throughout California west of the Cascade-Sierras from near sea level to 4,700 feet. They prefer calm waters, typically found on and near lakes and ponds with basking sites that include protruding logs and rocks where often many can be seen basking at one time together.

The adjacent creek is unlikely, but potentially habitat for the species. However, new activities on site will be outside the creek and riparian. No impacts will occur.

Pacific Fisher (*Pekania pennanti*)
A Federal Candidate and CA State Candidate species for listing, the Pacific Fisher is currently listed as a California species of special concern. Fishers prefer large areas of dense mature coniferous or mixed forest and are solitary animals. They are mainly nocturnal, but may be active during the day. They travel many miles along ridges in search of prey, seeking shelter in hollow trees, logs, rock crevices, and dens of other animals. Fishers in California prefer a strong component of oak, with California Black Oak for denning in their natural broken off tops and side branch holes that are left.

No habitat is present on the site. Fisher will not be impacted by this project.

Townsend's Big-eared Bat (*Corynorhinus townsendii*); **Pallid Bat** (*Antrozous pallidus*); **Long-eared Myotis** (*Myotis evotis*)
Both species require specific roost sites. These include old mines, old buildings, bridges and large culverts, rock shelters and tree snags.

No potential roosts were observed on the site potential roost sites were observed on the

site. No impacts are expected for any bat species, as no tree removal is associated with this project.

Ringtail Cat (*Bassariscus astutus*)
Ringtails use a variety of habitats, but prefer chapparal, rocky hillsides and riparian areas. Rock crevices, boulder piles, underground cavities, hollow trees or underground in hollow roots of trees are typically used as denning sites.

No habitat for this species on the parcel. There will be no impacts nor tree removal.

Snowshoe Hare (*Lepus americanus*)
This species is found in the upper elevations of the Klamath and Siskiyou mountains. It prefers meadows and riparian areas.

No habitat for the species is present on the site. No impacts will occur.

American Badger (*Taxidea taxus***)**
Badgers prefer open areas and are found typically in grasslands, open shrubby areas bald ridge tops and agricultural areas. The openings of their dens are distinctive and D-shaped.

No habitat on the parcel. No impacts will occur.

Sonoma Tree Vole (*Arborimus pomo*)
This arboreal species requires old growth forests within the fog belt.

No habitat is present for the species on site. No impacts will occur.

Yellow-breasted Chat (*Icteria virens*) and **Yellow Warbler (***Setophaga petechia*)
These two species have very similar habitat requirements. Both are essentially riparian thickets in Northern California.

No new impacts and no riparian impacts. No impacts will occur to either species.

Olive-sided Flycatcather (*Contopus cooperi*)
This species prefers older growth, typically conifer forest with open canopy. More specifically, they prefer edges of it bounded by clear-cuts, meadows or other openings.

No habitat for this species is present on the site. There will be no impacts to this species. nor its habitat.

Deer Herds
Deer inhabit this and adjacent properties year around. The site is at an elevation that should support year-around populations and this project will not interfere with deer movement, migratation or otherwise.

Wildlife/Avian Survey and Results
Biologist, Rob Meade, completed a wildlife and avian survey on April 22, 2023. There were no Endangered, Threatened, Candidate or Sensitive species found nor were there any nests

found that would be protected by the Migratory Bird Treaty Act during field survey. All observed avian and wildlife species that were detected are listed below:

Dark-eyed junco (*Junco hyemalis*), rufous hummingbird (*Selasphorus rufus*), Anna's hummingbird (*Calypte anna*), ruby-crowned kinglet (*Regulus calendula*) and golden-crowned kinglet (*Regulus staprata*) were observed on the parcel. Pacific chorus frog (*Pseudacris regilla*) and gray squirrel (*Sciurus griseus*) were also observed.

BOTANICAL STUDY

USFWS Listed Plants – Hennessy Peak and Ironside Mountain quadrangles query

No federally listed plants. Additionally, no state-listed but three rare plants were listed.

Rattlesnake Fern (*Botrypus virginianus*) (2B.2)

This species prefers bogs and fens. No appropriate habitat exists on site and no impacts will occur.

Coast fawn lily (*Erythronium revolutum*) (2B.2)

This species grows in bogs, fens and wet areas. No habitat is present on site and no impacts will occur.

Regel's rush (*Juncus regelii*) (1B.3)

This species prefers meadows and seeps. No habitat on the parcel. No impacts will occur.

Heckner's lewisia (*Lewisia cotyledon var. heckneri*) (1B.2)

This species prefers rock faces. No habitat on the parcel. No impacts will occur.

Howell's montia (*Montia howellii*) (2B.2)

This species prefers meadows and seeps. No habitat on the parcel. No impacts will occur.

