

SURVEY FOR SPECIAL-STATUS VASCULAR PLANT SPECIES

For the proposed

**Eagle Canyon Fish Passage Project
Tehama and Shasta Counties, California**

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T30N, R1W, SE 1/4 Sec. 25, SE1/4 Sec. 24, NE ¼ Sec. 36 of the Shingletown 7.5' USGS Topographic
Quadrangle

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I. Executive Summary

A survey for special-status vascular plant species was conducted at the proposed Eagle Canyon Fish Passage Project, on North Fork Battle Creek, northeast of Red Bluff, in Shasta and Tehama Counties, California. The survey area (hereafter referred to as the Study Area) included all lands subject to potential direct and indirect project impacts, including an upstream and a downstream fish passage-improvement site (hereafter referred to the Lower Barrier and Upper Barrier Study Areas, potential staging and/or crane platform areas (on adjacent terrace/plateaus), potential access corridors (if overhead tramline is option), and north and south access roads. Two special-status plant species were encountered within the Study Area on the dates of survey: Butte County Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2) was encountered at several locations in the Upstream Study Area and tentatively identified at numerous others both Upstream and Downstream Study Areas (55 GPS-Mapped Points); Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2) was encountered at one site on the eastern side of the northern access road, at 6 sites along the margins of the southern access road, and at 3 locations in the vicinity of the southern staging area in the Lower Barrier Study Area. With exception to *Fritillaria* sp., all other plant taxa encountered on the dates of field surveys (April 5, 10, 2018) were identifiable to the level necessary to determine conservation status and scientific significance. No Federal or State-Listed plant species were encountered and suitable habitat for them is deemed lacking (J. Dittes pers. obs.). Follow-up surveys and GPS-mapping in the spring of 2019 will be required to determine the identity and extent of fritillary species in the Study Area. *Fritillaria eastwoodiae* identified in the Study Area should be protected, and direct and indirect impacts to plants and associated habitat avoided to the full possible and practicable extent. Mitigation is generally not required for CNPS List 4.2 species unless the population has particular conservation significance (e.g., outside of known range, the type locality, morphologically/genetically unique, etc.). With regard to Woolly Meadowfoam in the Study Area however, direct and indirect impacts are readily preventable. Avoidance measures are recommended. Direct impacts to mixed riparian woodland/scrub and riverine/aquatic habitat will occur within portions of the construction footprint. Mitigation measures for these natural resources will be developed by Tehama Environmental Solutions during the permitting process

II. Introduction

At the request of Tehama Environmental Solutions LLC, a survey for special-status vascular plant species was conducted for the proposed Eagle Canyon Fish Passage Project on (April 5, 10, 2018) (**Figures 1 and 2**). The purpose of the botanical survey was to ascertain the potential presence of any special-status plant species, to locate populations of rare plants if present, characterize vegetation and habitats, and to provide suggestions for mitigation measures for special-status botanical resources, if found.

III. Project Description

The proposed project is designed to increase upstream passage for adult Chinook Salmon and Steelhead Rainbow Trout at two locations within the banks of North Fork Battle Creek. These two locations are referred to as the Upstream and Downstream Barrier Sites. The existing physical barriers at each of the two locations are complexes of large boulders situated in the

stream. Project objectives include increasing water depth at low passage flows, reduction of channel velocity, reduction of vertical drops, increase existing pools or create new pools, reduction in overall slope of channel, and creation of variable swim paths. At the Lower Barrier Site, approximately 190 cubic yards of boulder and some bedrock will be removed from the canyon and placed on the plateau(s) above, or hauled off site. At the Upper Barrier Site, approximately 720 cubic yards of boulder, and potentially some bedrock will be similarly removed. At each of these sites, large boulders will be first broken down into sizes that can be removed either by helicopter, crane, or skyline yarding system. Equipment and materials will be brought into the canyon and placed by at least one of these methods. Potential staging/access areas are located on the level plateau/terrace on both the north and south sides of Eagle Canyon at both the Lower Barrier and Upper Barrier locations. An improved foot trail will provide pedestrian access for workers to the Upper Barrier Location from the west side of North Fork Battle Creek, above its confluence with Digger Creek. At both upper and lower sites, trees and shrubs will be removed or trimmed as necessary for required access and operation of helicopter, crane or skyline yarder (Michael Love & Associates 2017). Project implementation is planned for June 2019.

IV. Location

The proposed Eagle Canyon Fish Passage Project is located on North Fork Battle Creek, in the Cascade Range foothills northeast of the northern Sacramento Valley. The Project Area is situated approximately 25 air-miles northeast of downtown Red Bluff, 4.8 air-miles south by southwest of Shingletown, and 3.6 air-miles west by southwest of Manton; the portion of The Study Area on the north side of North Fork Battle Creek is in Shasta County, the portion on the south side is in Tehama County, CA (T30N, R1W, SE 1/4 Sec. 25, SE1/4 Sec. 24, NE 1/4 Sec. 36 of the Shingletown 7.5' USGS Topographic Quadrangle; see **Figure 1**).

V. Methods

A preliminary investigation was performed that included a query of The California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2018) for Tehama County. The California Department of Fish and Wildlife Natural Diversity Database was also queried for special-status plant species from the Shingletown, and surrounding eight USGS 7.5' Topographic Quadrangles (Clough Gulch, Inwood, Hagaman Gulch, Tuscan Buttes NE, Manton, Inskip Hill, Finley Butte; CDFG, 2018). In addition, the Consortium of California Herbaria was queried for special-status species recorded from the vicinity but not included in the CNDDDB (<http://ucjeps.berkeley.edu/consortium/>). The results of these database queries were used, along with consideration of site location and habitat (including parent material/soils), to compile a list of vascular plant species with potential to occur in the Study Area. This information is summarized in **Table 1 (Appendix-A)**.

The field survey was conducted by John Dittes on April 5 and 10, 2018. The survey was performed with aid of a map with project Study Area boundary on aerial photo-base. An intuitive-controlled survey was performed within the Study Area. To the extent possible, all areas subject to potential disturbance were assessed, along with a minimal 30-foot buffer. This included the lower and upper barrier locations in the stream, potential staging areas, and two graded dirt access roads, one entering the Study Area from the north, the other from the south (0.62-mile total). Because of

safety concerns and access constraints imposed by extremely steep canyons walls, large boulders and swift water, each of the two in-channel barrier sites were not completely surveyed. Habitat and vegetation within bed-and-bank were inspected with aid of quality color photographs obtained by project planners using a remote-controlled drone (Michael Love & Associates 2017). These aerial images show that the boulder and bedrock substrates within bed and bank of North Fork Battle Creek are mostly devoid of vegetation at both barrier locations.

