

***Biological Site Assessment for
6847 and 6775 Lucas Valley Rd. Bridge
Replacement Project Nicasio, California***

Prepared for:

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June, 2020



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I. INTRODUCTION

The purpose of this biological site assessment is to evaluate the potential impacts of a proposed bridge replacement, driveway widening and creek bank riprap augmentation project on Nicasio Creek; and to assess the potential for special status plants and animal species and their habitats to occur in the project area or be impacted by the project.

Project Description

The project is located at 6847 and 6775 Lucas Valley Road, Nicasio, California. The project would replace an existing driveway bridge, widen the driveway by approximately 3 feet for fire truck access, and install 350 square feet of riprap along the upstream right bank of Nicasio Creek to prevent further bank erosion near the bridge. The Owner is required by the Fire Marshal to replace the existing private driveway bridge with a new bridge that meets load requirements for modern fire emergency vehicles. The Owner is also required to widen the existing gravel driveway by approximately 3 feet to meet the 12-foot minimum width for emergency vehicle access. A 10-foot by 50-foot staging area adjacent to the driveway would be used to stage the trailer delivering the new bridge (Geomorph Designs, Plans dated April 22, 2020).

Due to ongoing erosion of the creek bank near the bridge, which is threatening a large bay tree cluster and could destabilize the bridge footings, a 375-square foot area would be covered with riprap boulders. The boulders would be used to augment existing riprap boulders that have partially collapsed over the past several decades (Geomorph Designs, Plans dated April 22, 2020). All in creek work related to the riprap augmentation is expected to take 2 to 3 days.

To enhance existing riparian habitat, as part of the project, a 575-square foot area of the creek floodplain would be cleared of invasive plant species (*Vinca major*) and replanted with native riparian species (Geomorph Designs, Mitigation and Monitoring Plan, 2020; CDFW, Streambed Alteration Agreement 2020).

The project is located within the Stream Conservation Area of Nicasio Creek, and the setback boundary and tree protection measures are shown on Geomorph Designs, Plans dated April 22, 2020. No protected or heritage trees would be impacted by the project per Marin County Code (§ 22.130.030).

Project Location

The project area is located on Lucas Valley Road in Nicasio, a rural town in Marin County (Figure 1). Nicasio Creek and the project area are located approximately 200 feet south of Lucas Valley Road. The surrounding area consists of single family homes, small ranches and steep canyons covered with coast redwood forest, coast live oak woodland and other forest and scrub habitat types. The properties at 6487 and 6775 Lucas Valley Road are zoned ARP-5 (121-152-01) and ARP-60 (121-180-12), respectively. Representative photos of the site are provided at the end of this document.

II. METHODS

Coast Ridge Ecology senior biologist Patrick Kobernus conducted a site survey of the project area and surrounding area on April 17, 2020. All plant and animal species observed were documented and plant communities and habitats were assessed for their potential to support special status species. The California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDDB) was consulted for known occurrences of sensitive plant, animal, and natural plant communities of concern with known occurrences within a three-mile radius of the project site (CNDDDB 2020). Data from CNDDDB, California Native Plant Society (CNPS) On-Line Inventory of Rare and Endangered Plants of California (CNPS 2020a), Marin Municipal Water District Rare Plant Inventory Update (2019) and other relevant literature and databases; knowledge of regional biota; and observations made during the field survey; were used to evaluate on-site habitat suitability for special status plant and wildlife species within the project site. Additional documents reviewed include project plans and regulatory documents pertaining to the project.

III. RESULTS

Soils

There is one soil type within the impact area shown as mapped by the NRCS Web Soil Survey (2020). The listed soil type for the project impact area is Ballard gravelly, loam 2 to 9 percent slopes. The site is also shown to have Coast Range Ophiolite/ Serpentine soils (County of Marin Map, online viewer), however no surface rock exposures or serpentine endemic plants were observed on the property.

Hydrology

Nicasio Creek is a perennial creek that flows through a 36-square mile watershed. The creek flows into Nicasio Reservoir, which was built in 1960. Downstream of the reservoir the creek flows into Lagunitas Creek. The project site is located approximately 2.3 miles upstream of Nicasio Dam. The wetlands within the creek on the site are characterized by the National Wetlands as PFOC (Palustrine, Forested, Seasonally Flooded), (USFWS 2020a). However the site would be more accurately characterized as an intermittent creek (riverine) due to the landforms and habitat types present within the creek. The creek section is a bedrock channel that is mostly 2-4 inches deep. The deepest pool (mid-channel pool) observed was approximately 2 feet deep.

Plant Communities

The vegetation communities within the project area include Big Leaf Maple Forest & Woodland Alliance (CNPS, 2020b) within Nicasio Creek. The overstory is dominated by big-leaf maple (*Acer macrophyllum*) with California bay (*Umbellularia californica*) and white alder (*Alnus rhombifolia*). Species within the understory include California hazelnut (*Corylus cornuta*), snowberry (*Symphoricarpos albus*), hound's tongue (*Cynoglossum grande*), and the invasive species periwinkle (*Vinca major*). Table 1 shows all plant species identified within the project area during the site visit. The creek channel is composed of mostly bedrock with some trees along the lower banks, including white alder and arroyo willow (*Salix lasiolepis*) and a few herbaceous plants such as mugwort (*Artemisia douglasiana*) growing on mostly barren gravel bars. Habitat types along the driveway and staging area include two types of nonnative grassland, dominated by Italian ryegrass (*Festuca perennis*) and foxtail (*Hordium murinum*) on the south side of the bridge, and rose clover (*Trifolium hirtum*) and white-flowered onion (*Allium triquetrum*) on the north side of the bridge, with some native sedges and wildflowers in the adjacent meadow. These areas are annually mowed for fire prevention.

