Buck Gulch Falls Trail Biological Assessment
Ignacio Valley Preserve
Marin County, California
August 2021

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1 Introduction

Marin County Parks (MCP), which includes the Marin County Open Space District (MCOSD), manages and maintains the Ignacio Valley Preserve (Preserve), one of its 34 open space preserves in Marin County. The Preserve supports a small network of trails and limited fire roads for hikers, bikers, dog walkers, and equestrians on the outskirts of Novato. MCOSD is currently exploring opportunities to upgrade an existing hiker/equestrian trail within the Preserve. MCOSD retained Prunuske Chatham, Inc. (PCI) to complete a biological resources assessment of the conceptual Buck Gulch Falls Trail improvements. The assessment was completed to 1) document existing plant and wildlife resources within the study area and 2) provide a summary of potential resource impacts and recommendations for protection of biological resources. This report summarizes PCI's botanical and wildlife assessment for the conceptual trail improvements.

2 Setting

The Ignacio Valley Preserve is located in northern Marin County, south of the city of Novato; Figure 1. It encompasses 906 acres of rugged woodland and chaparral habitat. It lies adjacent to the Loma Verde, Pacheco Valley, and Indian Valley Preserves. Together these preserves form a contiguous band of open space which encompass the northern slope of eastern Big Rock Ridge. Key attractions within the Ignacio Valley Preserve include the 30-foot tall cascading Buck Gulch Falls and Big Rock Ridge with sweeping vistas. Elevations on the Preserve range from approximately 200 feet near the trailhead to Buck Gulch Falls to 1,200 feet along the ridges. The Buck Gulch Falls study area is located in the northwest corner of the Preserve along Arroyo de San Jose Creek. It is accessible at the end of Fairway Drive, off Ignacio Boulevard. Buck Gulch Falls Trail travels along Arroyo de San Jose Creek for approximately 0.7 miles before reaching the falls. Arroyo de San Jose is a small watershed of about 5.7 square miles. It drains to a lagoon at Bel Marin Keys. It is connected to the San Pablo Bay via the historic Novato Creek channel and canals within Hamilton Army Airfield (Leidy et al., 2005)

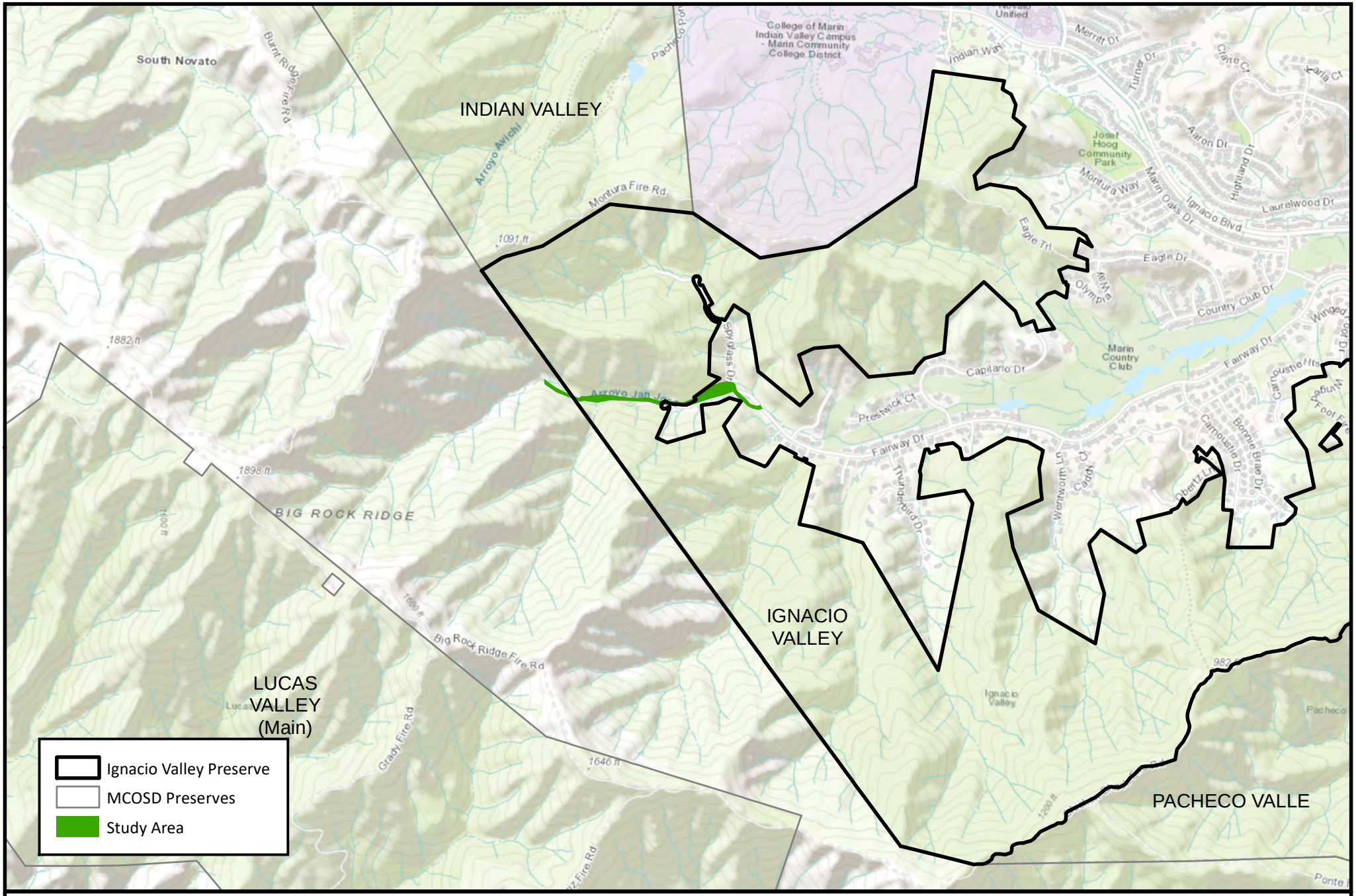

Figure 1. Study Area
Buck Gulch Falls Trail Biological Resources Assessment
Ignacio Valley Preserve

August 2021
Topo: ESRI
Preserve Boundary: Marin County

3 Conceptual Trail Improvements

The purpose of the conceptual trail improvements is to implement the MCOSD's *Road and Trail Management Plan* (RTMP) to provide the public with a safe trail to enhance the visitor experience in the Ignacio Valley Preserve (MCOSD 2014). The Ignacio Valley Preserve is located within Region 3 of the Marin County Open Space District. A portion of the Buck Gulch Falls Trail lies within a public use easement on private property. The easement is with Marin Country Club Estates, LLC. The public easement is a 20-foot wide corridor for pedestrian, equestrian and bicycle use, District maintenance vehicle use, and emergency vehicles.

In 2016, the Buck Gulch Falls Trail was approved for formal adoption subject to improvements as part of the Region 3 Road and Trail Designation process. The conceptual trail improvements would address trail related erosion and protect Arroyo de San Jose Creek by realigning the existing trail that currently encroaches on sensitive riparian habitat and delivers sediment to the creek. The current trail alignment to Buck Gulch Falls is directly adjacent to the top of the bank in many locations with no buffer between the creek and public uses. MCOSD is exploring the feasibility to upgrade 1,850 feet of existing trail to be more sustainable and accessible, realign 1,225 feet of trail along Arroyo de San Jose Creek, and decommission 1,160 feet of trail. The existing trails will be actively decommissioned to stabilize the soil surface and prevent future erosion and promote natural regeneration. The trail upgrades would also include two bridge crossings on Arroyo de San Jose Creek and at least two armored fill crossings on ephemeral tributaries. Currently, the public cross the creek and tributaries directly within the channels. Overall, the goal of the trail improvements is to provide a sustainable trail that meets design and management standards to provide safe, year-round access to Buck Gulch Falls.

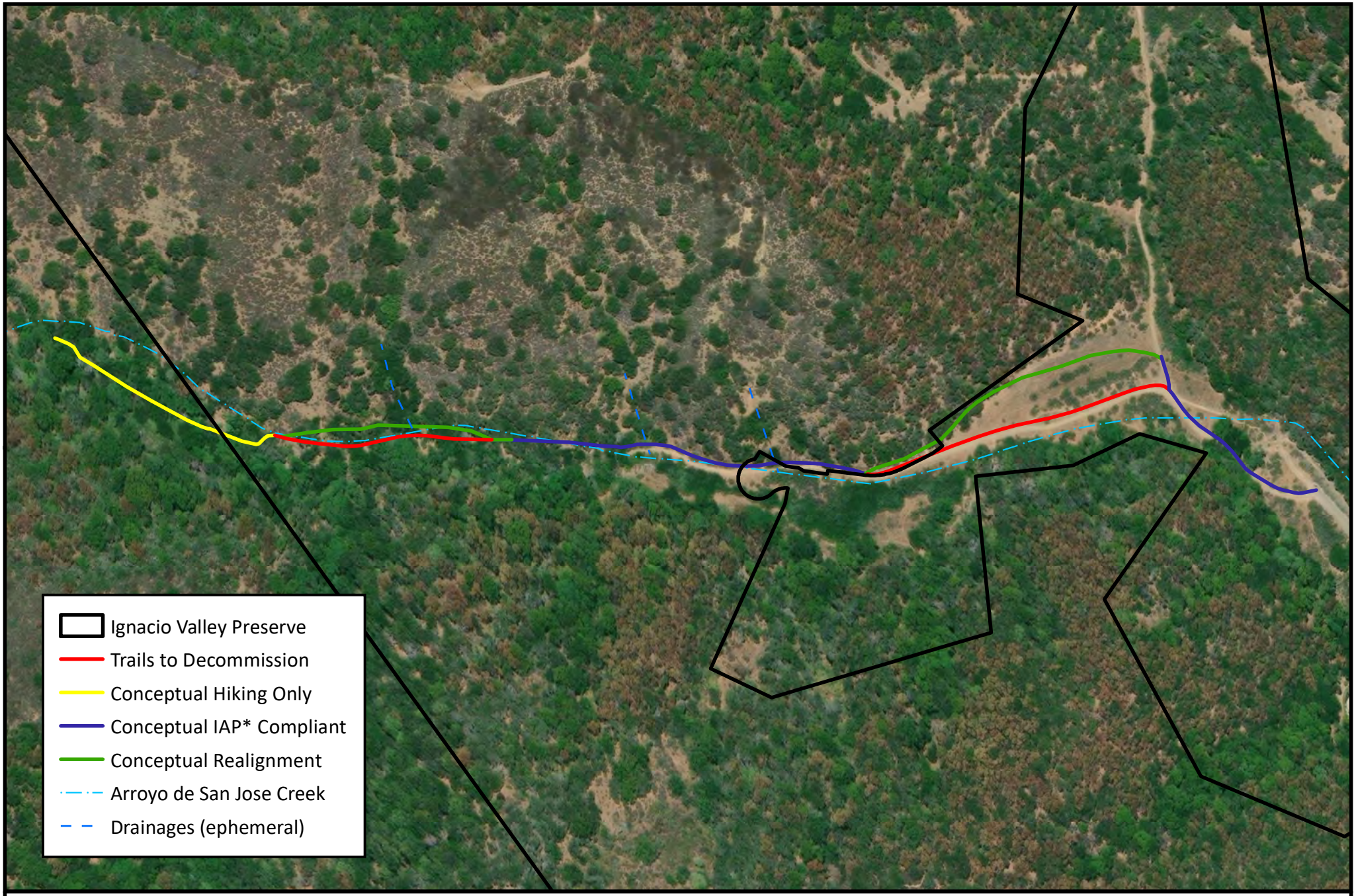

Figure 2. Conceptual Trail Improvements
Buck Gulch Falls Trail Biological Resources Assessment
Ignacio Valley Preserve

August 2021
Aerial: ESRI
Preserve Boundary and Trails: Marin County
*Inclusive Access Plan

4 Methodology

Field Surveys

Biological field surveys of the study area[1] were completed in spring-summer 2021 by PCI's Senior Wildlife Biologist and Vegetation Ecologist, who are familiar with the region's flora and fauna. PCI's assessment followed Marin County's *Preparation of Biological Site Assessments* (Marin County undated). The field surveys were intended to be a general inventory of habitats within the study area and of species observed or potentially occurring within the site. Observations were limited in scope due to the seasonal distribution and/or rarity of some species.