All plant species encountered were identified to the taxonomic level necessary to determine legal status and scientific significance. Plants not readily identified in the field were identified later in the lab. Scientific names follow Baldwin et al. (2012); common names follow Janeway (2013). Plant species encountered during the field surveys are listed in **Table 2 (Appendix-B)**.

VI. Results: Setting, Habitats and Plant Species Encountered

- a) **Geology/Soils**: The Study Area is situated in the western foothills of the Southern Cascade Range. Eagle Canyon and surrounding plateaus and foothills are comprised of the Pliocene-Age Tuscan Volcanic Formation, which overlay older basalt, which is exposed in Eagle Canyon. Soils on the plateau east of the confluence of North Fork Battle and Digger Creeks are mapped as TcE (Toomes very rocky loam 0-50% slope). Soils associated with the relatively level terrace/plains on the north and south sides of the canyon include GsD (Guenoc loam 10-3-% slopes), GuD (Guenoc very rocky loam 0-30% slopes, TkB (Toomes very rocky silt loam 1-10% slopes). These soils are residuum derived from weathered basalt, tuff breccia, or volcanic breccia. An area along the southern access road is mapped as IcD (Inks very cobbly sandy clay loam 1-13% slopes). This soil is colluvium derived from fanglomerate over tuff. The canyon edges, slopes and walls are mapped as Rxf and Rtf (unweathered bedrock).
- b) **Topography**: The Study Area encompasses the sharply-incised canyons of North Fork Battle Creek and Digger Creek at their confluence, and the relatively flat terrace/plains on the north and south sides of the canyons. The streams and surrounding terrace/plains drain in a southwesterly direction. Slopes range from nearly level at places on the terrace/plains, to vertical along the incised canyon walls. Elevations range from ~1,705 feet above sea level along the northern access road at the northern boundary of the Study Area, to ~1,378 feet where North Fork Battle Creek passes across the western (downstream) boundary of the Study Area. The average stream-gradient between the eastern and western boundaries is ~7% (calculated from USGS Topographic Quadrangle).
- c) **Hydrology**: The principal hydrologic features in the Study Area are the perennial drainages of North Fork Battle and Digger Creeks, which have their confluence near the eastern boundary. North Fork Battle Creek is a tributary of the Sacramento River. North Fork Battle Creek joins South Fork Battle Creek at a point ~4.5 miles west of the Study Area. Battle Creek conveys the joined waters of the two branches to the Sacramento River; this confluence is ~14 air-miles to the west of the Study Area. In addition to these perennial streams, there are several small seasonal/ephemeral drainages on the property, these crossing both the northern and southern access roads. One of these seasonal drainages is indicated as a blue-line feature on the USGS topographic quadrangle. There

are also scattered small depressions and swales supporting seasonal wetland vegetation associated with the edges of the access roads and in portions of the southern staging area.

- d) **Disturbances:** Properties on the north and south sides of the Creeks are managed as seasonal dryland pasture. Evidence of livestock use is apparent along the access roads. There are previously-graded sites on the terrace/plains at canyon edge on both sides of North Fork Battle Creek. These were used in the past and are presently used as parking/equipment staging areas for activities associated with the Eagle Canyon Diversion Dam site. Within the canyon walls themselves, within the Study Area Boundaries, evidence of human disturbance is lacking.
- e) **Plant Communities:** Vegetation in the Study Area was characterized by species composition and habitat association (see **Figure 4**). Major plant communities include Annual Grassland/Herbland, Blue Oak Woodland/Savannah, and Mixed Foothill Woodland. Owing to prevalence of bedrock and general lack of soils along North Fork Battle and Digger Creeks, woody riparian species and herbaceous wetland vegetation is generally lacking. It was not mappable as a separate bio-community/vegetation type based on discernable signature on aerial imagery. General characteristics and species composition for each are as follows:

Annual Grassland/Herbland: This plant community dominates upland sites on the terrace/plains and slopes on both sides of the canyons of North Fork Battle and Digger Creeks. It comprises the understory of Blue Oak Woodland/Savannah, and openings and edges of Mixed Foothill Woodland and Chaparral. Species composition varies depending on site. On better-developed, deeper soils this community corresponds to the *Bromus (diandrus, hordeaceus)-Brachypodium distachyon* semi-natural stand, *Festuca perennis* semi-natural stand, or *Avena (barbata, fatua)* semi-natural stand of Sawyer et al. (2009). Thinner rockier soils support *Lasthenia californica-Plantago erecta-Festuca microstachys* alliance of Sawyer et al. (2009). Non-native annual grasses observed include Silver European Hairgrass (*Aira caryophyllea*), Slender Wild-oat (*Avena barbata*), False Brome (*Brachypodium distachyon*), Small Rattlesnake Grass (*Briza minor*), Soft Chess (*Bromus hordeaceus*), Foxtail Chess (*Bromus madritensis*), Poverty Brome (*B. sterilis*), Ripgut Brome (*B. diandrus*), Hedgehog Dogtail (*Cynosurus echinatus*), Annual Rye (*Festuca perennis*), Rattail Fescue (*Festuca myuros*), Medusahead (*Elymus caput-medusa*), Nitgrass (*Gastridium phleoides*) and Mediterranean Barley (*Hordeum. marinum* ssp. *gussoneanum*). Native grasses include Small Fescue (*Festuca microstachys*), Annual Hairgrass (*Deschampsia danthonioides*) and Three-awn (*Aristida oligantha*). One-sided Bluegrass (*Poa secunda* ssp. *secunda*), California Melic (*Melica californica*) were also observed. Native annual forbs include California Plantain (*Plantago erecta*), Blow-wives (*Achyrachaena mollis*), Fiddleneck (*Amsinkia intermedia*), Valley Tassels (*Castilleja attenuata*), Fitch's Spikeweed (*Centromadia fitchii*), Purple Clarkia (*Clarkia purpurea*), Fremont's Tidy-tips (*Layia fremontii*), California Goldfields (*Lasthenia californica*), Shiny Peppergrass (*Lepidium nitidum*), Wand Lessingia (*Lessingia virgata*), Bird's-Eye Gilia (*Gilia tricolor*), Q-tips (*Micropus californicus*), Marigold Navarretia (*Navarretia tagetina*), Downy Navarretia (*N. pubescens*), Hoary Popcorn-flower (*Plagiobothrys canescens*), Common Popcorn-flower (*Plagiobothrys nothofulvus*), Dwarf-stonecrop (*Sedella pumila*), Foothill Clover