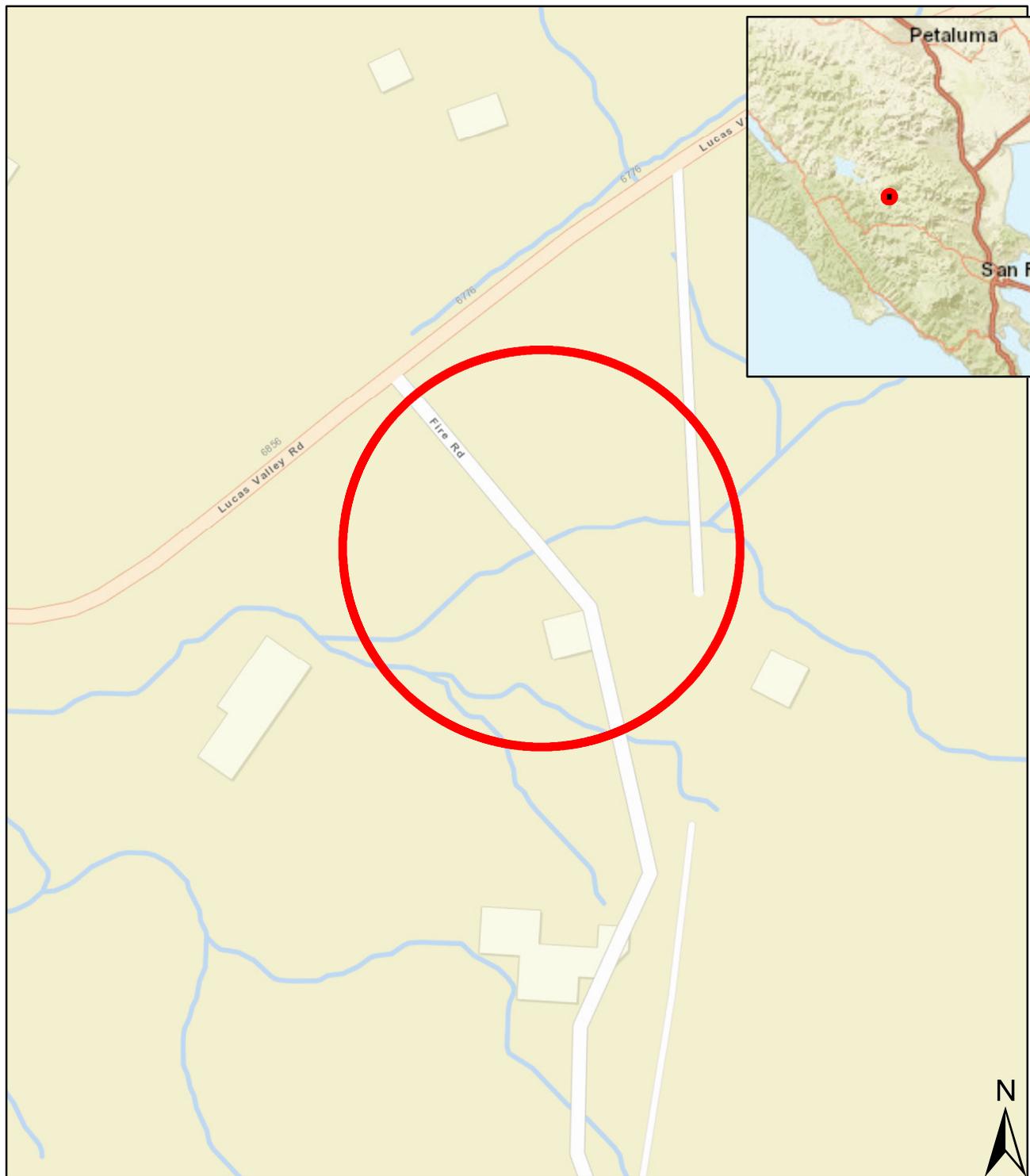


Figure 1: Project Location

6847/6775 Lucas Valley Rd, Nicasio, CA

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Legend

 Project Site



Table 1: Plant Species Observed During Site Survey

Common name	Scientific Name	Native?	Present in project area?
Arroyo willow	<i>Salix lasiolepis</i>	Y	Y*
Big leaf maple	<i>Acer macrophyllum</i>	Y	N
Broadleaf forget-me-not	<i>Myosotis latifolia</i>	N	Y
Buckeye	<i>Aesculus californica</i>	Y	N
California bay	<i>Umbellularia californica</i>	Y	Y
California blackberry	<i>Rubus ursinus</i>	Y	Y
California buttercup	<i>Ranunculus californica</i>	Y	N
California hazelnut	<i>Corylus cornuta</i>	Y	N
California pipevine	<i>Aristolochia californica</i>	Y	Y
Clustered field sedge	<i>Carex praegracilis</i>	Y	Y
Coast live oak	<i>Quercus agrifolia</i>	Y	Y
Common bog rush	<i>Juncus effusus</i>	Y	N
Common snowberry	<i>Symphoricarpos albus</i>	Y	N
Douglas fir	<i>Pseudotsuga menziesii</i>	Y	N
Foxtail	<i>Hordeum murinum</i>	N	Y
Great horsetail	<i>Equisetum telmateia</i>	Y	Y
Italian ryegrass	<i>Festuca perennis</i>	N	Y
Miner's lettuce	<i>Claytonia parviflora ssp. parviflora</i>	Y	Y
Mugwort	<i>Artemisia douglasiana</i>	Y	Y
Pacific hound's tongue	<i>Cynoglossum grande</i>	Y	N
Pacific sanicle	<i>Sanicula crassicaulis</i>	Y	N
Periwinkle	<i>Vinca major</i>	Y	Y
Small bract sedge	<i>Carex subbracteata</i>	Y	Y
Southern hedgenettle	<i>Staches bullata</i>	Y	Y
Spreading gooseberry	<i>Ribes divaricatum</i>	Y	N
Stinging nettle	<i>Urtica dioica</i>	N	Y
Tall flatsedge	<i>Cyperus eragrostis</i>	Y	N
Velvet grass	<i>Holcus lanatus</i>	N	Y
Western swordfern	<i>Polystichum munitum</i>	Y	N
White-flowered onion	<i>Allium Triquetrum</i>	N	Y