The primary purposes of the assessment were to characterize biological communities and existing habitat conditions within the study site, to help determine whether or not suitable habitat for special-status species is present, to identify potential biological impacts, and to provide guidance on limiting resource impacts and general protection recommendations. The potential for presence of and impacts on special-status species and habitats was determined based on existing habitat conditions and the presence of unique habitat features, proximity of the site to reported occurrences, and geographic range of subject species. The survey area included the conceptual trail area, trail decommissioning area, and a 25-foot buffer on either side. Habitats beyond these boundaries were not evaluated. A hand-held Trimble TDC 150 GPS unit was used to acquire sub-meter location data for biological features within the study area. GPS data were downloaded in the office and superimposed onto aerial imagery using ArcGIS software. Representative photographs are provided at the end of the report.

BOTANICAL SURVEYS. Botanical surveys were conducted to characterize plant communities, compile an inventory of species observed, and to evaluate the potential for presence of special-status plant species. Surveys of the site were conducted on April 5 and July 5, 2021. During each survey the existing trails and conceptual general areas for future trails were traversed on foot and all habitats were surveyed. All plants observed were identified using the *Jepson eFlora* (Jepson Flora Project 2021) and *Marin Flora* (Howell et al. 2007) to the taxonomic level necessary to determine whether or not they were rare. Botanical nomenclature follows the *Jepson eFlora*. Representative plant species observed within the study area are provided in the sections that follow. For a full list of all plant species observed within the study area, see Appendix B. Vegetation types were identified based on visual assessment in the field and comparison with *Manual of California Vegetation* (CNPS 2021a) definitions; no detailed quantitative data was collected. Vegetation of this Preserve was mapped by Aerial Information Systems and California Native Plant Society for Marin County in 2008 as part of a larger effort across multiple parklands (AIS 2008)

[1] The study area includes the study site and the surrounding lands that may be directly or indirectly affected by conceptual trail improvements.

and the Marin County Fine Scale Vegetation Map (Conservancy et al., 2021); these existing maps were reviewed by PCI in the field.

WILDLIFE SURVEYS. A wildlife survey of the study area was conducted on April 5, 2021 to evaluate the potential for presence of special-status wildlife, compile an inventory of species observed and wildlife habitats, and complete an evaluation of existing habitats; it did not include protocol-level focused surveys for special-status animal species. During the survey, an inventory of all animal species observed was compiled. The survey was conducted with the aid of binoculars. Visual cues (e.g., nests, tracks, scat, burrows, skeletal remains), calls, songs, and direct observations were used to identify wildlife. Unique habitat features (e.g., woody debris, water sources, etc.) and other plant materials were examined for presence of mammals, amphibians, reptiles, birds, and invertebrates. Representative and wildlife species observed within the study area are provided in the section that follows.

FIGURES. Figure 1 shows the Ignacio Valley Preserve study area and regional context. Figure 2 shows the conceptual trail improvements. Figure 3 is a map of vegetation and resource conditions of the study area. Figure 4 illustrates the locations of known sightings of special-status plants and wildlife within the region (CDFW 2021a).

This biological assessment is specific to the Buck Gulch Falls Trail portion of the Ignacio Valley Open Space Preserve identified above; impacts beyond these boundaries were not evaluated. It does not include an evaluation of the cumulative effects at a local and regional scale. This report represents PCI's best professional effort to identify all sensitive habitats, species, and resources of concern within the study area.

Background Research

A background literature and database search was conducted to determine the potential for occurrence of special-status species within the study area. The search focused on reported occurrences for the Novato 7.5' USGS quadrangle where the study area is located. General references, including aerial photographs, were also consulted to evaluate the potential for unique biological communities and special-status species. The review included the following sources:

- California Natural Diversity Database (CNDDB) (CDFW 2021a)
- California Sensitive Natural Communities (CDFW 2021b)
- A Manual of California Vegetation Online (CNPS 2021a)
- CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021b)
- Calfora database (Calflora 2021)

- Information for Planning and Conservation (IPaC) Trust Resource List for the study area (USFWS 2021)
- Natural Resources Conservation Service Web Soil Survey (NRCS 2021)
- Field guides and general references for plants, birds, mammals, reptiles, amphibians, and invertebrates
- Marin County Open Space District Vegetation and Biodiversity Management Plan (MCOSD 2015)

5 Soils

Soils in the study area are mapped as Tocaloma-McMullin complex (NRCS 2021). These are well-drained loam and/or gravelly loam soils derived from residuum weathered from sandstone, shale, and conglomerate. Depth to bedrock is 18 to 43 inches. Runoff is medium to rapid. These soils are not subject to flooding or ponding.

6 Existing Conditions

Botanical Resources

The study area primarily supports annual and perennial grasslands, shrublands, riparian scrub and forest, and woodlands. Table 1 below shows the nomenclature from the Marin County Fine Scale Vegetation Map (Conservancy et al., 2021) and grouped into more general vegetation types. Figure 3 provides a general map of vegetation types, based on the previous field mapping which was verified by PCI in the field.

Table 1. Vegetation Types within the Study Area

Community Type	Manual of California Vegetation Alliance	Latin Name	Sensitivity	CDFW Rank
Annual and Perennial Grasslands	Annual brome grassland	*Bromus (diandrus, hordeaceus)* Semi-natural Stands	n	n/a
	Yellow starthistle fields	*Centaurea solstitialis* Provisional Alliance	n	n/a
	Perennial ryegrass fields	*Lolium perenne* Semi-natural Herbaceous Stand	n	n/a
Shrubland	Coyote brush scrub	*Baccharis pilularis* Alliance	n	G5S5
	California yerba santa chaparral - sagebrush scrub	*Eriodictyon californicum-Artemisia californica* Provisional Alliance	n	G4?S4?
Riparian Scrub and Forest	Bigleaf maple forest	*Acer macrophyllum* Alliance	y	G4S3
	Arroyo willow thicket	*Salix lasiolepis* Alliance	y	G4S4

Community Type	Manual of California Vegetation Alliance	Latin Name	Sensitivity	CDFW Rank
Oak Woodland and Forest	Madrone forest	*Arbutus menziesii* Alliance	y	G4S3.2
	Coast live oak woodland	*Quercus agrifolia* Alliance	n	G5S4
	California bay forest	*Umbellularia californica* Alliance	y	G4S3

Annual and Perennial Grasslands

Grasslands on the site are dominated by non-native annual and perennial grasses, with occasional native and non-native forbs. Dominant non-native grass species include ripgut brome (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), foxtail barley (*Hordeum murinum*), hedgehog dogtail (*Cynosurus echinatus*), soft chess brome (*Bromus hordeaceus*), and orchardgrass (*Dactylis glomerata*). Non-native forbs are common and include vetches (*Vicia villosa* and *V. sativa*), dovefoot geranium (*Geranium molle*), English plantain (*Plantago lanceolata*), and Italian thistle (*Carduus pycnocephalus*). There are several stands of invasive Harding grass (*Phalaris aquatica*) and large infestations of yellow starthistle (*Centaurea solstitialis*) along the propsoed trail alignment. Native perennial grass species are mostly absent but blue wildrye (*Elymus glaucus*) is growing at low cover within the mostly non-native assemblage. Native forbs present in scattered locations include Pacific sanicle (*Sanicula crassicaulis*), buttercups (*Ranunculus californicus*), spikeweed (*Centromadia fitchii*), baby blue eyes (*Nemophila menziesii*), miniature lupine (*Lupinus bicolor*), and miner's lettuce (*Claytonia perfoliata*). A small patch of showy ground iris (*Iris macrosiphon*) is growing where the grasslands transition into more woodland vegetation. Overall, habitat quality in the grasslands is low. Invasive Harding grass and yellow starthistle are present in the grasslands and non-native ruderal species are abundant.

Coyote Brush Scrub

Coyote brush (*Baccharis pilularis*) scrub occurs along the eastern end of the trail. Native blackberry (*Rubus ursinus*) and sticky monkeyflower (*Diplacus aurantiacus*) are growing within the scrub. A grassy understory is present, and is similar in composition to the grasslands found throughout the site. Habitat quality in the coyote brush scrub patches is moderate. Native diversity is low but coyote brush scrub provides valuable habitat for wildlife and native pollinators.

California Yerba Santa Chaparral - Sagebrush Scrub

Chaparral is growing on a south-facing slope to the north of the trail. Coastal sage brush (*Artemisia californica*), yerba santa (*Eriodictyon californicum*), and poison oak (*Toxicodendron diversilobum*) are dominant in the shrub layer with occasional common manzanitas (*Arctostaphylos manzanita*) growing along the forested edges. Other native shrubs and perennials include redberry buckthorn (*Rhamnus crocea*), chamise

(*Adenostoma fasciculatum*), sticky monkeyflower, buckwheat (*Eriogonum nudum*), coyote mint (*Monardella villosa*), and toyon (*Heteromeles arbutifolia*). Smaller native forbs such as wild hyacinth (*Dichelostemma capitatum*), false babystars (*Leptosiphon androsaceus*), rusty popcornflower (*Plagiobothrys nothofulvus*), and clarkia (*Clarkia* sp.) are abundant and were being heavily visited by butterflies at the time of the survey. California pipevine (*Aristolochia californica*) and Pacific false bindweed (*Calystegia purpurata*) are also intermingled within the scrub and succulent rock lettuce (*Dudleya cymosa*) hangs on the rocky outcrops. A few non-native grasses and forbs such as Italian thistle, rattlesnake grass (*Briza maxima*), and ripgut brome were also present within the scrub understory. Habitat quality within this native dominated community is high and wildlife species were actively using the array of resources.

Riparian Scrub and Forest

Riparian scrub dominated by willows (*Salix lasiolepis* and *S. lasiandra*) grows along the lower portion of Arroyo de San Jose Creek. In the upper portions of the reach, along the conceptually decommissioned trail, the riparian plant community shifts to forest, dominated by bigleaf maple (*Acer macrophyllum*), accompanied by California buckeye (*Aesculus californica*), oaks (primarily *Quercus agrifolia*), and California bay (*Umbellularia californica*). Ferns are abundant in the understory and include California maidenhair fern (*Adiantum jordanii*) and polypody ferns (*Polypodium californica* and *P. calirhiza*). Native shrubs such as snowberry (*Symphoricarpos albus*), ocean spray (*Holodiscus discolor*), native blackberry, and poison oak grow sporadically within the shaded understory. Cleavers (*Galium* spp.), sweet-cicely (*Osmorhiza berteroi*), bee plant (*Scrophularia californica*), and round fruit sedge (*Carex globosa*) grow beneath the shrubs and along the rocky streambed. Non-native species are infrequent but spreading hedgeparsley (*Torilis arvensis*) is growing along the streambanks. The rocky boulders of Buck Gulch Falls are covered in polypody ferns and small, native water-loving forbs such as seep monkeyflower (*Erythranthe guttata*) and brook foam (*Boykinia occidentalis*). Habitat quality is high as this riparian system supports a diverse array of native species.