(*Trifolium ciliolatum*), Cowbag Clover (*T. depauperatum*), Deceptive Clover (*T. bifidum* var. *decipiens*), White-tipped Clover (*T. variegatum*), Tomcat Clover (*T. wildenovii*), Small-Head Clover (*T. microcephalum*), Johnnytuck (*Triphysaria eriantha*) and others. Native geophytes include White Onion (*Allium amplexans*), Yellow Mariposa Lily (*Calochortus luteus*), Narrow-leaved Soaproot (*Chlorogalum angustifolium*), Wavy-leaved Soaproot (*C. pomeridianum*), Blue Dicks (*Dichelostemma capitatum*), Round-Toothed Ookow (*Dichelostemma multiflorum*), and White Triteleia (*Triteleia hyacinthina*). Non-native forbs observed include Hedge Parsley (*Torrilis arvensis*, *T. nodosa*), Yellow Star-thistle (*Centaurea solstitialis*), Long-beaked Hawkbit (*Leontodon saxatilis*), Filaree (*Erodium cicutarium*, *E. botrys*), Smooth Cat's-ear (*Hypochaeris glabra*), Bur Clover (*Medicago polymorpha*), Grasspink (*Petrorhagia dubia*), Hop Clover (*Trifolium dubium*), Rose Clover (*T. hirtum*), Sessile-headed Clover (*T. glomeratum*), Dove's-foot Geranium (*Geranium mollis*), Smartweed (*Polygonum aviculare*), Sandspurrey (*Spergularia* sp.) and others.

Chaparral: Chaparral is associated with portions of the relatively level terrace on the southern side of the canyon in the eastern portion of the Study Area. Chaparral intergrades with Blue Oak Woodland Savannah, Mixed Foothill Woodland and with Valley and Foothill Annual Grassland. Depending on site, vegetation corresponds to the Buck Brush Chaparral (*Ceanothus cuneatus* Shrubland Alliance) of Sawyer et al. (2009). This bio-community/vegetation type is characterized by a dense, closed canopy of shrub species, generally dominated by Buckbrush (*Ceanothus cuneatus*); in places this species forms an almost pure stand. Depending on site, other shrubs observed include Holly-leaved Redberry (*Rhamnus illicifolia*), California Flannel-Bush (*Fremontodendron californicum*), Big Manzanita (*Arctostaphylos manzanita* ssp. *manzanita*), Sticky-leaved Manzanita (*A. viscida* ssp. *viscida*), Skunkbush (*Rhus aromatica*), Poison Oak (*Toxicodendron diversilobum*) and Yerba Santa (*Eriodictyon californicum*). Chaparral Honeysuckle (*Lonicera interrupta*) and Chaparral Clematis (*Clematis lasiantha*) are also present. Where the canopy is completely closed, the herbaceous understory is sparsely vegetated with some grass and herb species shared in common with surrounding Valley and Foothill Annual Grassland/Herbland, and with Blue Oak Woodland/Savannah and Mixed Foothill Woodland communities.

Blue Oak Woodland/Savannah: This woodland type occurs on the level terrace/plains along both the northern and southern access roads. Blue Oak Woodland/Savanna intergrades with Valley and Foothill Annual Grassland/Herbland, which comprises the herbaceous layer. In areas it also intergrades with Mixed Foothill Woodland and Chaparral. Depending on site, vegetation corresponds to the Blue Oak Woodland (*Quercus douglasii* Woodland Alliance) of Sawyer et al. (2009). Other tree species observed in this mapped vegetation type include scattered Interior Live Oak (*Quercus wislizenii*), Foothill Pine (*Pinus sabiniana*), and California Juniper (*Juniperus californica*). Where present shrubs species include Buckbrush (*Ceanothus cuneatus*), Holly-leaved Redberry (*Rhamnus illicifolia*), Skunkbrush (*Rhus aromatica*), Poison Oak (*Toxicodendron diversilobum*) and occasional others shared with surrounding Chaparral and Mixed Foothill Woodland communities.

Mixed Foothill Woodland: This woodland type occurs along the canyon edge, slopes and walls, as well as with scattered sites on the relatively level terrace/plains along the southern access road. Mixed Foothill Woodland intergrades with Blue Oak Woodland/Savannah and Chaparral. In comparison to the latter, the canopy is dense and mostly closed. Depending on site, vegetation corresponds to the Canyon Live Oak Forest (*Quercus chrysolepis* Forest Alliance) and/or to the Interior live Oak Woodland (*Quercus wislizenii* Woodland Alliance) of Sawyer et al. (2009). In addition to Blue Oak, Interior Live Oak, and Canyon Live Oak (*Q. chrysolepis*), other trees observed include California Bay (*Umbellularia californica*), Foothill Pine (*Pinus sabiniana*), occasional California Black Oak (*Q. kelloggii*), California Juniper (*Juniperus californica*), and on the north-facing slope in the canyon, California Nutmeg (*Torreya californica*). Along the immediate edge of North Fork Battle and Digger Creeks, occasional White Alder (*Alnus rhombifolia*) occur. Shrubs observed include Buckbrush (*Ceanothus cuneatus*), Deerbrush (*Ceanothus integerrimus*), Holly-leaved Redberry (*Rhamnus illicifolia*), Hoary Coffeeberry (*Frangula tomentosa* ssp. *californica*), California Snowbell (*Styrax redivivus*), Lemmon's Keckiella (*Keckiella lemmonii*), Western Redbud (*Cercis occidentalis*), California Flannel-bush (*Fremontodendron californicum*), California Buckeye (*Aesculus californica*), Big Manzanita (*Arctostaphylos manzanita* ssp. *manzanita*), Sticky-leaved Manzanita (*A. viscida* ssp. *viscida*), Skunkbush (*Rhus aromatica*), Poison Oak (*Toxicodendron diversilobum*), Common Snowberry (*Symphoricarpos albus* var. *laevigatus*) and Yerba Santa (*Eriodictyon californicum*). Chaparral Honeysuckle (*Lonicera interrupta*) and Chaparral Clematis (*Clematis lasiantha*) are also present. Composition of the herbaceous layer varies by site. Annual grasses and herbs include many in common with surrounding Foothill Annual Grassland/Herbland (see description). Mixed Foothill Woodland has greater diversity of native perennial herbs than do surrounding Foothill Annual Grassland, Chaparral and Blue Oak Woodland/Savannah types. Native grasses observed include Torrey's Melica (*Melica torreyana*), California Melic (*M. californica*), One-sided Bluegrass (*Poa secunda*), and Needlegrass (*Nassella* sp.). Commonly observed perennial forbs include Purple Sanicle (*Sanicula bipinnatifida*), Pacific Sanicle (*S. crassicaulis*), Hartweg's Tauschia (*Tauschia hartwegii*), California Pipevine (*Aristolochia californica*), Large-flowered Woolly Sunflower (*Eriophyllum lanatum* ssp. *grandiflorum*), Jepson's Barberry (*Berberis aquifolium*), Hound's-tongue (*Cynoglossum grande*), Bastard Toadflax (*Comandra umbellata*), Yellow Star-lily (*Calochortus monophyllus*), Sierra Fawn-lily (*Erythronium multiscapideum*), California Bird's-foot Fern (*Pellaea mucronata*), Gold-back Fern (*Pentagramma triangularis*), Red Larkspur (*Delphinium nudicaule*), Western Buttercup (*Ranunculus occidentalis*), Narrow-leaved Climbing-bedstraw (*Galium porrigens* var. *tenue*), Twining Ookow (*Dichelostemma volubile*). Thin soils and crevices on bedrock support Hansen's Spike-moss (*Selaginella hansenii*), Canyon Live-forever (*Dudleya cymosa*) and Broad-leaved Stonecrop (*Sedum spathulifolium*).