*Less than 4" DBH.

Wildlife and Wildlife Corridors

The project area is located within the riparian habitat and creekbank of Nicasio Creek. No aquatic vertebrates were observed within the creek with the exception of one adult riffle sculpin (*Cottus gulosus*), a California species of special concern. The surrounding riparian trees, shrubs and herbaceous habitats provide suitable nesting habitat for a wide variety of birds. Bird species detected in the area included warbling vireo (*Vireo gilvus*), American raven (*Corvus corax*), Steller's jay (*Cyanocitta stelleri*), and pacific slope flycatcher (*Empidonax difficilis*). No bat roosts were observed within the bridge and no suitable bat roost habitat was observed within tree cavities on site. The creek and property are likely

often used by local wildlife, including using the creek as a wildlife corridor. The project would not create any temporary or permanent impacts to wildlife movement through the site.

Special Status Species

Potential impacts to special-status species were assessed based on previous reports and known CNDDDB occurrences within three miles of the project area. Figures 2 and 3 show special status species (plants and animals) detected within a three-mile radius. Table 2 shows the special status species identified as having a low potential for occurrence, and Table 3 shows all species within a three-mile radius, and their potential for occurrence. The project site is not located within any designated Critical Habitat (CH) for federal or state listed species (USFWS 2020b). The project site is located approximately 1.8 miles northeast of Marbled Murrelet CH; 2.5 miles north of northern spotted owl CH, and 6.8 miles southeast of California red-legged frog CH. Special-status species not discussed below were excluded based on: a) lack of suitable habitat within the project area; and b) not observed on prior or recent surveys of the project area.

Plants

No special status plants were observed on the site and none are expected. North coast semaphore grass (*Pleuropogon hooverianus*), a state Threatened species and CNPS List 1B.1 plant has been seen in the region, but was not detected during surveys of the site. Most special status plant species that grow in the region are found in open, native grassland habitats that are not present on the property.

Animals

The project will involve work within the Creek, and therefore there is a low chance of impact to the following special-status aquatic animal species (Table 2). These species are discussed below.

Table 2: Special-status species with potential to be impacted by project activities

Common Name	Scientific Name	Status
Amphibians		
California giant salamander	<i>Dicamptodon ensatus</i>	SSC
California red-legged frog	<i>Rana draytonii</i>	FT, SSC
Foothill yellow-legged frog	<i>Rana boylei</i>	SCT, SSC
Reptiles		
Western pond turtle	<i>Actinemys marmorata</i>	SSC
Fish		
Riffle Sculpin	<i>Cottus gulosus</i>	SSC

Status: FE (Federally Endangered), FT (Federally Threatened), SSC (California Species of Special Concern), SCT (State Candidate Threatened)

California giant salamander (Dicamptodon ensatus)

The California giant salamander is a California species of special concern. This large salamander is found in wet coastal forests near fast-flowing streams from Mendocino County south to Monterey County (CNDDDB 2020). This species has been recorded approximately 2000 feet upstream from the project site in Nicasio Creek. The creek is currently very shallow within the project area but provides some potential habitat for this species.