Oak Woodland and Forest

The oak woodlands along the trail adjacent to the Arroyo de San Jose support a robust array of native vegetation. The dominant tree species are coast live oak and California bay with occasional madrone (*Arbutus menziesii*) and California buckeye. Black oak (*Quercus kelloggii*) and valley oak (*Quercus lobata*) are more abundant near the trailhead. The composition of the understory is diverse and almost entirely native. The shrub layer includes occasional snowberry, hazelnut (*Corylus cornuta*), ocean spray, toyon, native blackberry, and abundant poison oak. Ferns are flourishing in the shaded undergrowth of the oak canopy. Large patches of wood fern (*Dryopteris arguta*) grow on the forest floor and polypody ferns, goldenback fern (*Pentagramma triangularis*), coffee fern (*Pellaea andromedifolia*), and maidenhair fern hug the rocky slopes of the ravine. Large swaths of yellow Douglas iris (*Iris douglasiana*) grow in the partly shaded oak understory along the

proposed trail alignment; see Figure 3. Other native perennial forbs in the understory include honeysuckle (*Lonicera hispidula*), fairy bells (*Prosartes hookeri*), checker lilies (*Fritillaria affinis*), canyon larkspur (*Delphinium nudicaule*), false Solomon's seal (*Maianthemum racemosum*), giant wakerobin (*Trillium chloropetalum*), and California pipevine. Annual wildflowers such as canyon nemophila (*Nemophila heterophylla*) and Chinese houses (*Collinsia heterophylla*) grow in the dappled sunlight of the woodland. Non-native plants are mostly absent except for spreading hedgeparsley. Habitat quality is high as this woodland hosts a diverse array of native species within all layers of the vegetation profile.

A small section in the northeastern portion of the study area is occupied by madrone forest. The tree canopy in this community is dominated by madrone with occasional California bay. The understory is sparse due to the dense layer of madrone leaves on the forest floor. Species observed in the madrone understory include toyon, Douglas iris, and honeysuckle. Habitat quality is high in this native-dominated habitat that serves as an important food resource for wildlife.

Creeks and Drainages

The Buck Gulch Falls Trail is located along Arroyo de San Jose Creek. The creek is an intermittent stream as mapped on the USGS topo map. At the upper limits, there is large bedrock outcrop creating Buck Gulch Falls. Above the falls and beyond the Preserve boundary, there is a deep pool. Below the falls, there is a shallow pool before the channel flows downstream into a defined bed and banks. Areas of deep incision and bank erosion are evident throughout the study area, especially at the downstream limits. During PCI's April survey, the creek was mostly dry with the exception of the pool below the falls and several small (3-4" deep) pools at the downstream limits of the study area. Several small ephemeral drainages flow into Arroyo de San Jose Creek from the surrounding slopes. The drainages are not mapped on the USGS topo map, but have defined channels. These features were completely dry in April and mostly likely only flow in direct response to rainfall.

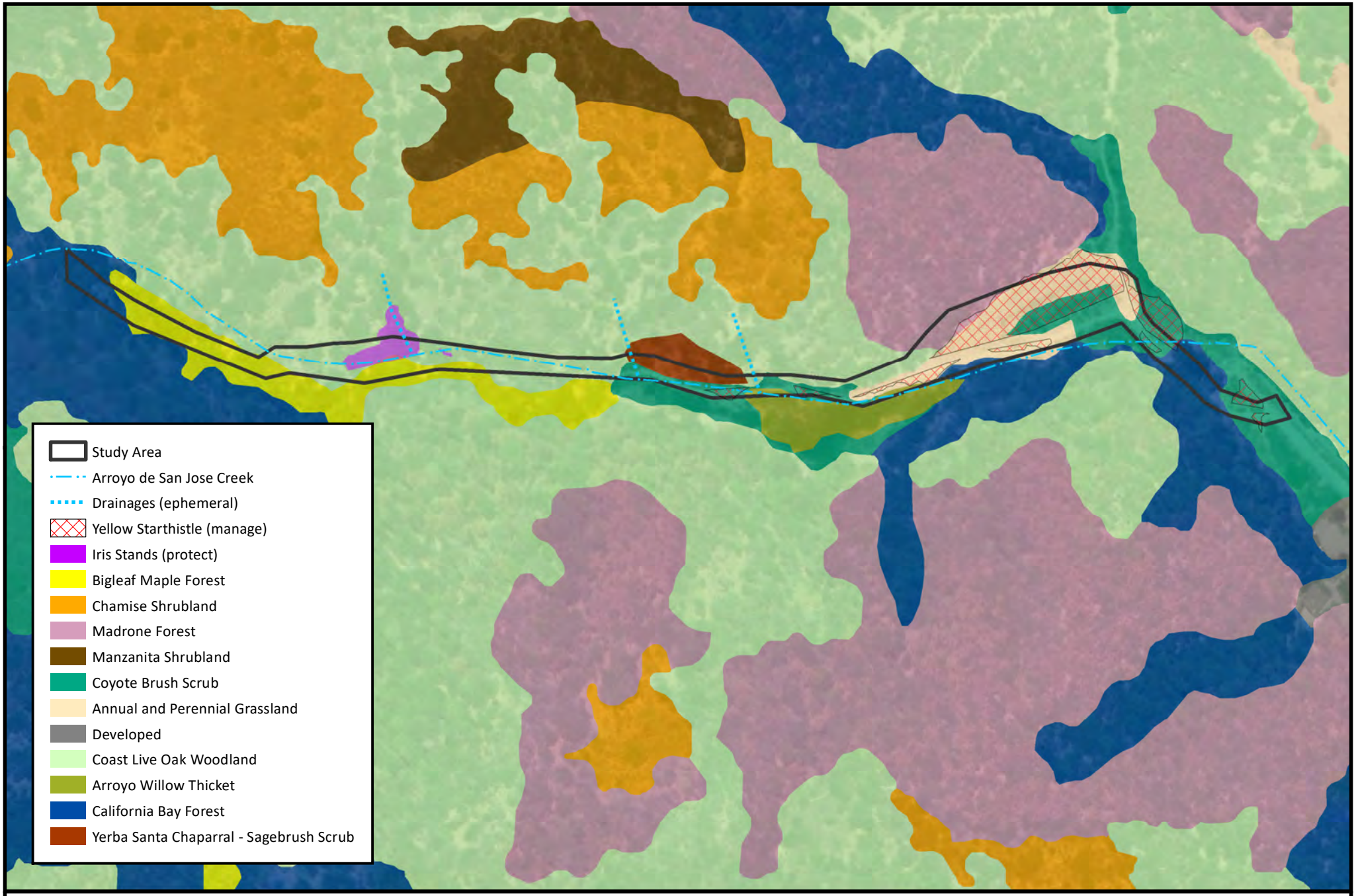

Figure 3. Vegetation Types and Resource Conditions
Buck Gulch Falls Trail Biological Resources Assessment
Ignacio Valley Preserve

August 2021
Aerial: ESRI
Preserve Boundary, Trails: Marin County
Vegetation Types: Marin County Fine Scale Veg Map 2021

Wildlife Resources

The following discussion includes a general summary of animals typically associated with natural communities present in the study area based on regional occurrence and field observations. Although the characteristic assemblages may occur predictably within certain vegetation types, relatively few wildlife species are restricted to a single habitat, and, indeed, some species may require more than one habitat type. Wildlife species' common names are used in the text because they are unequivocal. A complete list of wildlife species observed is provided in the following section.

The study area supported extensive mixed oak woodlands and riparian forest interspersed with patches of coyote brush and coastal scrub, grassland, and seasonal channels. It is part of a continuous swath of protected lands on the outskirts of Novato. The wooded habitats provide important corridors that allow wildlife to move to and from surrounding lands and along the drainages. The intact woodlands buffer wildlife from recreational use and nearby development, and leave some habitats within the Preserve intact. The study area, and larger Preserve, provide key habitat for many of Marin County's wildlife species and can support a variety of wildlife through part or all of their life cycles.

Native woodlands dominate the study area. These woodlands provide suitable habitat for a variety of terrestrial birds, mammals, amphibians, and reptiles. Birds represent the most abundant and prominent wildlife species within this habitat. Year-round resident birds observed included Anna's hummingbird, California quail, chestnut-backed chickadee, common bushtit, dark-eyed junco, spotted towhee, and western scrub-jay. Seasonal migrants observed within the woodlands and likely to breed within the habitat included orange-crowned warbler, Pacific-slope flycatcher, and Wilson's warbler. Additional wintering species may occur here, but were not seen due to the timing of the field survey. Red-shouldered hawk and turkey vulture were observed soaring over the wooded areas. Small vertebrates within the habitat are likely to serve as a food source for predatory birds. Nocturnal avian predators may also be present. Due to their nocturnal nature and timing of the field survey, no owls were observed. Two special-status bird species, Cooper's hawk and northern spotted owl, have been reported within the Preserve (Marin County 2021, MCOSD 2015); see *Special-status Species and Habitats* for further discussion.

Native oaks and oak communities found within the study area serve as a significant resource for many wildlife species in the form of both food and shelter. Every part of the oak tree is utilized as forage for native species including acorns, leaves, twigs, pollen, roots, and sap. Perhaps the most widely recognized source of food is the acorn. This high-energy food is used heavily by western-scrub jays and western gray squirrels; both species were observed within the study area. Bat species may forage over the grassland and woody habitats and roost in nearby larger trees. A California kingsnake was observed

climbing the trunk of a large tree within the woodland habitat; this is a seldom-seen snake in Marin County.

Grasslands and grassy openings are present at the lower limits of the study area. Grasslands provide important habitat for wildlife, but many species also require special habitat features (i.e., rocky outcroppings, woody cover, shrubs) and habitat margins to meet their needs. Grasslands provide foraging opportunities for a number of bird species who are attracted to seeds, other plant material, invertebrates, and small vertebrates. Species such as the western bluebird and American goldfinch were observed foraging in these open areas. Coyote brush scrub and coastal sage scrub occurs in small patches along the trail. Scrub provides habitat for a wide variety of wildlife. Wildlife observed in the scrub included California quail, western scrub-jay, and spotted towhee. Western fence and alligator lizards were observed near rocky outcrops in the scrub. Native butterflies were abundant within the study area, foraging in all of the habitat types.

Arroyo de San Jose Creek is a critical aquatic resource for local wildlife. The creek provides intermittent flows and a seasonal water source for wildlife. The drainage is well vegetated and provides cool and moist microclimate conditions required by many wildlife species. The diverse plant community and habitat complexity provides critical foraging, roosting, and nesting habitat along the creek. At the upper limits of the study site, there is a deep pool above the falls that provides a persistent water source; young children were observed capturing newts from the pool. Small isolated pools were also observed at the downstream end of the study site. California newt adults and egg masses were observed in the lower reaches. The creek is also an important movement corridor for wildlife, especially in areas that are buffered from public access. The smaller ephemeral channels feeding into Arroyo de San Jose Creek also provide seasonal water sources during the rainy season and movement corridors for wildlife.