White-flowered rein orchid (*Erythronium revolutum*) (1B.2)

This species prefers serpentine areas. No habitat is present on site and no impacts will occur.

Trinity River jewelflower (*Streptanthus oblanceolatus*) (1B.2)

This species grows in exposed rock with fissures. No habitat is present on site and no impacts will occur.

Botanical Survey and Results

Botanical species found during the April 22, 2023, field survey by Rob Meade and Mikayla are listed below. The record search was limited to the Ironside Mountain and Hennessy Peak Quadrangles for this project.

Trees on the tract were live oak (*Quercus wislizini*), black oak (*Quercus kelloggii*), gray pine (*Pinus sabiniana*), douglas fir (*Psuedotsuga menziesii*), tan oak (*Notholithocarpus densiflorus*), incense cedar (*Calocedrus decurrens*), madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*), and ponderosa pine (*Pinus ponderosa*).

The following plants were observed: Bulbous bluegrass (*Poa bulbosa*), henbit (*Lamium amplexicaule*), California brome (*Bromus carinatus*), annual bluegrass (*Poa annua*), English plantain (*Plantogo lanceolata*), coffeeberry (*Rhamnus californica*), velvet grass (*Holcus lanatus*), tall fescue (*Festuca arundinacea*), coast twinleaf (*Lonicera involucrata*), poison oak (*Toxicodendron pubescens*), yerba santa (*Eriodictyon californicum*), California fawn lily (*Erythronium californicum*), bristly oxtongue (*Helminthotheca echioides*), soaproot (*Chlorogalum pemeridianum*), greenleaf manzanita (*Arctostaphylos patula*), Himalayan black berry (*Rubus armenaicus*), whitethorn (*Ceanothus leucodermis*) and vanilla grass (*Hierochloe oderata*).

No listed plant species, habitat for listed plants, nor areas likely to contain listed plant species were observed on site.

WATERS OF THE UNITED STATES/STATE

A "Surface Waters" assessment study and evaluation was completed on April 22, 2023. This includes a study and full walk through of the property to evaluate if Class I-IV watercourses, lakes, ponds, artesian wells, springs, seeps and man-made canals are present or not. The findings are below.

40 CFR 230.3(s) of the Federal Register states this to be: 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. The Army Corps of Engineers (USACE) administers Sec. 404 of the Clean Water Act through the U.S. EPA. CA Department of Fish and Wildlife oversees the CA Fish and Game Codes.

Water Features on Property

McDonald Creek, a Class I or perennial stream, is very likely to be federally jurisdictional and Section 1602 for the state of CA.

Minimal activities will take place within the vicinity for McDonald Creek beyond what is already in place. No impacts should occur.

CRITICAL HABITAT

Critical habitat is a specific geographic area that is essential for the conservation of a threatened or endangered species, and may require special management or protection (USFWS, July 15, 2013). Critical habitat can be designated by the USFWS or the National

Marine Fisheries Service (NMFS). The USFWS species lists for the project area and the appropriate USGS quadrangle. There is NO listed USFWS Critical TES habitat per the USFWS completed at authoring time of this document. The site does not possess any usable habitat for rare plants or animals.

ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, established the Essential Fish Habitat (EFH) mandate, that only applies to fish species managed under a federal Fishery Management Plan. As such, EFH analysis is required for the Pacific salmon. Essential fish habitat for the Pacific salmon fishery consists of "those waters and substrate necessary for salmon production needed to support a long- term sustainable salmon fishery and salmon contributions to a healthy ecosystem" (NMFS, 2001). There are no creeks or tributary creeks that flow into any critical habitat streams.

There will be no effect on any fisheries species from the proposed project nor are there any impacts to Essential Fish Habitat. Neither critical habitat nor essential fish habitat are on the property. Furthermore, no impacts to either are expected elsewhere from activities on site.

DISCUSSION OF SPECIES POTENTIALLY AFFECTED SPECIES

As determined through the records search and field evaluation, no currently known locations of federally listed, proposed, or candidate wildlife or plant species would be affected by project implementation. For anadromous fish, no portions of their habitat will be affected and, since the site is stable, no secondary impacts. Wildlife and botanical surveys were completed, with no listed, proposed or candidate species, or Migratory Bird Treaty Act nests found on the subject property.

PROJECT EFFECTS

No effects to rare species will occur, as only minor tree removal and grading are required.

The proposed project will not have any impacts on any federally or state listed endangered, threatened, species of special concern, candidate wildlife species or plant species. The proposed operation will not impact jurisdictional features nor protected species or their habitat.

AVOIDANCE/MINIMIZATION MEASURES

The site is will require only minimal tree removal and only a small area of grading. Neither will impact rare species nor their habitat, No need for avoidance and minimization measures (AMMs).