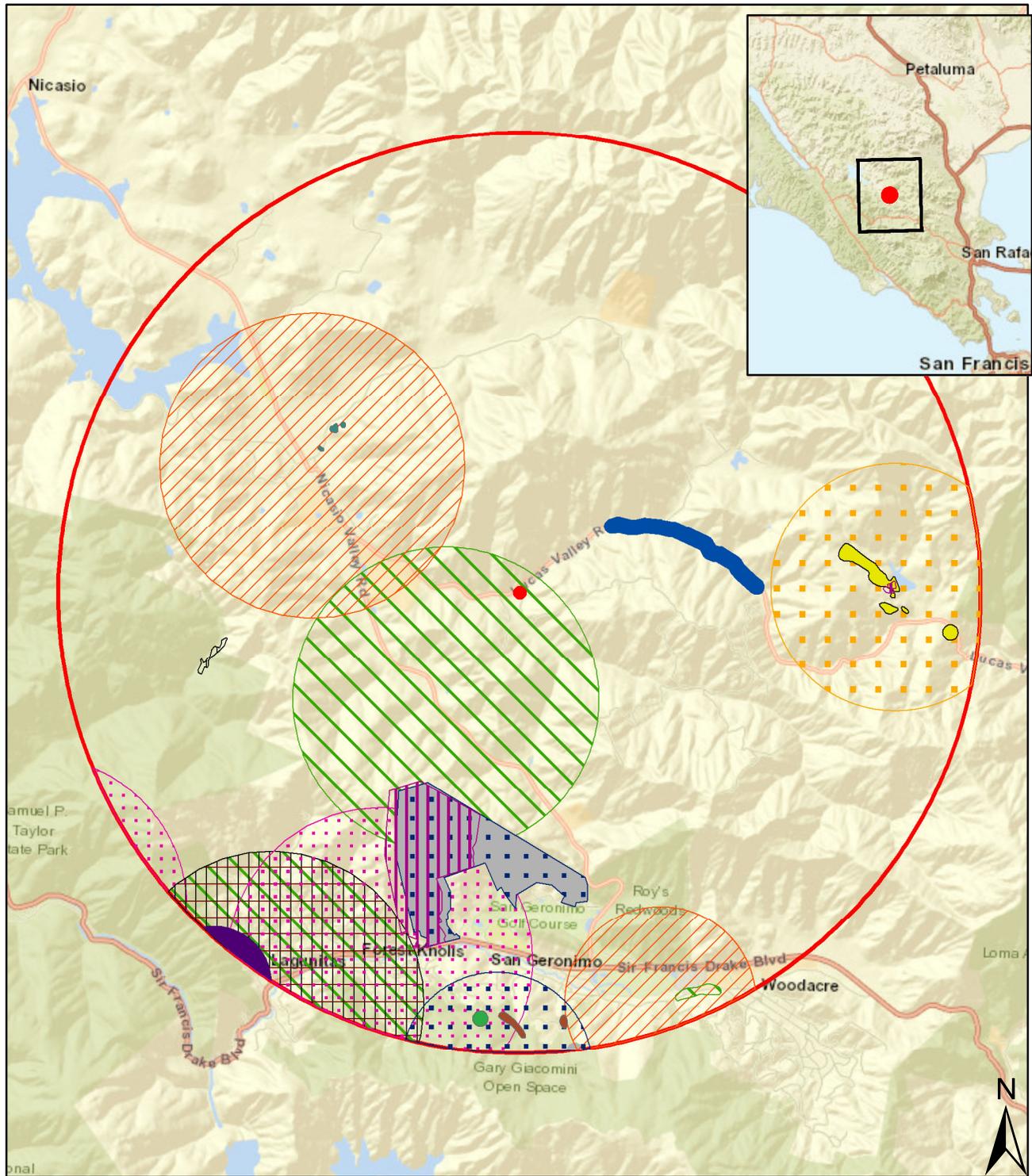


Figure 2: CNDBB Occurrence Map- Plants
6847/67775 Lucas Valley Road, Nicasio, CA



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, ©

Legend

- Project Site
- 3 mile radius

Plants

- Amsinckia lunaris*
- Arctostaphylos montana*
- Arctostaphylos virgata*
- Cardamine angulata*
- Cirsium hydrophilum*
- Dirca occidentalis*
- Entosthodon kochii*
- Eriogonum luteolum*
- Fritillaria lanceolata*
- Fritillaria liliacea*
- Hemizonia congesta*
- Hesperolinon congestum*
- Lessingia micradenia*
- Pleuropogon hooverianus*
- Streptanthus glandulosus*



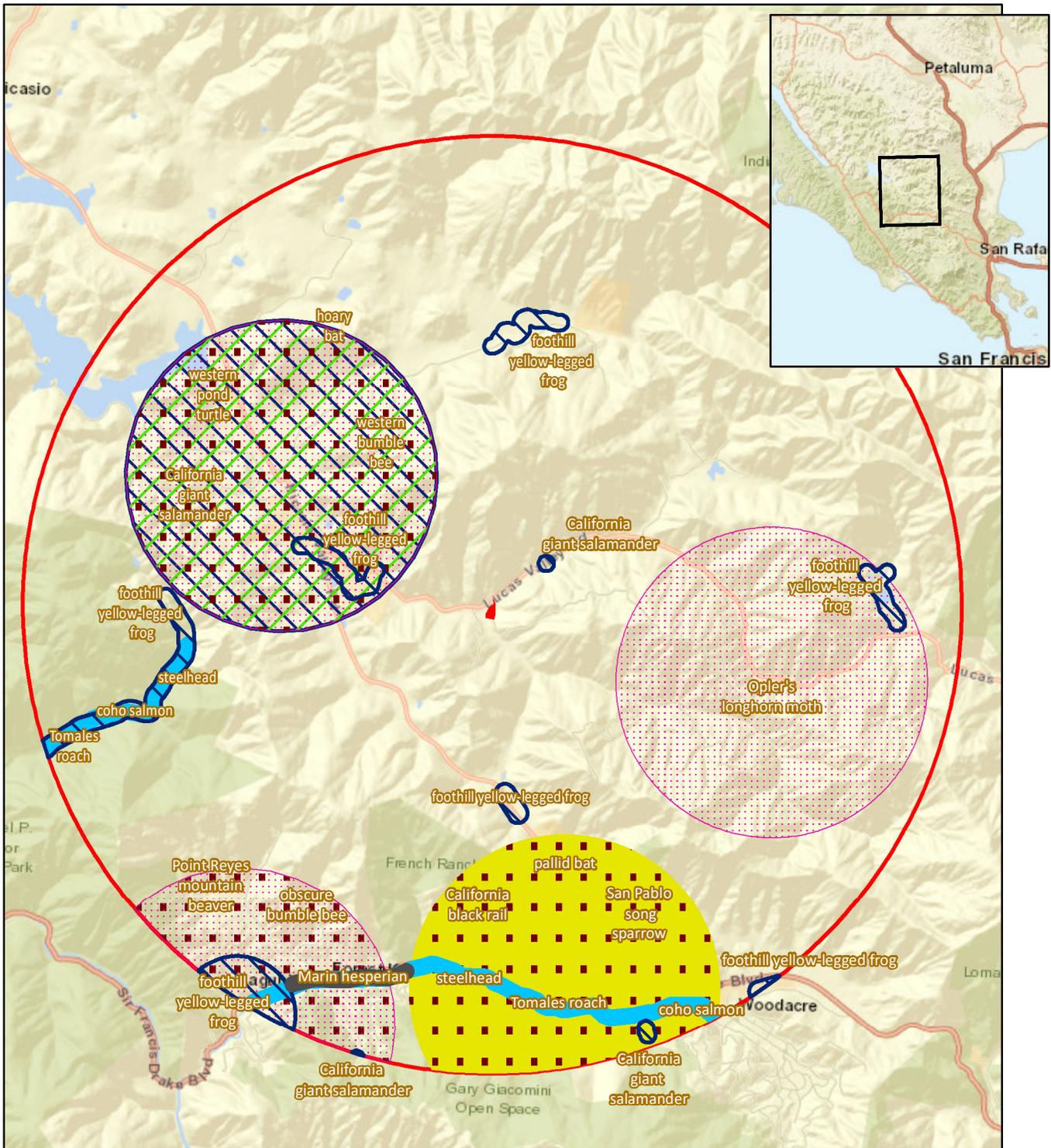
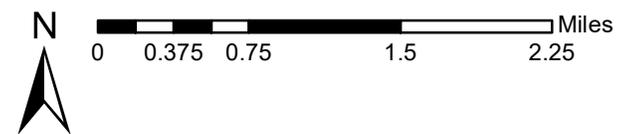