Animals Observed

Animals observed (directly and indirectly: scat, tracks, burrows, sounds) within the study area by PCI included the following:

Birds

American Goldfinch
American Robin
Anna's Hummingbird
California Quail
Cassin's Vireo
Chestnut-backed Chickadee
Common Bushtit
Common Raven
Dark-eyed Junco
House Finch
Orange-crowned Warbler
Pacific-slope flycatcher
Red-shouldered Hawk
Song Sparrow
Spotted Towhee
Steller's Jay
Turkey Vulture
Western Bluebird
Western Scrub-jay
Wilson's Warbler

Amphibians

California Newt

Reptiles

Alligator Lizard
California Kingsnake
Western Fence Lizard

Mammals

Black-tailed Deer
Western Gray Squirrel

Invertebrates (butterflies)

California Buckeye
California Pipevine Swallowtail
California Sister
Western Tiger Swallowtail

7 Special-status Species and Habitats

Definition of Special-status Species

In California, special-status plants and animals include those species that are afforded legal protection under the federal and California Endangered Species Acts (ESA and CESA, respectively) and other regulations. These species must be considered during evaluation to comply with CEQA, during consultation with State and federal resources agencies, and in development of specific management guidelines for resource protection. Special-status species are defined as the following:

- Species listed or proposed for listing as threatened or endangered under the federal ESA;
- Species listed or proposed for listing as threatened or endangered under CESA;
- Species that are recognized as candidates for future listing by agencies with resource management responsibilities, such as U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW);
- Species defined by CDFW as California Species of Special Concern;
- Species classified as Fully Protected by CDFW;
- Plant species, subspecies, and varieties defined as rare or threatened by the California Native Plant Protection Act (California Fish and Game Code Section 1900, et seq.);
- Plant species listed by the California Native Plant Society as California Rare Plant Rank 1, 2 and 3 under CEQA (CEQA Guidelines Section 15380); and some list 4 plants based on CNPS guidelines;
- Species that otherwise meet the definition of rare, threatened, or endangered pursuant to Section 15380 of the CEQA Guidelines, and
- Mountain lions protected under the California Wildlife Protection Act of 1990 (Proposition 117) and designated as a "specially protected mammal in California."

Special-status Species Evaluation Criteria

The potential for special-status species to occur on the study site was reviewed and classified into the following categories: not present, not likely to occur, moderate potential to occur, high potential to occur, or present. The criteria for each of these categories are:

Not Present – Suitable habitat is not present within the study site; the site lacks critical habitat requirements for the species and/or study site is outside the range of the species.

Not Likely to Occur – One or more key habitat components is absent from the study site; no known occurrences in region; or habitat present but species not observed during field surveys that would be expected to discover species, if

present, based on season and level of effort. Species is unlikely to occur within the study site.

Moderate Potential to Occur – Some of the habitat components required by this species are present within the study site and/or marginally suitable habitat is present within surrounding areas. Field surveys did not confirm or rule out species presence. Species may occur within the study site.

High Potential to Occur – All of the habitat components required by this species are present within the study site and/or it is known to occur in surrounding areas. Field surveys did not confirm or rule out species presence. Species is likely to occur within the study site.

Present – Species has reported occurrences within the study site which are believed to be still extant and/or was observed within the study site during field surveys.

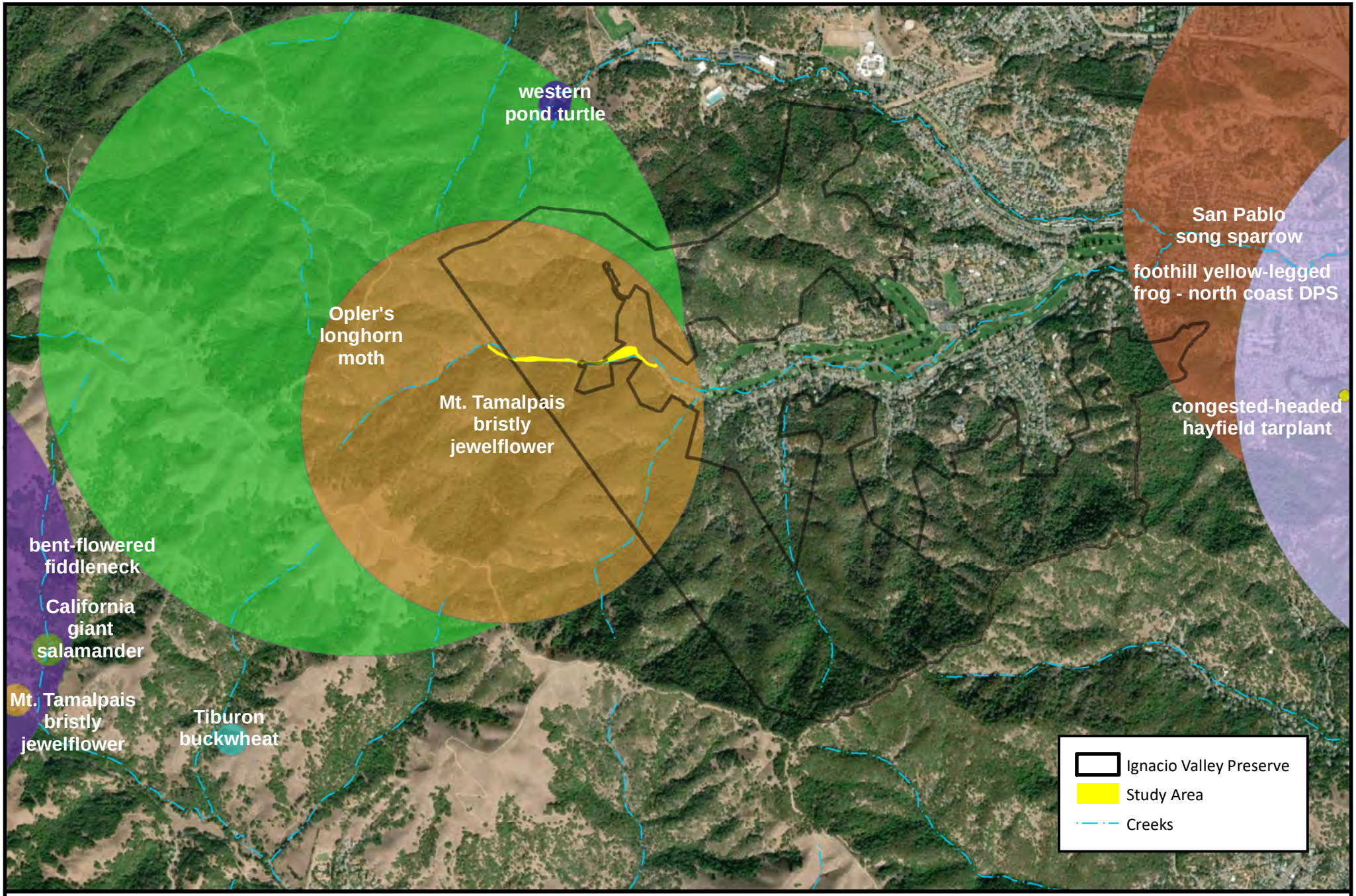

Figure 4. Reported Occurrences of Special-status Species
Buck Gulch Falls Trail Biological Resources Assessment
Ignacio Valley Preserve

August 2021
Aerial: ESRI
Preserve Boundary: Marin County
CNDDB: CDFW
Note: northern spotted owl occurrences not included due to sensitivity

Special-status Plant Species

Based on the background literature review, a number of special-status plant species were identified as having the potential to occur within the study area; see Figure 4. Species with reported observations in close proximity to the study site and/or in habitat types of relevance (e.g. grassland, woodland, chaparral) were evaluated. Table 2 lists these species, their listing status, habitat needs and potential for occurrence on the site; see *Special-status Species Evaluation Criteria*. No special-status plant species were observed by PCI within the study site. No federally or state-listed threatened or endangered species have been documented within the study area.

Table 2. Special-status Plants Evaluated for the Buck Gulch Falls Trail Study Area

Scientific Name	Common Name	Listing Status USFWS/ CDFW/ CRPR	Life Form, Blooming Period, and General Habitat	Potential for Species Occurrence
Amsinckia lunaris	bent-flowered fiddleneck	--/--/ 1B.2	Annual herb. Blooms March-June. Coastal bluff scrub, woodland, grassland. Typically on gravelly slopes, grassland, openings in woodland, often serpentine. 3-500 m.	Not likely to occur. Only one historic (1938) occurrence within 3 miles at the head of Nicasio Creek. Suitable habitat present, but species not observed.
Arctostaphylos montana ssp. montana	Mt. Tamalpais manzanita	--/--/ 1B.3	Perennial evergreen shrub. Blooms February-April. Serpentinite, rocky chaparral or grassland. 160-760 m.	Not likely to occur. No documented occurrences within 3 miles. Most of the potential suitable habitat for this species is beyond the study footprint. Species not observed.
Entosthodon kochii	Koch's cord moss	--/--/1B.3	Moss. Woodland, on open soil. 180-1000 m.	Not likely to occur. Documented occurrences within 3 miles. Potentially suitable habitat present, but species not observed.
Eriogonum luteolum var. caninum	Tiburon buckwheat	--/--/ 1B.2	Annual herb. Blooms May-September. Serpentinite, sandy to gravelly locations in chaparral, woodland, coastal prairie, and grassland. 0-700 m.	Not likely to occur. Multiple documented occurrences within 3 miles. No suitable microhabitat observed within 25 feet of the study area. Species not observed.
Hemizonia congesta ssp. congesta	white seaside tarplant (congested-headed hayfield tarplant)	--/--/ 1B.2	Annual herb. Blooms April-November. Grassland, sometimes roadsides. 20-560 m.	Not likely to occur. Documented occurrences within 3 miles. Suitable habitat present, but species not observed.
Hesperolinon congestum	Marin western flax	FT/CT/ 1B.1	Annual herb. Blooms April-July. Serpentinite chaparral and grassland. 5-370 m.	Not likely to occur. Documented occurrences on south side of Lucas Valley Road, east of Big Rock. No serpentine chaparral/grassland

Scientific Name	Common Name	Listing Status USFWS/ CDFW/ CRPR	Life Form, Blooming Period, and General Habitat	Potential for Species Occurrence
				observed within 25 feet of the study area. Species not observed.
Lessingia micradenia var. micradenia	Tamalpais lessingia	--/--/ 1B.2	Annual herb. Blooms June or July-October. Usually serpentinite, often roadsides, in chaparral and grassland. 100-500 m.	Not likely to occur. No documented occurrences within 3 miles. No serpentine chaparral/grassland observed within 25 feet of the study area. Species not observed.
Streptanthus glandulosus var. pulchellus	Mt. Tamalpais bristly jewel-flower	--/--/ 1B.3	Annual herb. Blooms May-July. Serpentinite in chaparral and grassland.	Not likely to occur. Documented occurrences near Big Rock. No serpentine chaparral/grassland observed within 25 feet of the study area. Species not observed.

Sensitive Natural Communities

The California Department of Fish and Wildlife (CDFW) ranks natural communities based on their rarity and vulnerability to human impacts. Communities listed as critically imperiled (Rank 1), imperiled (Rank 2), or vulnerable (Rank 3) within the state are considered special-status, defined as "communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects" (CDFW 2021b). Riparian and scrub forest plant communities and one forest alliance within the study area are considered sensitive. These include the arroyo willow thicket, bigleaf maple forest, and California bay forest alliances noted in Table 1 and mapped within the study area.

Jurisdictional Areas

Wetlands and other waters of the U.S. and the state of California are considered jurisdictional areas. Wetlands and other waters include a variety of both permanent and ephemeral aquatic features. Regulations and policies that protect aquatic habitats have been enacted by a number of government agencies. Wetlands and waters fall under the jurisdiction of the U.S. Army Corps of Engineers, local Regional Water Quality Control Board, California Department of Fish and Wildlife, and Marin County. Any fill, removal of native riparian vegetation, or alteration of drainage patterns require permits and resource agency consultation.