Mixed Riparian Woodland/Scrub: This plant community/vegetation type is typically associated with streams in the vicinity. Within the Study Area however, the boulder-congested bed and nearly vertical bedrock banks of North Fork Battle and Digger Creeks are mostly devoid of soil and are barren of hydrophytic vegetation. There is no discernable signature on aerial photo separating a mappable riparian vegetation type.

Mixed Foothill Woodland dominates the lower canyon walls and boulder banks, where the latter are vegetated. Since access and safety issues precluded pedestrian survey and direct observation of the banks and lower walls of Eagle Canyon (particularly the lower fish-passage improvement site), precise characterization of woody and herbaceous riparian species was not possible. Where the creeks were accessible directly (near creek confluence), where observable from the edge of the canyon and from inspection of detailed aerial drone-obtained photos, woody riparian vegetation appears to be comprised mainly of a few scattered White Alder (*Alnus rhombifolia*). In addition to White Alder, other species observed along the riparian corridor include California Grape (*Vitis californica*), Edible Fig (*Ficus carica*), Himalayan Blackberry (*Rubus armeniacus*), California Blackberry (*R. urisinus*), Chain-fern (*Woodwardia fimbriata*), Hedge-Nettle (*Stachys* sp.). Water-Cress (*Nasurtium officinale*), Common Monkey-flower (*Mimulus guttatus*) and Torrent Sedge (*Carex nudata*) are likely present. The remainder of woody and herbaceous species observed along the lower canyon walls and stream appear to be those shared in common with the surrounding upland Mixed Foothill Woodland type.

Seasonal Wetland: Seasonal wetland vegetation is associated with a few scattered depressions and swales that occur along the margins of the northern and southern access roads and with a few sites on and near the graded staging areas. These were not mapped separately. Vegetation is dominated by marginally hydrophytic non-native grasses, including Mediterranean Barley (*Hordeum marinum* ssp. *gussoneanum*) and Annual Rye (*Festuca perennis*). Sub-dominant species include some of those associated with nearby vernal pools, including Annual Hairgrass (*Deschampsia danthonioides*), Toadrush (*Juncus bufonius*), Oregon Woolly-marbles (*Psilocarphus oregonus*), Cut-Leaved Plantain (*Plantago coronopus*), Elongate Plantain (*Plantago elongata*), Water Pygmyweed (*Crassula aquatica*), Stalked Popcorn-flower (*Plagiobothrys stipitatus*), Fremont's Goldfields (*Lasthenia fremontii*), Cowbag Clover (*Trifolium depauperatum*), White-tipped Clover (*T. variegatum*), Sacramento Valley Pogogyne (*Pogogyne zyziphoroides*), Purselane Speedwell (*Veronica peregrina* ssp. *xalapensis*), Hyssop Loosestrife (*Lythrum hyssopifolium*), and others. The rare Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2) was encountered in several of these seasonal wetlands (see **Section VII**).

VII. Results: Special-Status Plant Species:

The 2018 Online CNPS Inventory lists 129 special-status plant taxa for Tehama County and 191 for Shasta (CNPS 2016). Some of these are currently listed, or are candidates for inclusion on state and federal lists. Several of these special-status species are known to occur in the general vicinity of the Project or have potentially suitable habitat present. **Table 1** summarizes the results of the CNDDDB, CNPS Inventory, and CSUC Herbarium database queries for sensitive plant species with geographic and elevation ranges that overlap with the Eagle Canyon Fish Passage Project Study Area.

No special-status vascular plant species have been previously documented from within the Study Area as indicated by the database queries, nor were any previously documented in the analysis of the Eagle Canyon Dam removal project. Timing of the 2018 field surveys was such that all potentially occurring species included in the database queries would have been

identifiable at least to the level of genus (see **Table 1**), if present. Plant species observed and documented during the 2018 field surveys are summarized in **Table 2**. During these surveys, sub-populations of Fritillary (*Fritillaria*) species were encountered that were past flower and thereby not identifiable to the level necessary to make determination of significance. All other plants encountered were identifiable to the necessary level.

This 2018 field survey revealed the presence of two special-status vascular plant species in the Study Area, **Butte county Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2)** and **Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2)**: No Federal or State-Listed plant species were encountered and suitable habitat for them is lacking (J. Dittes pers. obs.).

Butte county Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2): Butte County Fritillary was positively identified at several locations in the study area on the terrace/plain edge and north-facing slope on the south side of Digger and North Fork Battle Creek in the eastern portion of the Study Area during the April 5 field survey. It was noted too, plants identified as Checkered Fritillary (*F. affinis*) and Scarlet Fritillary (*F. recurva*) were also encountered that day. Unfortunately, timing of surveys was such that numerous Fritillary subpopulations, comprising thousands of individuals were encountered post-flowering on that day and on the second day of survey (April 10). Identification to species was not possible for the vast majority of Fritillary plants encountered. A total of 55 GPS-mapped locations indicate the distribution of *Fritillaria* sp. encountered in the Study Area (see **Figures 4a, 4b, 4c**). The number of plants at each of these locations ranges from a few individuals to swaths of several hundred. This species is known from 234 extant, and one possibly extirpated CNDDDB Occurrences in Butte, El Dorado, Nevada, Placer, Shasta, Tehama and Yuba Counties, and Oregon. It occurs on 42 USGS 7.5' Topographic Quadrangles. This species has been assigned a CNPS Rank of 3.2, meaning more information is needed (regarding taxonomy), and it is fairly endangered in California. It is thought that Tehama and Shasta County populations represent a different, as yet undescribed species. This has been supported by recent molecular studies (J. Nelson pers. comm.). It has been suggested that *Fritillaria eastwoodiae* might appropriately be changed to CNPS Rank 1.B (CNPS 2018). It has been assigned a State Rank of S3 and Global Rank of G3Q meaning it is "Vulnerable". Butte County Fritillary is threatened from logging, development, vehicles, road maintenance, recreation activities, altered fire regimes, erosion, non-native plants and over-shading (CNPS 2018). Throughout its range, it is associated with Chaparral, Cismontane Woodland and openings in Lower Coniferous Forest. In the Study Area it is associated with Mixed Foothill Woodland, mostly on shaded slopes within the canyons, under trees and at the bases of topographic ledges and rock outcrops. There are a few colonies under the driplines of trees in Blue Oak Woodland/Savannah and the edges of Chaparral.

Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2): Woolly Meadowfoam was encountered at several locations along reaches of both the north and south access roads; some of these colonies are situated within the southeast portion of the Construction Site Study Area (see **Figure 5**). Colonies ranged from a few individuals to several dozen; one colony included approximately 200 plants. This species is known from 54 extant occurrences in Butte, Lake, Lassen, Napa, Shasta, Siskiyou, Tehama and Trinity Counties in California, and in Oregon. It occurs on 39 USGS topographic quadrangles). This species has

been assigned a CNPS Rank of 4.2, meaning it is uncommon and fairly very endangered in California. It has been assigned a State Rank of S3, meaning it is vulnerable in California; with a Global Rank of G4T4, it is deemed apparently secure, considering occurrences outside of California. Woolly Meadowfoam is threatened by grazing, road widening, and potentially by development and non-native plant species (CNPS 2018). Throughout its range, it is associated with vernal moist habitats, including seasonal wetlands and vernal pools in Chaparral, Cismontane Woodland and Valley and Foothill Annual Grassland communities. In the Study Area, Woolly Meadowfoam is associated with seasonal wetland vegetation in shallow swales, ephemeral drainages and seasonally wet depressions.

VIII. Potential Impacts

Implementation of the proposed project has potential to directly and indirectly impact populations of two special-status vascular plant species; **Butte county Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2)** and **Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2)**.

Butte county Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2): Butte County Fritillary was positively identified in the Upper Barrier Study Area, on the and north-facing slope and plateau edge on the south side of Digger and North Fork Battle Creek. Numerous other fritillary plants encountered during the 2018 field surveys, in both the Upper and Lower Barrier Study Areas, were just past flower and unidentifiable to species. Since two common species, scarlet Fritillary and Checkered Fritillaria, are also known from the vicinity, it cannot be assumed that all fritillaria mapped in the Study Area are the rare Butte County Fritillary. Once follow-up surveys are conducted in the spring of 2019 and taxonomic determination made, potential impacts to the rare species can be accurately assessed.

Direct impacts to fritillaria plants in both the Lower and Upper Barrier Study Areas may be incurred from any disturbance to soils and woody vegetation resulting as a consequence of project implementation. Vegetation clearing, grading, trail construction, vehicle/equipment access, foot traffic, equipment operation, transportation/placement of materials and rock, all may potentially disturb soils and destroy plants. Indirect impacts to plants in the vicinity of soil and vegetation disturbances may result mainly as they relate to changes in light, precipitation runoff and seasonal soil-moisture regime, and potentially increased exposure to herbivores.

Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2): Woolly Meadowfoam was encountered at seven sites along the access roads and at three sites on the plateau in the southern portion of the Lower Barrier Study Area. Potential direct impacts may be incurred as a consequence of project implementation. Road improvement and off-road vehicle traffic may impact plants along the southern access road. The single location along the Northern Road is relatively safe from vehicle impacts since the road is in good condition there, and the ephemeral stream incised and passing under the road via culvert pipe. Plants at the 3 GPS-mapped locations within the Lower Barrier Study Area may be directly impacted by site-preparation/grading, vehicle travel, pedestrian travel, equipment staging/operation, and placement of rock. Indirect impacts may result from any soil-disturbance in the vicinity of plants that might alter site hydrologic regime.

Riverine-Aquatic, Riparian and Seasonal Wetland Habitat: There will also be direct and indirect impacts to small areas of Mixed Riparian Woodland/Scrub, Riverine-Aquatic and Seasonal Wetland habitats. These sensitive habitat areas are potentially jurisdictional and under regulation of the United States Army Corp of Engineers (USCOE under authority of Section 404 of the Clean Water Act, and of California Department of Fish and Wildlife (CDFW) under Section 1600 of the Fish and Game Code. These potential impacts and proposed mitigation measures for riparian and wetland habitats is addressed in a separate report (Tehama Environmental Solutions, 2018).

IX. Mitigation Measures

Butte county Fritillary (*Fritillaria eastwoodiae*; CNPS Rank 3.2): For several reasons, it is recommended that potential impacts to *Fritillaria eastwoodiae* populations in the Study Area be avoided and protected to the fullest extent that is possible and practicable. First, these populations are near the northern range of the taxon's distribution. Second, Shasta and Tehama County populations are suggested by some to be possibly represent a currently-undescribed taxon. And thirdly, it has been suggested that Butte County Fritillary may deserve designation as a CNPS Rank 1.B Species, which may be considered potential candidates for formal listing under State and/or Federal Endangered Species Acts. For these reasons, follow-up surveys will be required during Spring 2019 during which taxonomic determination is made and the full extent and distribution of the rare Fritillary determined and GPS-mapped. Once these tasks are complete, the following mitigation measures are recommended to avoid and minimize adverse effects:

- 1) Among options considered for bringing in equipment and supplies, and for removing rock from the canyon (Helicopter, Crane, Skyline Yarder), choose the method that will require the least disturbance to soil and woody vegetation. Ideally, plants should be protected from direct impacts of soil and vegetation disturbance, and indirect effects owing to alterations in physical condition of habitat (e.g., alteration in light/shade, changes to upslope and site-specific hydrologic regime, exposure to herbivory).
- 2) Establish a minimum 30-foot protective buffer around Fritillary plants/colonies that occur on the canyon edges/plateau, which might be subject to impacts relating to vegetation disturbance, equipment and materials staging, equipment operation, and placement of rocks removed from the canyon.
- 3) For any proposed access trail extending downslope to the Creek in the Upper Barrier Study Area, delineate a route that will avoid Fritillary plants to the maximum extent possible, and which will require the least amount of disturbance to soil and woody vegetation. Use plastic flagging and/or plastic orange barrier fence to define the route and boundaries of allowable pedestrian traffic.
- 4) Use orange plastic barrier fence to mark the outer boundaries of the minimum 30-foot protective buffer established around each Fritillary subpopulation.