Figure 3: CNDDDB Occurrence Map- Animals

6847/ 6775 Lucas Valley Road, Nicasio, CA

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Legend

- Project Location
- Records**
- Taxon**
- Amphibians
- Birds
- Fish
- Insects
- Mammals
- Mollusks
- Reptiles



Foothill Yellow-Legged Frog (Rana boylei)

The Foothill yellow-legged frog is a California Species of Special Concern and a Candidate Threatened species that inhabits lotic (riverine) habitats with rocky substrate, as found in riffles, pools and on open, sunny banks of creeks (Stebbins 1985; Marin Municipal Water 2010). They utilize stream riffles containing cobble-sized or larger rocks for egg laying sites (Jennings and Hayes 1994). Other types of riparian habitats include isolated pools and vegetated backwaters (Hayes and Jennings, 1988). Timing and duration of breeding activity generally occurs during the spring (April), (Fellers, G.M. 2005). The nearest recorded observation is 1.2 miles west (downstream) in Nicasio Creek (CNDDDB 2020). This species is present in the watershed and has potential for presence however the shallow conditions and lack of flow likely preclude this species from breeding in this section of Nicasio Creek.

California red-legged frog (Rana draytonii)

The California red-legged frog is a federally Threatened species and State species of special concern. This species was not observed during the site visit, and has a low probability of occurrence. Nicasio creek does not provide the depth or vegetative cover preferred by red-legged frogs. The deepest pool in the creek in the vicinity of the project area is approximately 2 feet, with most sections of the creek only a few inches deep. The high visibility of the bedrock channel does not provide suitable cover from predators for red-legged frogs. The species is not known to occur within a three-mile radius of the project site (CNDDDB 2020). There is a low probability for this species to occur in the project area. The nearest potential breeding habitat is a pond feature approximately 1.2 miles northwest of the project site.

Western pond turtle (Actinemys marmorata)

The western pond turtle is a California species of special concern. This species was not observed during the site survey and is not expected to occur in the creek in the project area due to the shallow conditions. The section of Nicasio Creek within the project area provides only limited habitat for this species, lacking the substrate, depth, vegetative cover, and basking locations preferred by pond turtles. While the project area provides limited habitat for this species there still remains the possibility that individuals may utilize or move through the project area at various times throughout the year.

Riffle sculpin (Cottus gulosus)

Riffle sculpins are a California Species of Special Concern. Riffle sculpins are small sculpins that inhabit permanent coldwater streams and reach approximately 160 mm (6 inches) in length. Riffle sculpins feed on small aquatic insects and will eat other fish, including other sculpins. They live in areas with low water velocity, under rocks or logs, and in small pools that contain undercut banks, rubble, or other complex cover. They prefer areas with stream water temperatures below 26°C, with high dissolved oxygen levels, which restricts them to areas of flowing water. In most streams, they occur with 3-6 species of other native fishes, most typically with rainbow trout (*Oncorhynchus mykiss*), (Moyle et al. 2015). One adult riffle sculpin (mortality) was observed in the creek during the site survey, and this species is assumed present.

Steelhead (Oncorhynchus mykiss irideus) and Coho salmon (Oncorhynchus kisutch)

Nicasio Creek upstream of Nicasio Dam, has not supported steelhead or Coho salmon for several decades due to these species being blocked by the dam from accessing upstream spawning areas. There is no potential for these species to be detected in the project area.