The study area supports a jurisdictional stream channel and several smaller tributary drainages. Arroyo de San Jose Creek is an intermittent stream channel mapped on the UGGS topo map. It has a defined bed and banks throughout the study area reach. Several small channels feed into the creek from the surrounding slopes. The channels are not mapped on the USGS topo map, but have defined channels and may be subject to federal, State, or local jurisdiction. No wetlands are present.

Special-status Animals

Based on the background literature review and biological surveys of the study area, a number of special-status animal species were identified as having the potential to occur within the study site; see Figure 4. Based on field observations and an assessment of the suitability of habitat within the study area and surrounding lands and proximity of recorded sightings, these species were evaluated for potential occurrence; Appendix C includes a comprehensive list of species evaluated. Listing status[2] is based on CDFW (2021c). Evaluation criteria are defined above in *Special-status Species Evaluation Criteria*.

PCI did not observe any special-status species during field surveys of the study site. One special-status bird has been documented within the Ignacio Valley Preserve by Marin County staff (MCOSD 2015) with potential habitat for additional species. The following section describes those species with moderate to high potential for occurrence within the study site and those species of regional significance and that were evaluated as part of the site analysis for the conceptual trail improvements. These include:

- Cooper's hawk (*Accipiter cooperii*, WL)
- White-tailed kite (*Elanus leucurus*, FP)
- Northern spotted owl (*Strix occidentalis caurina*, FT, ST)
- California giant salamander (*Dicamptodon ensatus*, SSC)
- Foothill yellow-legged frog (*Rana boylii*, SSC)
- California red-legged frog (*Rana draytonii*, FT, SSC)
- Western pond turtle (*Actinemys marmorata*, SSC)
- Steelhead – central California coast DPS (*Oncorhynchus mykiss irideus*, FT)
- Pallid bat (*Antrozous pallidus*, SSC, Western Bat Working Group, high priority species; see *Special-status and Common Bat Species* below)
- Townsend's big-eared bat (*Corynorhinus townsendii*, SSC, Western Bat Working Group, high priority species; see *Special-status and Common Bat Species* below)
- Hoary bat (*Lasiurus cinereus*, Western Bat Working Group, medium priority species; see *Special-status and Common Bat Species* below)

Birds

Over 502 bird species have been documented in Marin County, including 157 that are known to breed in the county (Shuford 1993). These include a wide range of species from habitat specialists to generalist, year-round residents, winter residents, summer residents, spring and fall migrants, and rare vagrants. Many of these species can and do occur within the study area. A number of native birds are listed as special-status species.

[2] Listing Status: FE-federally listed as endangered, FT-federally listed as threatened, BCC-Bird of Conservation Concern, ST- State listed as threatened, SE-State listed as endangered, Candidate ST-State candidate to be listed as threatened under CESA, FP-State of California fully-protected species, SSC-California Species of Special Concern, and WL-Watch List (CDFW 2021c).

The following special-status species have been documented within or near the Preserve and have potential to occur within the study area. Additional special-status species may also be present and will be protected in accordance with the RTMP BMPs to avoid and protect wildlife (MCOSD 2015).

Cooper's Hawk (*Accipiter cooperii*, WL)
Cooper's hawks are a medium-sized hawk of mature forests, open woodlands and brushlands. They are gray above and have pale orange barring below with short rounded wings and tail. They feed primarily of birds and small mammals. They are stealthy birds, pouncing on bred with rapid and powerful flight. Nests are constructed in forests and woodlands with tall trees and openings or edge habitats. Nests are constructed 25 to 50 feet off the ground and consists of a bulky structure of sticks and lined with finer material. Clutch size is typically 3 to 5 eggs. Young are capable of flight after about 4-5 weeks. Locally, this species typically breeds from February through August. This species declined in the mid-20th century due to the effects of pesticides, but populations are generally stable in most areas.

Cooper's hawks are a year-round resident in Marin County, but primarily as a winter resident and transient during fall migration (Shufford 1993). This species has documented breeding occurrences in central Marin County in the vicinity of the study area. This species has been documented on the Ignacio Valley Preserve by Marin County staff (MCOSD 2015). Cooper's hawks may be present within the study area during construction; birds may forage and nest within the study site. To protect Cooper's hawks, the RTMP BMPs to avoid and protect nesting birds would be incorporated into the concepts and implemented accordingly.

White-tailed Kite (*Elanus leucurus*, FP)
White-tailed kites are raptors of semi-open areas. They reside in open woodlands, bottomlands, and agricultural grasslands. They have a striking white coloration with black shoulders and gray back. They forage mostly on voles and other small mammals, and occasionally birds and insects, reptiles, and amphibians, by hovering and parachuting down to the ground for prey. Nesting sites include trees and tall bushes well above ground. Average clutch size is 4 to 5 eggs. Pairs are monogamous and breed from February to October, with peak nesting occurring from May to August. Females incubate the eggs and are tended by males during both incubation and nestling period.

White-tailed kites are an uncommon permanent resident in Marin County (Shufford 1993). This species has documented breeding occurrences in eastern Marin County in the vicinity of the study area. This species has not been documented in the Ignacio Valley Preserve by Marin County staff (MCOSD 2015) or PCI, but may still be present. The study site is mostly wooded with open grassland habitat limited to the Preserve entrance. Due to the habitat composition and levels of public use, white-tailed kites are not likely to be

present within the study area during construction, but birds may forage and nest within the larger Preserve. To protect white-tailed kites, the RTMP BMPs to avoid and protect nesting birds would be incorporated into any trail improvements.

Northern Spotted Owl (*Strix occidentalis caurina*, FT, ST)
Northern spotted owls occur from southern British Colombia south to Marin County, California. They are an uncommon, permanent resident of forest habitats with a dense closed canopy of mature and old-growth trees, with multi-layered canopies of varying size and age. These forests typically are 150-200 years old. They require these multi-layered closed canopies to for nesting, roosting, and foraging. In Marin County, at the southern edge of their range, the habitat associations differ. In this region, they can be found in younger forests with structural diversity and occasionally more open woodlands. The majority of the local territories in Marin County occur in canyon bottoms and mid-slope locations and often in association with perennial streams.

In Marin County, dusky-footed woodrats comprise the bulk of the northern spotted owls diet, making up over 75% of their diet by weight (Cormier 2020). They also prey on small mammals and birds. Northern spotted owls show strong site fidelity and commonly occupy the same home range year-round; the typically show strong site fidelity for nesting locations and activity centers[3]. They typically form long-term pair bonds. The breeding period generally lasts from early March through June, rearing two young per season. A pair of owls may utilize the same breeding site for 5 to 10 years; however, they may not breed every year. Individual territories are typically several hundred acres. The spotted owl has experienced a population decline due to the loss and degradation of existing mature and old growth forests and, most recently, the establishment of barred owls in the west.

Marin County populations of northern spotted owl have been closely monitored by Point Blue Conservation Science since 1997 (Cormier 2020; Point Blue 2020). Surveys have been completed on forests managed by Marin County Open Space District and Marin Municipal Water District to monitor populations over time (trends and reproductive success) and determine occupancy and nesting status. The National Park Service has also closely tracks owl populations on federal lands (Ellis 2018). Monitoring results are generally submitted to the California Department of Fish and Game that maintains a database (CNDDB) of reported nesting and activity centers for professionals. Due to the sensitivity of this species, northern spotted owl nesting locations are typically kept confidential.

[3] "Spotted owls have been characterized as central-place foragers, where individuals forage over a wide area and subsequently return to a nest or roost location that is often centrally-located within the home range" (Rosenberg and McKelvey 1999). Activity centers are a location or point within the core use area that represent this central location. Nest sites are typically used to identify activity centers, or in cases where nests have not been identified, breeding season roost sites or areas of concentrated nighttime detections may be used to identify activity centers" (U.S. Fish and Wildlife Service 2011)." CDFW 2019

The Ignacio Valley Preserve is within the range of the northern spotted owl and supports potentially suitable habitat. There is one reported observation of a northern spotted owl in the Preserve; an individual owl was reported 1.25 miles to the southeast of the study site in 2019 in a wooded drainage below Chicken Shack Fire Road (Marin County 2021). Directly to the northwest of the study site, there is an established northern spotted owl territory in the Indian Valley Preserve; owls have successfully produced young in a wooded area along the upper limits of Arroyo Avichi. There are also observations of individual owls in Loma Verde and Pacheco Valle adjacent to Ignacio Valley Preserve.

The study site supports mixed oak and riparian woodlands that could potentially support habitat for northern spotted owls. There are no reported nesting territories within Preserve and, the likelihood of nesting is low based on the proximity to development and current public uses. However, there is a known territory within 0.75 miles and the study site is within the home range for this species. Due to the close proximity to documented nesting occurrences and large home range of this species, the RTMP BMPs to avoid and protect northern spotted owls would be incorporated into any trail improvements.

Amphibians

California Giant Salamander (*Dicamptodon ensatus*, SSC)

Giant salamanders occur in wet coastal forests near permanent and semi-permanent streams and springs. This species is one of the largest terrestrial salamanders in North America. Breeding occurs mostly in spring, but sometimes fall. Eggs are laid in water and larvae exhibit an enlarged tail fin for swimming with external gills. They transform into land dwelling salamanders with lungs around 18 to 24 months. They consume a wide variety of animals from small invertebrates to salamanders, rodents, and lizard – they exhibit a sit and wait feeding style. This species is endemic to California. Habitat alteration is the primary threat to this species.

California giant salamanders are reported within several miles of the study site (CDFW 2021a). The nearest reported occurrence is from the adjacent Miller Creek watershed on the Lucas Valley Preserve; salamanders were reported in 2010 within 1.6 miles of the study site. Additional sightings are reported within 4.75 miles near Nicasio and within 4.3 miles in the San Geronimo Valley. There are no reported occurrences of California giant salamander within the Arroyo de San Jose Creek watershed in the CNDDB (CDFW 2021a).

Suitable upland habitat for California giant salamanders is present within the study site; however, suitable aquatic habitat (breeding) habitat is limited. The study site was evaluated during drought conditions and the stream channel supported only minimal flow and isolated pools. If under normal rainfall years, the creek supports perennial stream flows or perennial pools, salamanders could use the study site for breeding, but water would need to be present year-round for successful transformation of juveniles. A pool above Buck Gulch Falls may support persistent water and successful breeding habitat. If

suitable breeding habitat persists, salamanders could be present within the study site during all seasons. Adults could use the forest understory for refuge and terrestrial foraging habitat on a limited basis. All wildlife species will be protected in accordance with the RTMP BMPs to protect special-status wildlife species.

Foothill Yellow-legged Frog (*Rana boylii*, SSC) [Northwest/North Coast clade (including Marin County) of foothill yellow-legged frog is the only clade not listed as endangered under CESA]
Foothill yellow-legged frogs are found in or near partly shaded rocky streams from near sea level to 6,300 feet in a variety of habitats. Breeding generally occurs from mid-March to early June after high winter flows have subsided. Egg masses are attached to the downstream side of rock and gravel in shallow, slow, or moderate-sized streams. Tadpoles require 3 to 4 months to attain metamorphosis. Adults take aquatic and terrestrial invertebrates, and tadpoles graze along rocky stream bottoms on algae and diatoms. During all seasons, this species is generally found in or within close proximity to streams. Primary threats to this species include water management practices, non-native predators, pesticides, recreational activities along streams, habitat loss, and disease.