- 5) Educate those involved with project implementation regarding Butte County Fritillary and other sensitive biological resources present. All participants will be made aware of the purpose and locations of the orange plastic barrier fences. Photographs will be provided of Fritillary plants, flowers and mature fruits to all workers who walk or operated machinery/equipment in the Study Area.
- 6) Ensure that any materials brought in for slope-protection and erosion control be certified weed-seed free.
- 7) Ensure that vehicles and equipment be washed and are free of seeds and propagules of invasive plant species before entering the Study Area, and again washed before leaving the Study Area.

Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2): Mitigation measures are generally not proposed for CNPS Rank 4.2 species, unless the population is “unique” in some way (e.g., outside of geographic or elevation range, type locality, morphologically/genetically-distinct, etc.). With regard to this project however, sub-populations of Woolly Meadowfoam can be readily protected via the following proposed pre-project avoidance measures:

- 1) If road improvements are anticipated, it is recommended that all road improvement activities be conducted in such a manner that disturbances are confined to the already disturbed road prism.
- 2) It is recommended that all vehicles will be restricted to the existing disturbed road prism. Prior to project commencement, designated parking and passing areas will be established, mapped along segments of the road that are free of Woolly Meadowfoam. These designated pull-off areas will be clearly marked on the ground with colored pin flags. Pin flags of a different color will be used to demarcate those reaches of road along which Woolly Meadowfoam exists. All operators will be educated and made aware of the sensitive resource and avoidance measures. If practicable, orange barrier fencing will be placed around the seasonal wetland and Woolly Meadowfoam located near the southern staging area in the Lower Barrier Site Study Area.
- 3) Ensure that any materials brought in for slope-protection and erosion control be certified weed-seed free.
- 4) Ensure that vehicles and equipment be washed and are free of seeds and propagules of invasive plant species before entering the Study Area, and again washed before leaving the Study Area.

Sensitive Habitats: Implementation of the Project may result in impacts to small areas of potentially jurisdictional Riparian Woodland/Scrub, Seasonal Wetland and permanent aquatic habitats. Direct and indirect impacts to these sensitive habitats should be avoided or minimized to the degree possible. Appropriate mitigation measures will be developed by Tehama Environmental Solutions (TES) during the permitting process and in consultation with lead agencies.

Invasive Species: Invasive species encountered in the Study Area include Yellow Star-Thistle (*Centaurea solstitialis*), Milk-Thistle (*Silybum marianum*), Klamathweed (*Hypericum perforatum*), Himalayan Blackberry (*Rubus armeniacus*) and Edible Fig (*Ficus carica*). All of these species are well-established in the region. There are several other species which are spreading in the region but which were not observed in the Study Area, including, but not limited to Goatgrasses (*Aegilops cylindrica*, *A. triuncialis*), Puncture Vine (*Tribulus terrestris*) and Stinkweed (*Dittrichia graveolens*). To prevent introduction of invasive plants species into, or spreading from the Study Area, it is recommended that all vehicles and equipment be washed before entering or leaving the site. In addition, all erosion-control materials (e.g., straw, seed-mixes) that might be used should be certified “Weed-Free”.

X. References

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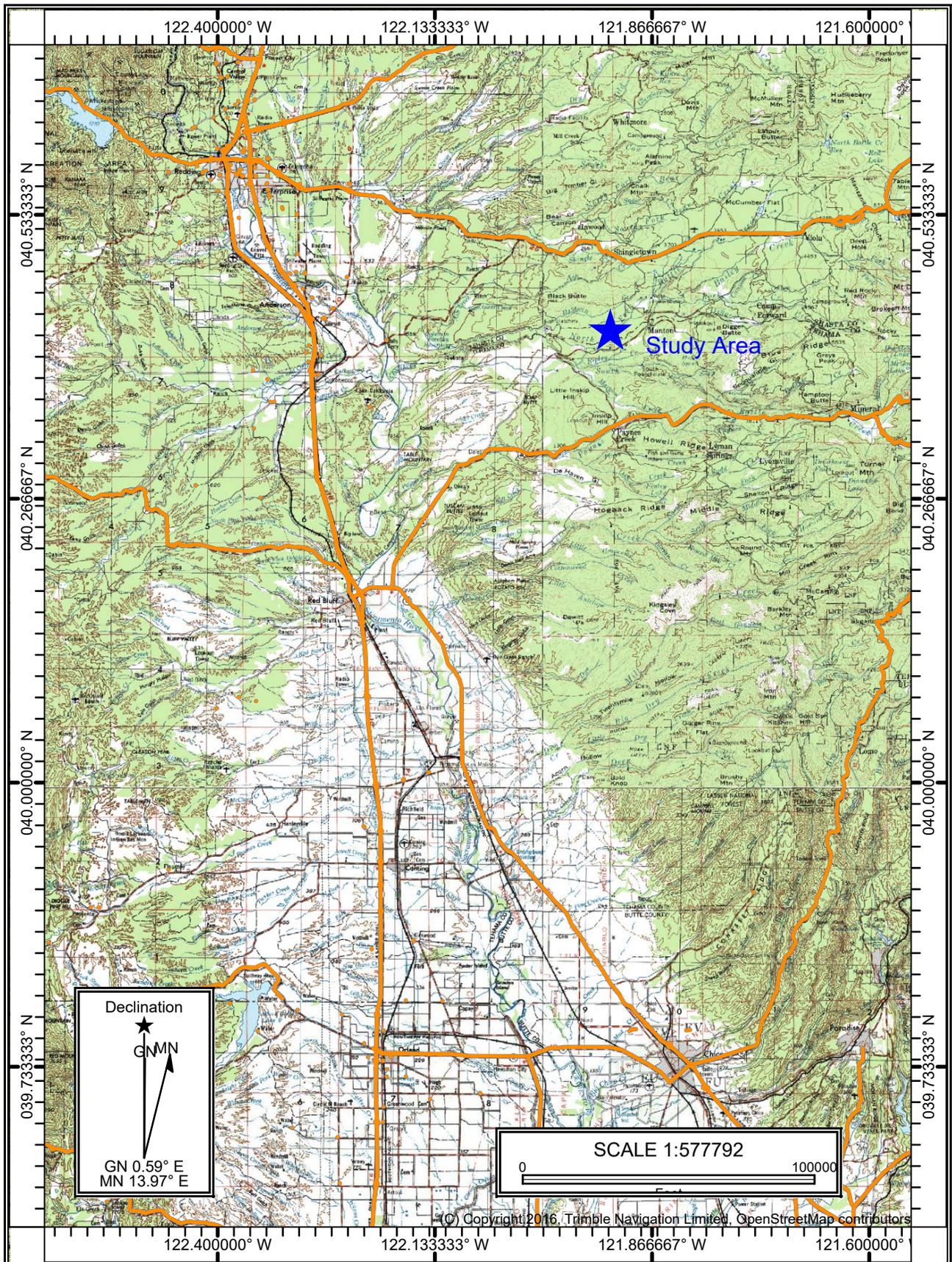