California freshwater shrimp (Syncaris pacifica)

The California freshwater shrimp is a small, (approximately 2 inch long) crustacean that inhabits perennially flowing streams with slow moving water and flat gradients. This species is endemic to Marin, Sonoma and Napa Counties and has been listed as federally Endangered since 1988. It is only found in portions of 16 coastal streams within this range, including Lagunitas Creek in Marin County. This species is threatened by introduced fish, loss of habitat from water diversion, migration barriers and water pollution from ranching activities (NPS 2020). The closest recorded occurrence of this species is in Lagunitas Creek approximately 4.0 miles west of the project site, and downstream of Nicasio Reservoir (CNDDDB 2020). This species is not expected to occur in Nicasio Creek near the project site due to the lack of suitable habitat. There have been no detections of this species upstream of the Nicasio Dam.

Nesting Birds

While no special-status bird species were observed during the site survey, it is possible that birds could use the vegetation on site as nesting locations during the breeding season. All nesting birds are protected by the Migratory Bird Treaty Act, and the vegetation present at the site could provide a variety of nest locations for common bird species.

Stream Conservation Area of Nicasio Creek

The project is within the Stream Conservation Area of Nicasio Creek, and these limits are shown on Geomorph Designs, Plans dated April 22, 2020, page C2. The riparian boundary was drawn 100 feet from the top of bank and/or 50 feet from the outer limit of the riparian dripline per Marin County Wide Plan, requirements (Marin County 2007). Enhancement of the riparian habitat will follow the Mitigation and Monitoring Plan prepared by Geomorph Designs, January 2020.

Tree Protection

Tree protection zones are shown on Geomorph Designs, Plans dated April 22, 2020, page C7. Tree protection zones are designated for each tree on site, with the tree protection radius in feet based on one foot per inch of DBH (Diameter Breast Height), per Marin County requirements (Marin County 2007).

IV. POTENTIAL IMPACTS

No direct or indirect impacts to biological resources are expected to occur as a result of the project.

V. CONCLUSIONS

The project would not:

- a) Substantially reduce the number or restrict the range of a rare, endangered or threatened plant or animal.
- b) Cause a fish or wildlife population to drop below self-sustaining levels
- c) Adversely affect significant riparian lands, wetlands, marshes and other significant wildlife habitats.

Based on the evidence presented, this project will not result in any potentially significant adverse biological impacts to the environment.

VI. STANDARD PRACTICES

The following standard practices are provided which are consistent with the special status species requirements stated in the CDFW Streambed Alteration Agreement (No. 1600-2020-0024-R3), and with Marin County Code. A CDFW-approved qualified biologist shall conduct all tasks for the project.

1. A pre-construction survey will be conducted within 14 days of ground disturbing activities to ensure that no special-status fish, amphibian and/or reptile species (including: California red-legged frog, foothill yellow legged frog, California giant salamander, western pond turtle and riffle sculpin) are present within the work area. Survey results for western pond turtle will be submitted to CDFW prior to construction activities. All areas will be inspected prior to disturbance. If any special status species are observed, the appropriate state and federal wildlife agencies will be notified.
2. The qualified biologist shall inspect the site daily during all instream work (riprap installation and access route clearing).
3. If work is to occur during the nesting bird season (approximately February 1 – August 31), a nesting bird survey shall be performed within 7 days of ground disturbance activities to avoid impacting any active nests (CDFW, 2020).

Marin County Code section 22.20.040 (F) also requires a preconstruction nesting bird survey, and specifies the season as between February 1 and August 15. If active bird nests are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist. To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude. After the fencing is in place, there will be no restrictions on grading or construction activities outside the prescribed buffer zones, but County staff during routine site inspections may verify that fencing remains in place.

4. The qualified biologist, experienced with the aquatic species of concern, shall provide an environmental training to all work crew members on site prior to ground disturbance.

VII. REFERENCES

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Representative Photographs



Photo 1: Existing driveway bridge (04/17/2020).



Photo 2: Southern section of driveway (04/17/2020).



Photo 3: North (front) driveway and meadow (04/17/2020).



Photo 4: Access Route to Creek (04/17/2020).



Photo 5: Riprap Augmentation Area (04/17/2020).



Photo 6: Riprap Augmentation Area (04/17/2020).



Photo 7: Driveway near bridge (04/17/2020).



Photo 8: Riffle sculpin (*Cottus gulosus*) (mortality) (04/17/2020).