Historically, foothill yellow-legged frogs were found throughout Marin County based on a large number of specimens collected from 1891-1972 (CDFW 2021a). Foothill yellow-legged frogs have been extirpated from most of their former locations and watersheds within Marin County. The most significant population persists in Little Carson Creek and Big Carson Creek tributaries. There may be small remnant populations in Tomales Bay tributaries. A small population of frogs have been reported 2.5 miles to the west of the study site in the Nicasio Creek watershed. There is a small population in Cascade Canyon Creek, 5.75 miles south of the study site. There is a historic occurrence from the 1940s at Hamilton Army Airfield, 2 miles downstream of the study site. This population is possibly extirpated. There are no extant records of foothill yellow-legged frog in the Arroyo de San Jose Creek watershed (CDFW 2021a).

Suitable habitat for foothill yellow-legged frogs is not present within the study area. The study site was evaluated during drought conditions and the stream channel supported only minimal flow and isolated pools. Based on the observed conditions in spring, the study site does not appear to support persistent perennial flows required by this species. Stream flows within Arroyo de San Jose Creek would need to remain perennial during most years to support a sustainable populations of foothill yellow-legged frog. However, all wildlife species will be protected in accordance with the RTMP BMPs to protect special-status wildlife species.

California Red-legged Frog (*Rana draytonii*; FT, SSC)
California red-legged frogs are the largest native frog in the western U.S. with females reaching up to 5¼ inches in length and males being slightly smaller. They are most common in marshes, streams, lakes, reservoirs, ponds, and other water sources with plant cover. Breeding occurs in deep, slow-moving waters with dense shrubby or emergent vegetation from late November through April. Floating egg masses are attached to emergent vegetation near the water's surface. Tadpoles require 3½ to 7 months to attain metamorphosis. During the non-breeding season, California red-legged frogs can remain at the breeding site (in the presence or absence of water) or move into surrounding non-breeding habitats. Adults eat invertebrates and small vertebrates. Larvae are algal grazers. Factors contributing to declining populations include degradation and loss of habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native plants, impoundments, water diversions, degraded water quality, use of pesticides, and introduced predators. Predation by introduced species has been a significant factor in their decline, especially non-native American bullfrog, crayfish, and fish.

According to the CNDDB, there are no reported populations of California red-legged frog within 5 miles of the study site (CDFW 2021a). The nearest CNNDB sightings are reported on the Tiburon Peninsula and Lagunitas Creek. However, Marin County staff have documented frogs on Mount Burdell Preserve within 4.75 miles of the study site (MCOSD 2015). Suitable habitat for California-red legged frogs is not present within the study site. The study site does not support aquatic breeding habitat. There are nearby open space lands that support potential breeding sites, but none within suitable migration distances for this species. California red-legged frogs are not likely to be present within the study site; however, all wildlife species will be protected in accordance with the RTMP BMPs to protect special-status wildlife species.

Reptiles
Western Pond Turtle (*Actinemys marmorata*, SSC)
The western pond turtle was previously recognized as two subspecies, *Actinemys marmorata pallida* and *A. m. marmorata*. Based on recent genetic work, the subspecies have been split into two separate species – the southwestern pond turtle (*A. pallida*) and northwestern pond turtle (*A. marmorata*). In California, the northwestern pond turtle is restricted to "north of the San Francisco Bay area plus populations from the Great Central Valley north including the apparently introduced Nevada population..."(Nafis 2021 citing Spinks et al. 2014). The Marin County population is classified as the northwestern pond turtle. The California Department of Fish and Wildlife is only tracking the western pond turtle at the full species level (CDFW 2021a).

Pond turtles can reach up to 8 ½ inches in length. They are most commonly found in or near permanent or semi-permanent water sources in a variety of suitable habitats below

4,700 feet elevation. This omnivorous species requires basking sites, such as emergent logs, rocks, mud banks, or mats of aquatic vegetation, for thermoregulation. Underwater retreats are also required for predator avoidance. Nesting sites of this species have been found some distance, up to 1,300 feet or more, from aquatic habitat. Three to 14 eggs are laid in shallow holes dug by the female from April through August. Nest sites include, but are not limited to, areas with sparse vegetation of short grasses and forbs, in hard-packed clay or silt soils, and along south- or west-facing slopes. Eggs hatch in late summer or fall, but the juveniles remain buried until the following spring; thus, nests are vulnerable to trampling year-round. Pond turtles have also been found using upland sites for aestivation and overwintering. They are dietary generalists consuming a variety of food items including aquatic invertebrates, carrion, and vegetation. Pond turtles experienced a population decline across their range due to commercial hunting during the late 1800s and early 1900s when they were harvested for use in soups and stews. Continued threats to this species include loss and degradation of habitat and widespread introduction of non-native predators including bullfrogs and fish.

Pond turtles occur year-round in select Marin County streams, ponds, and reservoirs. Pond turtles are known to occur within the watershed. There is a small population of pond turtles directly north of the Ignacio Valley Preserve at Pacheco Pond in the Indian Valley Preserve (CDFW 2021a; PCI personal observation). CDFW (2013) also documented pond turtles during a stream inventory of Arroyo de San Jose Creek. Turtle were documented in the vicinity of the golf course which is downstream of the study site.

Suitable habitat for pond turtles is not present within the study site. The study site was evaluated during drought conditions and the stream channel supported only minimal flow and small isolated pools. Based on the observed conditions in spring, the study site does not appear to support deeper pools with persistent water and aquatic habitat refugia. Pond turtles could move upstream into the site on occasion, but are not likely to be present during the low flow season when construction would occur. However, all wildlife species will be protected in accordance with the RTMP BMPs to protect special-status wildlife species.

Fish

Steelhead – Central California Coast DPS (*Oncorhynchus mykiss irideus*, FT)

Steelhead are anadromous salmonids. They migrate upstream from the ocean during the rainy season, anytime from November to March. They typically spawn (mate and lay eggs) at the downstream edge of pools where cover habitat exists nearby for predator protection. Eggs are laid in a redd, a depression dug into cobble or gravel substrate. Steelhead can migrate out to the ocean after spawning and return in subsequent years to spawn again. Eggs hatch in 30 to 60 days, depending on stream temperatures. The newly hatched fish, alevins, stay in the gravel for a few additional weeks until their yolk sac is absorbed. When they emerge, they seek slow-water areas, often at the stream margins.

As they grow bigger, the juvenile fish move into faster water to feed on drifting insects. Juvenile steelhead remain in freshwater streams from 1 to 3 years, depending on their rate of growth. Rearing juveniles have many habitat requirements. Most importantly, they need sufficient, cool streamflow to transport drifting insects for feeding and cover habitat, such as undercut banks, woody material, boulders, and deep pools, to hide from predators and areas for refuge during high flows. When juveniles are large enough, they migrate out to the ocean as smolts. During out-migration, steelhead need adequate streamflow to swim past barriers and cover for predator protection.

Steelhead occur year-round in select Marin County streams. Leidy et al (2005) reports that the Arroyo de San Jose Creek watershed "has been found to support multiple age classes in the past". Recent observations of successful spawning and rearing have not been documented. Leidy et. al (2005) recommends further investigation to inform management of the watershed for steelhead. CDFW completed a stream inventory of the Arroyo de San Jose Creek watershed in 2009 (CDFW 2013). CDFW (2013) notes the watershed should be managed as an anadromous, natural production stream. Possible steelhead were observed in the lower watershed (lower 3,000 feet), but no fish were observed upstream. CDFW notes the presence of several potential fish barriers.

Based on PCI's observations in spring 2021, suitable habitat for steelhead is not present within the study site. The study site was evaluated during drought conditions and the stream channel supported only minimal flow and isolated pools. Based on the observed conditions in spring, the study site does not appear to support persistent perennial flows required by this species. Stream flows within Arroyo de San Jose Creek would need to remain perennial during most years to support a sustainable population of steelhead. However, all aquatic habitats with potential to support fish will be protected in accordance with the RTMP BMPs to protect special-status wildlife species.

Special-status and Common Bat Species

There are approximately 25 bat species with known occurrences within Northern California, and a number of these species have a high probability of occurring within the study area and adjacent lands. Bats are highly mobile with many being migratory. Foraging habitats range from woodlands, forests, and grasslands to open water. All of Marin County's bat species are insectivorous and feed by echolocation. Bats use caves, mines, buildings, bridges, tree hollows, and other natural and man-made crevices for roosting. Focused surveys for bats were not performed as part of this biological assessment; however, a number of bat species are likely to utilize the study site and surrounding forests. Three special-status bat species - pallid bat, Townsend's big-eared bat, and hoary bat are reported within the region (CDFW 2021a). Additional special-status bats may occur in the area, but bat species are typically underrepresented in the CNDDB as focused surveys are uncommon

Pallid Bat (*Antrozous pallidus*, SSC, Western Bat Working Group high priority species)
Pallid bats occur in grassland, shrubland, forest, and woodland habitats at low elevations up through mixed coniferous forests. They are most commonly found in open, dry habitats with suitable rocky areas for roosting. This species can also be found roosting in caves, crevices, mines, hollow trees, and buildings during the day. Night roosts generally consist of more open areas such as porches and open buildings. They are a social species forming small colonies. Pallid bats feed on large flightless arthropods which they capture from the ground – a unique foraging strategy in comparison with other bat species. The pallid bat is a yearlong resident throughout most of its range. During the non-breeding season, both sexes may be found roosting in groups of 20 or more individuals. Young (one to three, but typically twins) are born from April to July. As with many bat species, pallid bats are extremely sensitive to roosting site disturbance.

Pallid bats are reported within several miles of study site (CDFW 2021a). There is a reported occurrence within 2.5 miles to the south of the study site near Gallinas Valley from 2001; the sighting is a maternity colony documented in a residential structure but is assumed to be possibly extirpated. There is an additional material colony reported 4 miles to northwest of the study site near Stafford Lake; this colony is also assumed to be possibly extirpated. These was a collection made in the 1880s to the southwest of the study site. There are additional sightings over 5 miles from the study site.

Townsend's Big-eared Bat (*Corynorhinus townsendii*, SSC, Western Bat Working Group high priority species)
Townsend's big-eared bat occurs in low to mid-elevation mesic habitats including riparian, mixed forest, coniferous forest, prairies, and agricultural lands. They use edge habitat for foraging. Roosting sites include caves, mines, tunnels, buildings, and other man-made structures. Mating typically occurs in winter with single young born in May or June. Maternal roosts consist of a small number of females with young, typically less than 100 individuals. They occur throughout California but distribution is not well known.

Townsend's big-eared bats are reported within several miles of the study site (CDFW 2021a). There was a collection made in the 1930s within 1.25 miles of the study site, directly to the north. There are additional more recent sightings over 5 miles from the study site.

Hoary Bat (*Lasiurus cinereus*, Western Bat Working Group medium priority species)
Hoary bats occur in open habitat or habitat mosaics. They require medium to large trees for cover and habitat edges and/or open areas for foraging habitat. They tend to be solitary roosting in trees and foliage, and they are widespread in California except patchy in desert regions. Mating occurs during fall migration and young are born the following June. Their favored food is moths.

Hoary bats are reported within several miles of the study site (CDFW 2021a). There was a collection made in the 1930s within 4.75 miles of the study site directly to the west. There are additional more recent sightings over 5 miles from the study site.