ESTIMATE OF TAKE ON TES SPECIES OR HABITATS

There will be no TES species or their habitats found on or near the subject property. Thus, there will be no "harm or harassment" or "take" of any TES or candidate species.

CUMULATIVE EFFECTS

Cumulative effects are effects that, when treated separately, do not create an adverse effect for a habitat or TES singularly, but when combined, would create a negative affect for that species or its habitat.

The property is already being used and new impacts will be minimal. Regardless of other impacts that are in the area, existing impacts will not add to any potential cumulative impacts. The surrounding area has been used for residences and agriculture for some time.

6. CONCLUSIONS

There will be no effect on habitat, TES species, or rare species that potentially occur.
No impacts to waters of the U.S., nor waters of the State will occur on the parcel, as the site is already mostly developed.

7. REFERENCES

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8. RESUME

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Summary of Qualifications

- Twenty+ years of extensive experience and knowledge of wetlands, T/E clearances, linear installations, transportation projects and various other projects.
- Extensive Project management experience, including responsibility for budgets and supervising up to 18 staff.
- Fluent in Section 404/401, with work in CA, TX, LA, MS, AL, FL, TN, KY, IL, AR and MO, including all N CA Counties inclusive of CDFW 1600 and 2081.
- Wide knowledge of T/E species, having worked with them in CA, LA, TX, AL, MS, FL & MO.
- Broad experience in highway noise and wide range of experience with NEPA/CEQA, 4(f) & 6(f).
- Well versed in GPS, mapping and database management with ArcGis, using ArcMap.
- Participated in all phases of Section 106, primarily archaeological investigations/clearances, some as lead.

Education

1996 *Master of Science*, Avian Ecology, Louisiana State University
1990 *Bachelor of Science*, Biology and Public Relations, Southeast Missouri State University

Professional Experience

Senior Resource Biologist (Agency Liaison) **2014-Now**
California Department of Transportation, Redding, CA.

Biologist/Generalist (Environmental-Maintenance Liaison) **2013-2014**
California Department of Transportation, Redding, CA.

State Highway Noise Coordinator **2000-2013**
Missouri Department of Transportation, Jefferson City, MO.

Senior Wetland Specialist **2000-2013**
Missouri Department of Transportation, Jefferson City, MO.

Project Manager/Senior Consultant **1998- 2000**
SWCA, Inc., Houston, TX.

Sub-consultant **1997**
EnviroSouth, Gulfport, MS.

Biologist **1996**
ENSR-FUGRO, Lafayette, LA.

Biologist **1993- 1994**
LSA Associates, Irvine, CA.

Sub-consultant **1992**
Dudec & Associates, Encinitas, CA.

Biologist **1991**
Lockhardt Consultants, Temecula, CA.

Biologist **1990**
U.S. Forest Service, Mark Twain N.F., MO.

Areas of Concentration and Expertise

Transportation:

Liaison to all state and federal permitting agencies for Caltrans in N CA. Delineated wetlands in all N CA Cos. Conducted wetland and permitting training to CT personnel in Caltrans' N Region. Quality control for wetland delineations and permitting in N CA. Oversaw all section 404 and section 401 permitting for MoDOT's St. Louis District, 2000-present and the Kansas City District of MoDOT from 2011-present. Oversaw, managed and updated statewide highway noise compliance policy. Conducted and managed many noise studies including TNM models requiring complex noise attenuation solutions. Reviewed and critiqued numerous consultant-generated TNM models. Participated in public meetings dealing with noise attenuation. Contributed to planning stages of roadway and bridge projects through project life to construction and mitigation. Authored CE's and CE II's, Floodplain Development Permit applications and No-rise Certificate requests. Contributed to and reviewed EA's and EIS's. Applied for and received 404 permits for small and large-scale projects. Planned and oversaw implementation of stream and wetland mitigation projects. Dealt extensively with the permitting for and relocation of pink muckets. Participated in Indiana bat habitat surveys. Participated in Phase I, II and III archaeological investigations. Submitted for and received SHPO clearance letters for various projects. Supervised data collection and territory mapping of California gnatcatchers, least Bell's vireos and cactus wrens, for tollway alignment, after wildfires, CA. Supervised road construction crews in permit-required avoidance of California gnatcatcher territories, CA.

Land Development

Oversaw and managed approximately 50 individual projects including wetland determinations, avoidance and minimization of impacts, wetland delineations and start-to-finish evaluations through 404 permitting and mitigation (tract sizes varied from one to 150 acres).
Conducted threatened and endangered species investigations (file searches and habitat assessments), TX.
Oversaw three wetland remediation projects resulting from Cease and Desist orders, TX.
Conducted habitat surveys for Red-cockaded woodpecker in Sam Houston National Forest, TX.
Managed and Conducted wetland delineations and determinations on fifty plus parcels ranging from one to 300 acres, MS. Oversaw wetland delineation and conceptual planning to avoid wetland impacts for resort development with roadway network, MS.
Conducted wetland determinations, delineations and permitting for forty projects ranging in size from five to 500 acres, LA.
Wetland re-delineations of three major projects in coastal MS under stringent agency scrutiny.
Supervised field investigations for proposed golf course and conducted general avian surveys with special emphasis on least Bell's vireos, CA.