Table 3. Special-Status Species within a 3-mile radius of the project site, and their potential for occurrence.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
Amphibians			
California giant salamander <i>Dicamptodon ensatus</i>	--/CSC/-- G3 S2S3	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Moderate potential. This species has been detected in Nicasio Creek.
California red-legged frog <i>Rana draytonii</i>	FT/CSC/-- G2G3 S2S3 IUCN-VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Low potential. This species occurs in ponds and creeks in Marin County, but has not been detected in Nicasio Creek. This species has a low potential to occur also based on habitat types present.
Foothill yellow-legged frog <i>Rana boylei</i>	FSC/CC/-- G3 S3 SSC IUCN-NT	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	Moderate potential. This species has been detected in Nicasio Creek.
Birds			
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT/CE/-- G3G4 S1 CDF S IUCN EN	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	Low potential. This species has not been detected within a 3-mile radius of the project area.
California black rail <i>Laterallus jamaicensis coturniculus</i>	--/CT/FP G3G4T1 S1 FP	Resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area, Sacramento-San Joaquin Delta, coastal southern California at Morro Bay and a few other locations, the Salton Sea, and lower Colorado River area. Dependent upon upper zones of saline emergent wetlands, especially with pickleweed, and brackish fresh emergent wetlands.	Not expected. Project site does not provide suitable habitat.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
San Pablo song sparrow <i>Melospiza melodia samuelis</i>	--*/SSC G5T2 S2	Year-round range is confined to tidal and muted tidal salt marshes fringing San Pablo Bay. Primarily associated with high marsh, particularly Pickleweed	Not expected. Project site does not provide suitable habitat.
Northern spotted owl <i>Strix occidentalis caurina</i>	FT/CT/-- G3T3 S2S3 CDF S IUCN NT	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests with patches of big trees. Prefers high, multistory canopy dominated by big trees, many trees with cavities or broken tops, woody debris, and space under canopy.	Low potential. This species has not been detected within a 3-mile radius of the project area.
Fish			
Coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i> (pop.4)	FE/CE/-- G4 S2? AFS-EN	Requires beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	Not expected. This species is blocked by Nicasio Dam from accessing Nicasio Creek near the project site.
Tomales roach <i>Lavinia symmetricus ssp. 2</i>	--*/SSC G4T2T3 S2	Tomales roach are restricted to the western Marin County drainages of Lagunitas Creek and Walker Creek. Roach of uncertain taxonomic affinity have also been reported from Pine Gulch Creek, tributary to Bolinas Lagoon and Salmon Creek. They mostly live in highly altered habitats that include warm, aggraded, reaches with little riparian vegetation.	Not expected. Project site does not provide suitable habitat.
Steelhead (Central California coast DPS) <i>Oncorhynchus mykiss irideus</i> (pop. 8)	FT*/-- G5T2T3 S2S3 AFS-TH	Streambed spawning areas require dense riparian canopy, cool oxygenated water, and coarse gravels. Rearing young requires deeper pools of streams for several years before migrating to the ocean.	Not expected. This species is blocked by Nicasio Dam from accessing Nicasio Creek near the project site.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
Mammals			
Pallid bat <i>Antrozous pallidus</i>	--/CSC/-- G5 S3 IUCN-LC WBWG-H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Not expected. Project site does not provide suitable habitat.
Point Reyes mountain beaver <i>Aplodontia rufa phaea</i>	--/*/SSC G5T2 S2	All known extant populations of this taxon occur on lands administered by the Point Reyes National Seashore. Found on moist, sloped soils with dense clumps of sword fern growing in easily excavated, humus-rich soil."	Not expected. Project site does not provide suitable habitat.
Hoary bat <i>Lasiurus cinereus</i>	--/*/-- G5 S4 IUCN-LC WBWG-M	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Low potential. This species utilizes forest habitats however no bats or sign of bats was detected during the survey of the project area.
Reptiles			
Western pond turtle <i>Emys marmorata</i>	--/*/SSC G3G4 S3	Ponds, creeks in woodland, grassland. Species requires deep water ponds, streams, or marshes with sunny, emergent basking sites and sunny upland habitat for nesting.	Low potential. The shallow and still water within the creek within the project area do not provide suitable habitat for this species.
Invertebrates			
Opler's longhorn moth <i>Adela oplerella</i>	--/*/-- G2 S2	Serpentine grassland. Larvae feed on <i>Platystemon californicus</i>	Not expected. Project site does not provide suitable habitat.
Obscure bumble bee <i>Bombus caliginosus</i>	--/*/-- G4? S1S2 IUCN-VU	Coastal areas from Santa Barbara county north to Washington state. Grassy coastal prairies and meadows. Nectar and pollen plants include: <i>Ceanothus, Cirsium, Clarkia, Keckiella, Lathyrus, Lotus, Lupinus, Rhododendron, Rubus, Trifolium, and Vaccinium.</i>	Not expected. Project site does not provide suitable habitat.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
Western bumble bee <i>Bombus occidentalis</i>	--*/-- G2G3 S1 XERCES-IM	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Host plants include <i>Ceanothus</i> , <i>Centaurea</i> , <i>Chrysothamnus</i> , <i>Cirsium</i> , <i>Geranium</i> , <i>Grindellia</i> , <i>Lupinus</i> , <i>Melilotus</i> , <i>Monardella</i> , <i>Rubus</i> , <i>Solidago</i> , and <i>Trifolium</i> . Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease. Nests underground.	Not expected. Project site does not provide suitable habitat.
California freshwater shrimp <i>Syncaris pacifica</i>	FE/CE/-- G2 S2	Inhabits low elevation, <i>i.e.</i> less than 380 feet, perennial and intermittent freshwater streams with structurally diverse pools and streambanks in Marin, Napa and Sonoma Counties. Requires high water quality with minimal pollution and high oxygen content.	Low potential. The shallow and still water within the creek within the project area do not provide suitable habitat for this species.
Marin Hesperian <i>Vespericola marinensis</i>	--*/-- G2 S2	Snail found in moist spots in coastal brushfield and chaparral vegetation in Marin county. Commonly found under leaves of cow-parsnip, around spring seeps, in leafmold along streams, and in alder woods or mixed evergreen forest.	Not expected. Project site does not provide suitable habitat.
Plants, Mosses, and Lichens			
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	--*/1B.2 G3 S3	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation: 3 - 795 meters Blooming period: Mar.-June	Not expected. Project site does not provide suitable habitat.
Mt. Tamalpais mazanita <i>Arctostaphylos montana ssp. montana</i>	--*/1B.3 G3T3 S3	Serpentine soils in chaparral and grassland. Elevation: 150-680 meters Blooming period: Feb.-Apr.	Not expected. Project site does not provide suitable habitat.
Marin Manzanita <i>Arctostaphylos virgata</i>	--*/1B.2 G2 S2	On sandstone or granitic soils in broadleafed upland forest, closed-cone coniferous forest, chaparral, north coast coniferous forest. Elevation: 1-800 meters Blooming period: Jan.-Mar.	Not expected. Project site does not provide suitable habitat.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
Seaside bittercress <i>Cardamine angulata</i>	--*/2B.1 G4G5 S3	Wet areas and streambanks in lower montane coniferous forest and North Coast coniferous forest.	Low potential. This species was not observed during the field survey of the site.
Mt. Tamalpais thistle <i>Cirsium hydrophilium var. vaseyi</i>	--*/1B.2 G2T1 S1	Serpentine seeps and streams in roadleaved upland forest, chaparral, and meadows. Elevation: 180-610 meters. Blooming period: May-Aug	Not expected. Project site does not provide suitable habitat.
Western leatherwood <i>Dirca occidentalis</i>	--*/1B.2 G2 S2	Deciduous shrub that occurs on mesic sites in broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian scrub, and riparian woodland. Flowers from January – April.	Low potential. This species was not observed during the field survey of the site.
Koch's cord moss <i>Entosthodon kochii</i>	--*/1B.3 G1 S1	Occurs on soil in cismontane woodlands from 180 to 1000 meters. It is known from Mendocino, Mariposa, Marin, and San Luis Obispo counties	Low potential. This species was not observed during the field survey of the site.
Tiburon buckwheat <i>Eriogonum luteolum var. caninum</i>	--*/1B.2 G5T2 S2	Serpentine soils in chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Sandy to gravelly. Elevation: 60-640 meters. Blooming period: May-Sept	Not expected. Project site does not provide suitable habitat.
Marin checker lily <i>Fritillaria lanceolata var. tristulis</i>	--*/1B.1 G5T2 S2	Found in coastal bluff scrub, coastal scrub, and coastal prairie, often on serpentine, in canyons, riparian areas, and rock outcrops. Elevation: 15-150 meters. Bloom period: Feb-May.	Not expected. Project site does not provide suitable habitat.
Fragrant fritillary <i>Fritillaria liliacea</i>	--*/1B.2 G2 S2	Bulbiferous herb found in moist areas, often ultramafic, open hills, in valley and foothill grasslands. Flowers from Feb. – April.	Not expected. Project site does not provide suitable habitat.
Congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	--*/1B.2 G5T2 S2	Valley and foothill grasslands and coastal scrub. Elevation: 25-200 meters. Blooming Period: Apr.-Nov.	Not expected. Project site does not provide suitable habitat.