Bat Summary: Suitable roosting and foraging habitat for bats is present within the study site and larger Preserve. Bats may roost in the large trees, especially in tree hollows and crevices, found within the study site. The study site also supports suitable foraging habitat and invertebrate food sources are likely to be abundant. However, no trees are proposed for removal, construction will occur only during daylight hours and will not interfere with the foraging ability of bats, and habitats will not be modified that would be detrimental to this taxon. The RTMP BMPs to protect special-status wildlife species and other relevant Marin County policies will be incorporated into the study and implemented.

Protected Nesting Birds

Nesting native bird species are protected under both federal and State regulations. According to U.S. Fish and Wildlife Service, under the federal Migratory Bird Treaty Act of 1918 (MBTA; 50 CFR 10.13,), "it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." Bald and golden eagles are also protected under the federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940.

Birds and their nests are also protected under the California Fish and Wildlife Code (§3503 and §3513). Under §3503, "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto". Under §3513, "it is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act". The federal Endangered Species Act and California Endangered Species Act also protect nesting threatened and endangered bird species.

Vegetation removal and/or construction activities in areas with suitable nesting habitat during the breeding period, typically February through August in this area, could result in nest abandonment or loss of native nesting birds unless appropriate actions are taken (e.g., preconstruction surveys, avoidance, monitoring, etc.; RHJV 2004). Precautionary protection measures should be in place to avoid impacts during any site disturbance within the study area from February through August.

8 Conclusions

MCOSD is currently exploring feasibility and opportunities to improve trail safety and habitat conditions along Arroyo de San Jose Creek in the Ignacio Valley Preserve. MCOSD retained PCI to complete a biological assessment of the study area to inform the planning effort. The following is a summary of key biological resources identified by PCI. **Upon completion of a final trail plan for the Buck Gulch Falls Trail Improvements, PCI will update this report and provide recommendations to protect biological resources in accordance with the California Environmental Quality Act (CEQA).** Based on the botanical and wildlife background literature, data search, and field surveys, the study area supports the following resources:

- Annual and perennial grasslands, shrublands, riparian forest, and woodlands are the dominant vegetation types within the study area. Habitat quality in all of the woody vegetation types is high. The woodlands are particularly diverse, supporting an array of native species within all layers of the vegetation profile. Of particular interest within the woodlands are the large swaths of yellow Douglas iris growing in the oak understory along the proposed trail alignment; see Figure 3.
- The arroyo willow thicket, bigleaf maple forest, and California bay forest alliances are considered sensitive based on CDFW ranking. County policies also protect native oak stands in general.
- Native trees are present along the proposed trail alignment including mature specimens. Tree roots and structural integrity should be protected during trail construction.
- Arroyo de San Jose Creek and several small drainages occur within the study area. The improvements would include two bridge crossings on Arroyo de San Jose Creek and at least two armored fill crossings on the ephemeral tributaries. These channels may be subject to federal, State, or local jurisdiction.
- No special-status plants were observed within the study area during plant surveys in April and July 2021, and none were determined to have significant potential to occur.
- No special-status animals were documented within the study area during a field survey in April 2021, but some special-status bird species have potential to occur.
- Habitat and wildlife corridors for a variety of native species (e.g., reptiles, amphibians, birds, mammals, and invertebrates) are present. The woodlands provide an important corridor for species occupying the Preserve, allowing them to move to and from the creek, which provides important food and water resources. The intact woodlands with limited interior trails buffer wildlife from recreational uses and leave some habitats within the Preserve intact.
- Nesting and/or non-nesting habitat is present for a number of native bird species, including several special-status species (i.e., Cooper's hawk).

- Suitable roosting and foraging habitat is present for special-status and common bat species; special-status pallid bat, Townsend's big-eared bat, and hoary bat have been documented in the region and additional bat species may be present.
- Patches of non-native invasive yellow starthistle and Harding grass are present within the study area and warrant treatment. The yellow starthistle is abundant in the grasslands while the Harding grass occurs in isolated locations. Yellow starthistle is a high priority species and Harding grass is a moderate priority species per Cal-IPC (Cal-IPC 2021).

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Appendix A

Photographs

Trailhead

Existing trail through coyote brush scrub

Yellow starthistle infestation along existing trail

Location of conceptual trail realignment

Existing trail through coyote brush scrub (left) and chaparral (right)

Willow stand along Arroyo de San Jose Creek

Existing trail as it enters the oak woodland habitat

Mature oaks to protect along trail

Creek crossing

Incised channel along existing trail

Grassland dominated by non-native grasses and forbs

Oak woodland

Coyote brush scrub along the riparian corridor

Yerba santa chaparral – sagebrush scrub along existing trail

Wood fern-dominated oak understory

Iris stand growing within a drainage in the oak understory

Bigleaf maple forest with native blackberry understory along existing trail

California bay forest

Madrone forest

Grasslands dominated by yellow star thistle

California kingsnake

California newt egg masses and adult in Arroyo de San Jose Creek

Pipevine swallowtail butterfly

Appendix B. Plant Species Observed

Common Name	Latin Name	Family - Common Name	Native (N) or Introduced (I)
bigleaf maple	*Acer macrophyllum*	Soapberry Family	N
deerweed	*Acmispon glaber*	Legume Family	N
chamise	*Adenostoma fasciculatum*	Rose Family	N
California maidenhair fern	*Adiantum jordanii*	Brake Family	N
California buckeye	*Aesculus californica*	Soapberry Family	N
bent grass	*Agrostis sp.*	Grass Family	varies
common fiddleneck	*Amsinckia intermedia*	Borage or Waterleaf Family	N
wiry snapdragon	*Antirrhinum vexillocalyculatum*	Plantain Family	N
Pacific madrone	*Arbutus menziesii*	Heath Family	N
common manzanita	*Arctostaphylos manzanita*	Heath Family	N
California pipe vine	*Aristolochia californica*	Birthwort Family	N
coastal sage brush	*Artemisia californica*	Sunflower Family	N
slender wild oat	*Avena barbata*	Grass Family	I
wild oat	*Avena fatua*	Grass Family	I
coyote brush	*Baccharis pilularis*	Sunflower Family	N
brook foam	*Boykinia occidentalis*	Saxifrage Family	N
rattlesnake grass	*Briza maxima*	Grass Family	I
ripgut brome	*Bromus diandrus*	Grass Family	I
soft chess brome	*Bromus hordeaceus*	Grass Family	I
Pacific false bindweed	*Calystegia purpurata*	Morning-Glory Family	N
milk maids	*Cardamine californica*	Mustard Family	N
bitter cress	*Cardamine oligosperma*	Mustard Family	N
Italian thistle	*Carduus pycnocephalus*	Sunflower Family	I
round fruit sedge	*Carex globosa*	Sedge Family	N
yellow star-thistle	*Centaurea solstitialis**	Sunflower Family	I
spikeweed	*Centromadia fitchii*	Sunflower Family	N
sticky chickweed	*Cerastium glomeratum*	Pink Family	I
soap plant	*Chlorogalum pomeridianum var. pomeridianum*	Century Plant Family	N
venus thistle	*Cirsium occidentale ssp. venustum*	Sunflower Family	N
miner's lettuce	*Claytonia perfoliata*	Miner's Lettuce Family	N
Chinese houses	*Collinsia heterophylla*	Plantain Family	N
jubata grass	*Cortaderia jubata*	Grass Family	I
hazelnut	*Corylus cornuta ssp. californica*	Birch Family	N
hedgehog dogtail	*Cynosurus echinatus*	Grass Family	I
orchard grass	*Dactylis glomerata*	Grass Family	I
canyon larkspur	*Delphinium nudicaule*	Buttercup Family	N
wild hyacinth	*Dichelostemma capitatum*	Lily Family	N
sticky monkeyflower	*Diplacus aurantiacus*	Lopseed Family	N

Common Name	Latin Name	Family - Common Name	Native (N) or Introduced (I)
wood fern	*Dryopteris arguta*	Wood Fern Family	N
rock lettuce	*Dudleya cymosa*	Stonecrop Family	N
blue wildrye	*Elymus glaucus*	Grass Family	N
California fuchsia	*Epilobium canum*	Evening-Primrose Family	N
yerba santa	*Eriodictyon californicum*	Borage or Waterleaf Family	N
naked buckwheat	*Eriogonum nudum*	Buckwheat Family	N
long beaked filaree	*Erodium botrys*	Geranium Family	I
red stemmed filaree	*Erodium cicutarium*	Geranium Family	I
seep monkeyflower	*Erythranthe guttata*	Lopseed Family	N
California poppy	*Eschscholzia californica*	Poppy Family	N
brome fescue	*Festuca bromoides*	Grass Family	I
California fescue	*Festuca californica*	Grass Family	N
annual ryegrass	*Festuca perennis*	Grass Family	I
checker lily	*Fritillaria affinis*	Lily Family	N
cleavers, goose grass	*Galium aparine*	Madder Family	N
cut-leaf geranium	*Geranium dissectum*	Geranium Family	I
crane's bill geranium	*Geranium molle*	Geranium Family	I
toyon	*Heteromeles arbutifolia*	Rose Family	N
oceanspray	*Holodiscus discolor*	Rose Family	N
Mediterranean barley	*Hordeum marinum ssp. gussoneanum*	Grass Family	I
farmer’s foxtail	*Hordeum murinum ssp. leporinum*	Grass Family	I
smooth cat's ear	*Hypochaeris glabra*	Sunflower Family	I
rough cat's ear	*Hypochaeris radicata*	Sunflower Family	I
Douglas iris	*Iris douglasiana*	Iris Family	N
ground iris	*Iris macrosiphon*	Iris Family	N
Pacific rush	*Juncus effusus ssp. pacificus*	Rush Family	N
gray rush	*Juncus patens*	Rush Family	N
hillside pea	*Lathyrus vestitus var. vestitus*	Legume Family	N
false babystars	*Leptosiphon androsaceus*	Phlox Family	N
woodland star	*Lithophragma affine*	Saxifrage Family	N
honeysuckle	*Lonicera hispidula*	Honeysuckle Family	N
miniature lupine	*Lupinus bicolor*	Legume Family	N
scarlet pimpernel	*Lysimachia arvensis*	Myrsine Family	I
coastal tarweed	*Madia sativa*	Sunflower Family	N
false Solomon’s seal	*Maianthemum racemosum*	Butcher's-Broom Family	N
mallow	*Malva sp.*	Mallow Family	I
pineapple weed	*Matricaria discoidea*	Sunflower Family	I
burclover	*Medicago polymorpha*	Legume Family	I
Torrey's melic	*Melica torreyana*	Grass Family	N
coyote mint	*Monardella villosa ssp. villosa*	Mint Family	N
canyon nemophila	*Nemophila heterophylla*	Borage or Waterleaf Family	N