Figure 1. Regional Vicinity and Study Area; Eagle Canyon Fish Passage Project; Shasta and Tehama Counties, CA

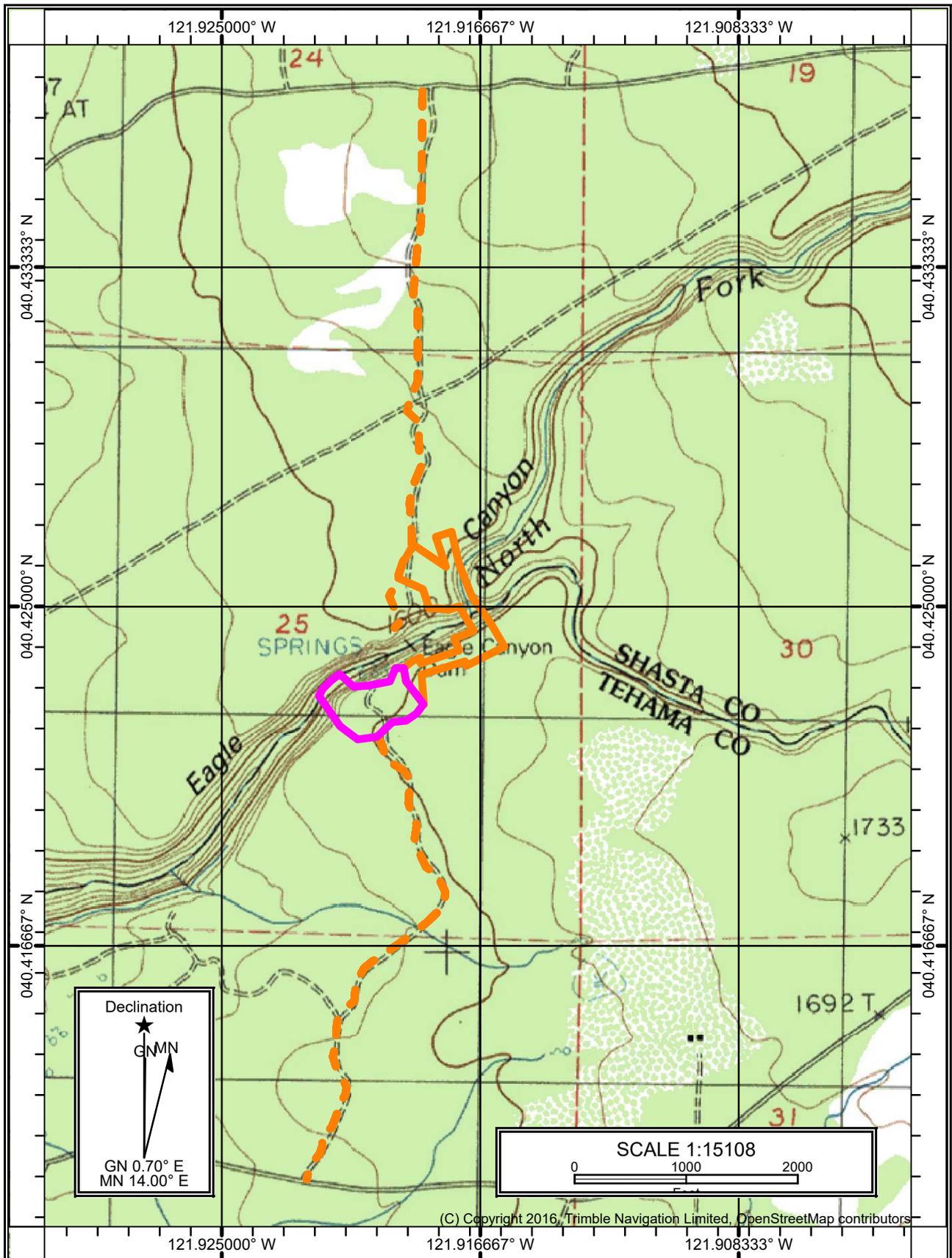
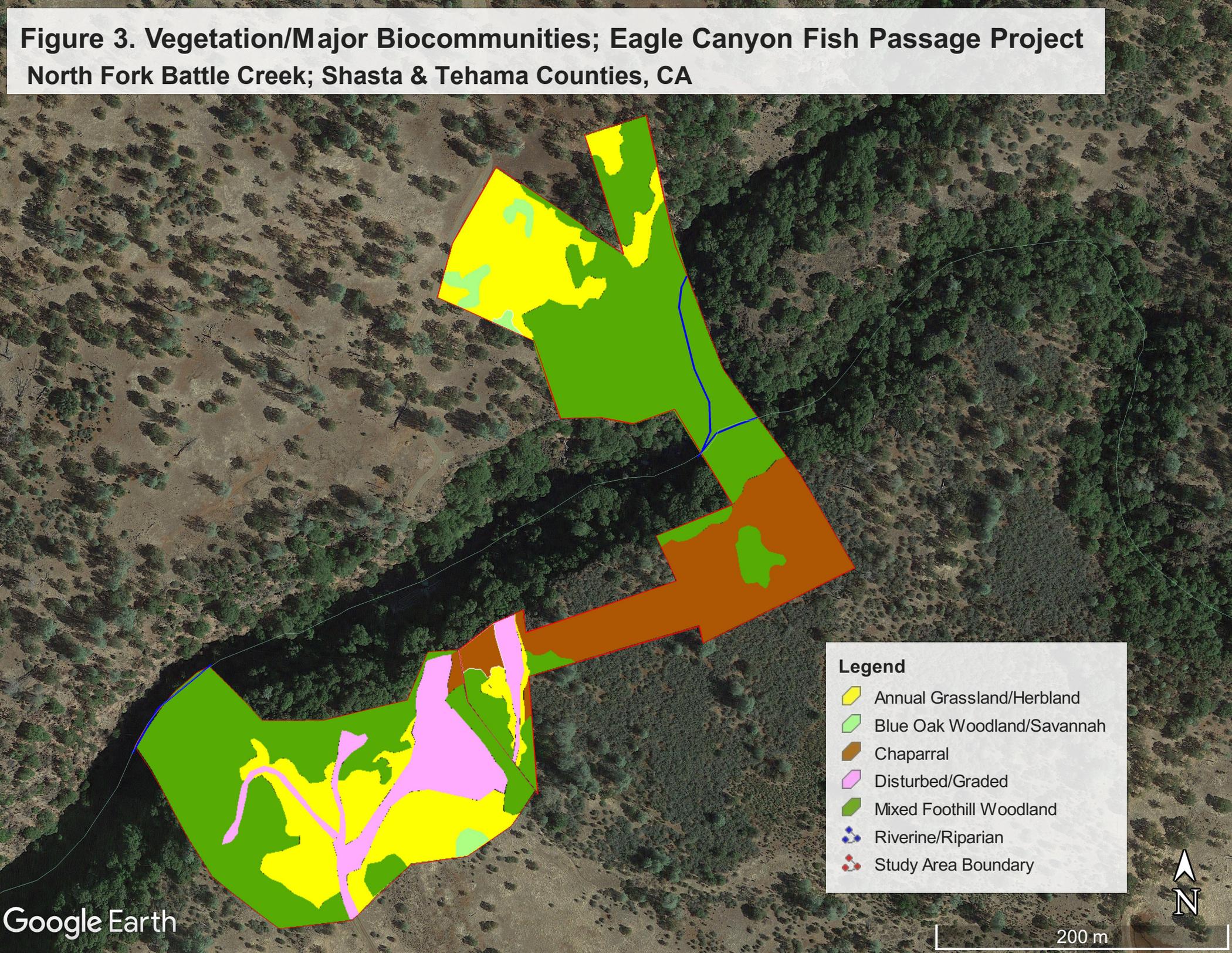