Pipelines

Wetland delineations/T/E surveys for proposed pipeline between Eunice, LA and Katy, TX.

Supervised wetland delineations for approximately 18-mile pipeline, TX.
Supervised wetland delineations and T/E surveys for 22-mile pipeline, TX.
Managed agency coordination/alternative selection/T/E species/US Waters, 20-mile pipeline, TX.
Managed agency coordination, permitting and environmental work for 11-mile gas pipeline, TX.

Communications
Managed wetland field investigations and reporting for an approximately 60-mile fiber optic route northwest of New Orleans.
Wetland and threatened and endangered species investigations, Texas, Louisiana, Mississippi, Alabama, Florida, Arkansas and Tennessee. Directed field investigations for over 2,700 miles of fiber optic line through the above states. Obtained threatened and endangered species clearances in each of the above states. Managed threatened and endangered species monitoring and wetland and erosion control projects. Managed field investigations and authored the Biological Assessment in support of the EA for a route through DeSoto NF, MS.

Mitigation Design/Construction/Monitoring
Managed removal of multiple low-head dams and low water crossings in the Ozark Highland border for Waters of the US mitigation.
Managed development of a 70 ac. Wetland creation/enhancement including fresh and saline components, Arcata Bottoms, CA
Site management plan for failing wetland mitigation, Honey Lake, CA
Managed all phases of 30 wetland and stream mitigation projects ranging in size up to 300+ acres, St. Louis region and Mississippi River valley, MO. Riparian corridors ranged from rural undisturbed to tight, creatively designed, urban projects. Substrates ranged from Ozarkian to alluvial. Wetland creations varied including large forested wetland creations. All sources of wetland hydrology and combinations thereof were implemented.
Managed phases of a proposed 1,000-acre wetland mitigation bank, TX.
Managed phases of 2,500-acre wetland mitigation bank, TX.
Conceptual stage of T/E species habitat bank in Alabama.
Marsh grass restoration mitigation project, LA.
Bottomland hardwood mitigation project, Big Island, Atchafalaya Delta W.M.A., LA.
Planning and installation of a two-acre wetland mitigation site, CA.
Managed two cowbird-trapping operations, CA.

Storm Water, Flood Control and Hazardous Waste
Managed wetland delineations and route selection for a flood control levee, TX. Project manager for Big Creek realignment, TX. Project manager for bayou channelization and bulkhead installation, MS. Consulted Harrison Co, MS Flood Control Board on bayou realignment. Supervised drainage realignment, CA.
Obtained all permits and clearances for hazardous waste disposal site, MS.

Continuing Education and Training
Advanced Wetland Delineation, Roseville, CA 2017
USACE Ordinary High Water Mark Training, Redding, CA 2015
Advanced Wetland Delineation, Corte Madera, CA 2014
California Rapid Assessment Method Training, Sacramento, CA 2013
Highway Traffic Noise, National Highway Institute, 2012
Traffic Noise Model, Bowlby and Associates, 2010
GPS Basics For Environmental, MoDOT, 2009
ProjectWise, MoDOT, 2009

Countermeasure Design for Bridge Scour and Stream Instability, Nat. Highway Institute, 2008
Amphibian and Reptile Conservation and Mgt. Workshop, MO Dept. of Conservation, 2008
Overview of Stream Restoration Principles and Application to Mitigation, USEPA, 2008
Advanced Jurisdictional Hydrology, Wetland Training Institute, 2006
Wetland Plant Identification, Biotic Consultants/Dr. Robert Mohlenbrock, 2002 & 2005
Section 4(f) Training, National Highway Institute, 2004
Carex Workshop, University of Missouri, Columbia, 2004
ArcGIS for Design, MoDOT, 2004
Stream Dynamics and Wetlands, MO Dept. of Conservation, 2001 & 2004
NEPA and the Transportation Decision Making Process, National Highway Institute, 2003
Reforestation of Drastically Disturbed Lands Wkshp., Off. of Surf. Mining/US Dept. of Int., 2003
Introduction to Highway Hydraulics, MoDOT, 2002
Plans Reading, MoDOT, 2002
Hydric Soils for Wetland Delineation, USDA/NRCS, 2001
Fundamentals of MicroStation, MoDOT, 2000
Basic Wetland Delineation, Wetland Training Institute, 1999
Wetland Fauna of the Western Gulf Coast, Stanley Jones, 1999