Common Name	Latin Name	Family - Common Name	Native (N) or Introduced (I)
baby blue eyes	*Nemophila menziesii*	Borage or Waterleaf Family	N
sweet-cicely	*Osmorhiza berteroi*	Carrot Family	N
coffee fern	*Pellaea andromedifolia*	Brake Family	N
goldenback fern	*Pentagramma triangularis*	Brake Family	N
Harding grass	*Phalaris aquatica*	Grass Family	I
rusty popcornflower	*Plagiobothrys nothofulvus*	Borage or Waterleaf Family	N
English plantain	*Plantago lanceolata*	Plantain Family	I
California polypody	*Polypodium californicum*	Polypody Family	N
acrid polypody	*Polypodium calirhiza*	Polypody Family	N
western sword fern	*Polystichum munitum*	Wood Fern Family	N
fairy bells	*Prosartes hookeri*	Lily Family	N
coast live oak	*Quercus agrifolia*	Oak Family	N
black oak	*Quercus kelloggii*	Oak Family	N
valley oak	*Quercus lobata*	Oak Family	N
interior live oak	*Quercus wislizeni*	Oak Family	N
buttercup	*Ranunculus californicus*	Buttercup Family	N
Himalayan blackberry	*Rubus armeniacus*	Rose Family	I
California blackberry	*Rubus ursinus*	Rose Family	N
sheep sorrel	*Rumex acetosella*	Buckwheat Family	I
dock	*Rumex sp.*	Buckwheat Family	I
shinning willow	*Salix lasiandra var. lasiandra*	Willow Family	N
arroyo willow	*Salix lasiolepis*	Willow Family	N
blue elderberry	*Sambucus nigra ssp. caerulea*	Muskroot Family	N
Pacific sanicle	*Sanicula crassicaulis*	Carrot Family	N
bee plant	*Scrophularia californica*	Figwort Family	N
common sowthistle	*Sonchus oleraceus*	Sunflower Family	I
rough hedgenettle	*Stachys rigida*	Mint Family	N
common chickweed	*Stellaria media*	Pink Family	I
snowberry	*Symphoricarpos albus*	Honeysuckle Family	N
creeping snowberry	*Symphoricarpos mollis*	Honeysuckle Family	N
spreading hedgeparsley	*Torilis arvensis*	Carrot Family	I
poison oak	*Toxicodendron diversilobum*	Sumac or Cashew Family	N
Fremont's star lily	*Toxicoscordion fremontii*	False-Hellebore Family	N
rose clover	*Trifolium hirtum*	Legume Family	I
clover	*Trifolium sp.*	Legume Family	varies
subterranean clover	*Trifolium subterraneum*	Legume Family	I
giant wakerobin	*Trillium chloropetalum*	False-Hellebore Family	N
California bay	*Umbellularia californica*	Laurel Family	N
spring vetch	*Vicia sativa*	Legume Family	I
California wild grape	*Vitis californica*	Grape Family	N

Appendix C. Special-status Animal Species Evaluated for the Ignacio Valley Preserve – Buck Gulch Falls Trail Biological Assessment

The table below includes those animal species with CNDDB occurrences on the Novato 7 ½' USGS quadrangle and within a 5-mile buffer around the Preserve (CDFW 2021a and USFWS IPaC resource list (USFWS 2021). However, shore and marine birds (e.g., California least tern, western snowy plover), estuarine/marine fish (e.g., Delta smelt, tidewater goby), and other marine species (e.g., green sea turtle) were excluded from the table as suitable habitat is not present within the study area. Non-listed invertebrates reported as local interest species were also not included.

Common Name ***Scientific Name***	**Listing Status[4] USFWS/CDFW**	**Habitat Requirements**	**Potential for Occurrence[5] within the Study Area**
Birds			
Cooper's hawk *Accipiter cooperii*	--/WL	Forest hawk of open woodlands and brushlands. Forages for birds, chipmunks, and squirrels through forest and edge habitats. Nests in dense mixed forests, larger canyons, and riparian corridors typically in the fork of a tree. Cooper's hawks are a year-round resident in Marin County.	Present. This species has been documented in the Ignacio Valley Preserve by Marin County staff (MCOSD 2015). Cooper's hawks may be present within the study area during construction - birds may forage and nest within the study site.
white-tailed kite *Elanus leucurus*	--/FP	Raptor of semi-open areas. Forages for mostly small rodents by hovering and diving. Nests in trees and tall bushes. Year-round resident in Marin County in open woodlands, bottomlands, and agricultural grasslands. Kites are known to breed in lowland and grassland habitats in Marin County (Shuford 1993).	Low. Suitable habitat is present within the larger Preserve. However, due to the habitat composition and levels of public use within the study area, white-tailed kites are not likely to be present within the study area during construction.
California black rail *Laterallus jamaicensis coturniculus*	BCC/ST and FP	An elusive and seldom seen marsh bird. Occurs in tidal saltwater marshes dominated by pickleweed, cordgrass, and bulrush, and low-elevation freshwater marshes. Primarily occurs in marshlands around San Francisco Estuary and recently discovered (1994) in Sierra foothills. Constructs woven cup nest near ground. Consumes insects, seeds, and small crustaceans.	Not Present. Suitable habitat is not present within the study area. Rails are not likely to be present within the site.

[4] Listing Status: FE-federally listed as endangered, FT-federally listed as threatened, BCC-Bird of Conservation Concern, ST- State listed as threatened, SE-State listed as endangered, Candidate ST-State candidate to be listed as threatened under CESA, FP-State of California fully-protected species, SSC-California Species of Special Concern, and WL-Watch List (CDFW 2021c).

[5] See *Special-status Species Evaluation Criteria.*

Common Name *Scientific Name*	Listing Status[4] USFWS/CDFW	Habitat Requirements	Potential for Occurrence[5] within the Study Area
San Pablo song sparrow *Melospiza melodia samuelis*	BCC/SSC	This subspecies of song sparrow occurs in tidal marshes throughout the San Pablo Bay, including Richardson Bay. This species occurs year-round throughout its range. They are primarily associated with high marsh habitats dominated by picklweed. This species feeds primarily on terrestrial invertebrates. Breeding occurs from early March to July, nests are constructed low to the ground in gum plants (*Grindelia* spp.).	Not Present. Suitable marsh habitat is not present within the study area. This subspecies of song sparrow is not likely to be present within the site.
California Ridgway's rail *Rallus obsoletus obsoletus*	FE/SE, FP	Occupy salt and brackish marshes within the San Francisco and San Pablo Bays. Prefer habitat dominated by pickleweed (*Salicornia virginica*) and Pacific cordgrass (*Spartina foliosa*). Breeding occurs from mid-March through July, with peak activity in late June.	Not Present. Suitable habitat is not present within the study area. Rails are not likely to be present within the site.
northern spotted owl *Strix occidentalis caurina*	FT/ ST	Dense forest habitats in northern California. Requires multi-layered canopy cover for roosting sites. Breeding sites include tree or snag cavities or broken tops of large trees. Nocturnal hunter eating mostly small mammals. Year-round resident in Marin County where it is known from breeding occurrences in old-growth and mixed forest habitats. Species occupies a large territory, approximately 5 square miles. A pair of owls may utilize the same breeding site for five to 10 year.	Low. Suitable habitat is present within the larger Preserve. However, due to the habitat composition and levels of public use within the study area, northern spotted owls are not likely to be present within the study area during construction. See text for additional information.
Amphibians			
California giant salamander *Dicamptodon ensatus*	--/SSC	Occur in wet coastal forests near permanent and semi-permanent streams and springs. This species is one of the largest terrestrial salamanders in North America. Breeding occurs mostly in spring, but sometimes fall. Eggs are laid in water and larvae exhibit an enlarged tail fin for swimming with external gills. They transform into land dwelling salamanders with lungs around 18 to 24 months. They consume a wide variety of animals from small invertebrates to salamanders, rodents, and lizard – they exhibit a sit and wait feeding style. Endemic to California.	Low. Suitable upland habitat for California giant salamanders is present within the study area; however, suitable aquatic habitat (breeding) habitat is limited. See text for additional information.

Common Name *Scientific Name*	Listing Status[4] USFWS/CDFW	Habitat Requirements	Potential for Occurrence[5] within the Study Area
foothill yellow-legged frog *Rana boylii*	--/SSC	In or near partly shaded rocky streams that are shallow, slow, and moderately size from sea level to 6,300 feet. Breeding occurs from spring to early summer after high flows have receded. Eggs are laid at downstream end of rocks. Tadpoles require 3 to 4 months to attain metamorphosis. During all season, never found far from water.	Low. Suitable habitat for foothill yellow-legged frogs is not present within the study area. See text for additional information.
California red-legged frog *Rana draytonii*	FT/ SSC	Breeding habitat includes marshes, streams, lakes, reservoirs, ponds, and other water sources with plant cover. Breeding occurs in deep, slow-moving waters with dense, shrubby, or emergent vegetation. Breeds November through April depending on location. During the non-breeding season, California red-legged frogs can remain at the breeding site (in the presence or absence of water) or move into surrounding non-breeding habitats.	Low. Suitable habitat for California red-legged frogs is not present within the study area. See text for additional information.
Reptiles			
western pond turtle *Actinemys marmorata*	--/SSC	A year-round resident of Sonoma County, found in or near permanent or semi-permanent water sources (e.g., ponds, lakes, rivers, streams) with suitable basking sites and underwater retreats. Eggs are laid in shallow holes dug by the female from April through August. Eggs hatch in late summer or fall. In northern California, hatchlings can remain buried until the following spring. Turtles may use uplands for overland migration (movements up to 5 km) and nesting sites (nesting can occur over 500 m from water).	Low. Based on PCI's observations in spring 2021, suitable habitat for pond turtles is not present within the study area. See text for additional information.
Fish			
steelhead – central California coast DPS *Oncorhynchus mykiss irideus*	FT/--	Spawn in fresh water and mature at sea. Steelhead generally spend their first and sometimes second year of life in freshwater creeks and then one to four years at sea. They return to spawn in their natal streams as many as four times as they do not always die after spawning like other salmonids. Juvenile steelhead generally occupy glides and riffles and less frequently pools. Adult steelhead spawn from December through April in cool, clear, well-oxygenated streams	Low. Based on PCI's observations in spring 2021, suitable habitat for steelhead is not present within the study area. See text for additional information.

Common Name *Scientific Name*	Listing Status[4] USFWS/CDFW	Habitat Requirements	Potential for Occurrence[5] within the Study Area
		with pea to apple-sized gravel, usually at the head of a riffle.	
Mammals			
pallid bat *Antrozous pallidus*	--/SSC Western Bat Working Group high priority species	Grassland, shrubland, forest, and woodland habitats at low elevations up through mixed coniferous forests. A social species forming small colonies. Roosting sites include caves, mines, crevices, buildings, and hollow trees during day, more open sites used at night. Pallid bats feed on large flightless arthropods. A yearlong resident throughout most of its range. During non-breeding season, both sexes may be found roosting in groups of 20 or more individuals. One to three (typically twins) pups born from April to July.	Moderate. Pallid bats are reported within several miles of study site (CDFW 2021a). Suitable habitat is present within the study area. See text for additional information.
Townsend's big-eared bat *Corynorhinus townsendii*	--/SSC Western Bat Working Group high priority species	Low to mid-elevation mesic habitats including riparian, mixed forest, coniferous forest, prairies, and agricultural lands. Utilizes edge habitats for foraging. Roosting sites include caves, mines, tunnels, buildings, and other man-made structures. Mating typically occurs in winter with a single young born in May or June. Maternal roosts consist of a small number of females with young, typically less than 100 individuals.	Moderate. Townsend's big-eared bats are reported within several miles of study site (CDFW 2021a). Suitable habitat is present within the study area. See text for additional information.
hoary bat *Lasiurus cinereus*	--/-- Western Bat Working Group medium priority species	Occur in open habitat or habitat mosaics. Requires medium to large trees for cover and habitat edges and/or open areas for foraging habitat. Tend to be solitary roosting in trees and foliage, and they are widespread in California except patchy in desert regions. Mating occurs during fall migration and young are born the following June. Favored food is moths.	Moderate. Hoary bats are reported within several miles of study site (CDFW 2021a). Suitable habitat is present within the study area. See text for additional information.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE/SE, FP	Salt marshes and adjacent diked wetlands. Prefers habitat dominated by pickleweed, their primary foot source. Breeding occurs from spring through autumn. Nests constructed in wetland habitat with dense cover.	Not present. Suitable wetland/marsh habitat is not present within the study area.