Common Name <i>Scientific Name</i>	Rarity Listing: USFWS/ CDFW/CNPS (Other)	Habitat Requirements	Potential to Occur in Project Area
Marin western flax <i>Hesperolinon congestum</i>	FT/CT/1B.1 G1 S1	In serpentine barrens and in serpentine grassland and chaparral. Elevation: 5 - 370 meters. Blooming period: Apr.-July.	Not expected. Project site does not provide suitable habitat.
Tamalpais lessingia <i>Lessingia micradenia</i> var. <i>micradenia</i>	--*/1B.2 G2T2 S2	Serpentine chaparral, valley and foothill grassland. Elevation: 60-300 meters. Blooming period: (June)July-Oct.	Not expected. Project site does not provide suitable habitat.
North Coast semaphore grass <i>Pleuropogon hooverianus</i>	--/CT/1B.1 G2 S2	It is endemic to northern California, where it is known from Mendocino, Marin, and Sonoma Counties. It grows in moist marshy areas and shady redwood forests	Low potential. This species was not observed during the field survey of the site.
Mt. Tamalpais bristly jewelflower <i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	--*/1B.2 G4T2 S2	Chaparral, valley and foothill grassland. Serpentine slopes. Elevation: 125-670 meters Blooming period: May-July (Aug.)	Not expected. Project site does not provide suitable habitat.

STATUS CODES:**FEDERAL:** (U.S. Fish and Wildlife Service)

FE = Listed as Endangered

FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.

BCC = Bird of Conservation Concern

FC = Candidate for federal listing

FEDERAL: (National Oceanic and Atmospheric Administration)

MMPA = Marine Mammal Protection Act

S = Strategic stock assessment D = Depleted stock assessment

STATE: (California Department of Fish and Wildlife [CDFW])

CT = Listed as Threatened by the State of California

CE= Listed as Endangered by the State of California

CC= Candidate for state listing

SSC = California Species of Special Concern

FP= CDFW designated "fully protected"

WL = CDFW designated "watch list"

§3503.5 = California Fish and Game Code Section §3503.5

This code protects nesting raptors and birds of prey

OTHER:

LS= Locally Significant Species

*= special status species inventoried by CDFW, including: Special Animals List (Nov 2018); Special Vascular Plants, Bryophytes, and Lichens List (Mar2019)

California Native Plant Society (CNPS) Rare Plant Ranks (RPR):

1A = Presumed extirpated in California; Rare or extinct in other parts of its range.

1B = Rare, threatened, or endangered throughout range; Most species in this rank are endemic to California.

2A = Extirpated in California, but common in other parts of its range.

2B = Rare, threatened, or endangered in California but common in other parts of its range.

3 = Need more information about species to assign it a ranking.

4 = Limited distribution and therefore warrants monitoring of status.

.1 = Seriously endangered in California

.2 = Fairly endangered in California

NatureServe Element Ranking

Global Ranking (G-rank)

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

G2 = Imperiled—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

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

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

G5 = Secure—Common; widespread and abundant.

State Ranking (S-rank)

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

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

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

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

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