Figure 2. Study Area Boundaries and Site Topography; Eagle Canyon Fish Passage Project; Shasta and Tehama Counties, CA; Dashed Gold Lines Indicate the North and South Access Roads; Solid Magenta Line indicates the Lower Barrier Study Area, Solid Blue Line Indicates the Upper Barrier Study Area

**Figure 3. Vegetation/Major Biocommunities; Eagle Canyon Fish Passage Project
North Fork Battle Creek; Shasta & Tehama Counties, CA**



Legend

-  Annual Grassland/Herbland
-  Blue Oak Woodland/Savannah
-  Chaparral
-  Disturbed/Graded
-  Mixed Foothill Woodland
-  Riverine/Riparian
-  Study Area Boundary

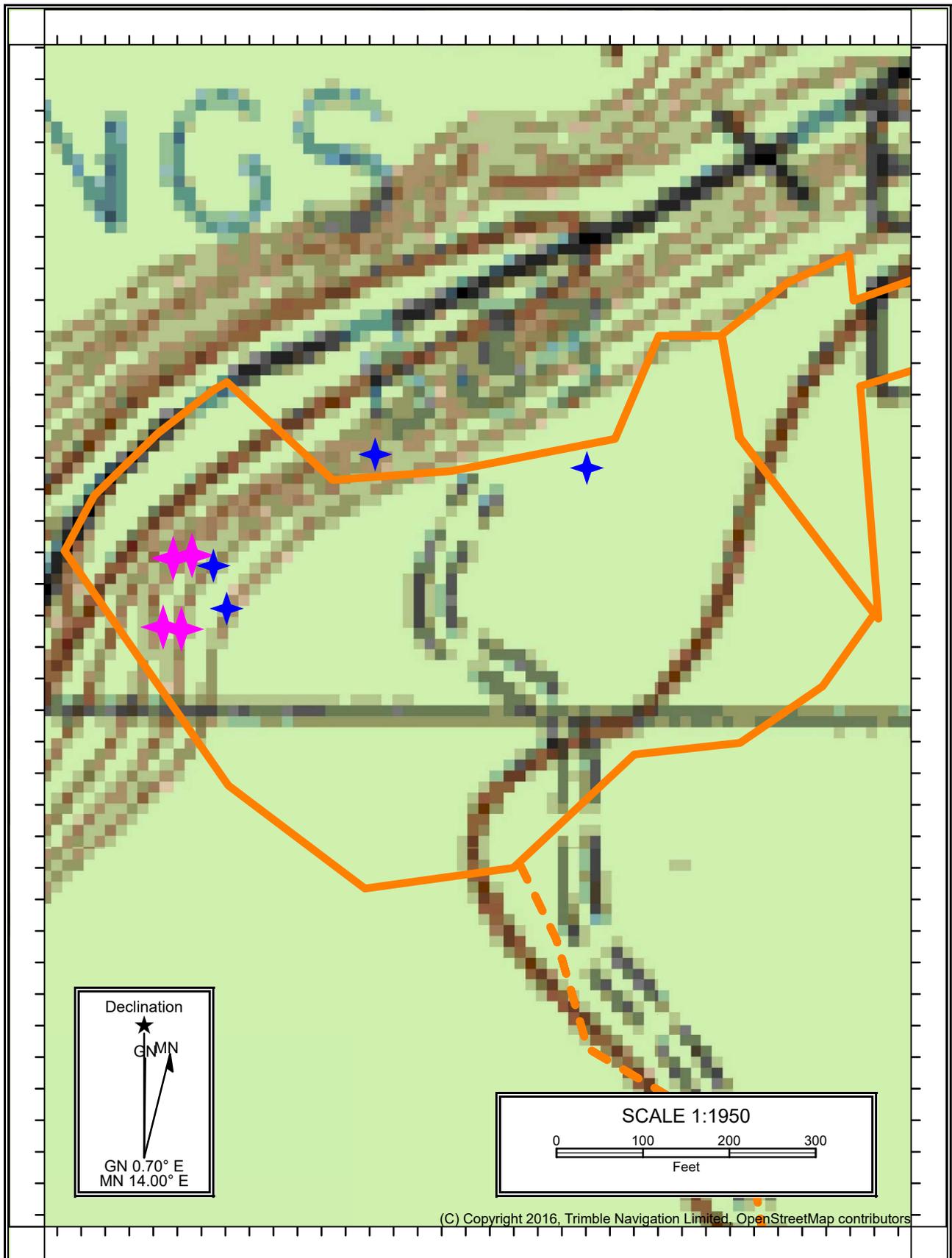


Figure 4a. *Fritillaria* (*Fritillaria* sp.) in Lower Barrier Study Area; Eagle Canyon Fish Passage Project; Shasta and Tehama Counties, CA; Surveys Conducted by John Dittes on April 5 & 10, 2018; Blue Stars Indicate Individual Plants or Isolated Colonies; Magenta Stars Represent Larger Colonies or Swaths of Plants Encountered on Transect

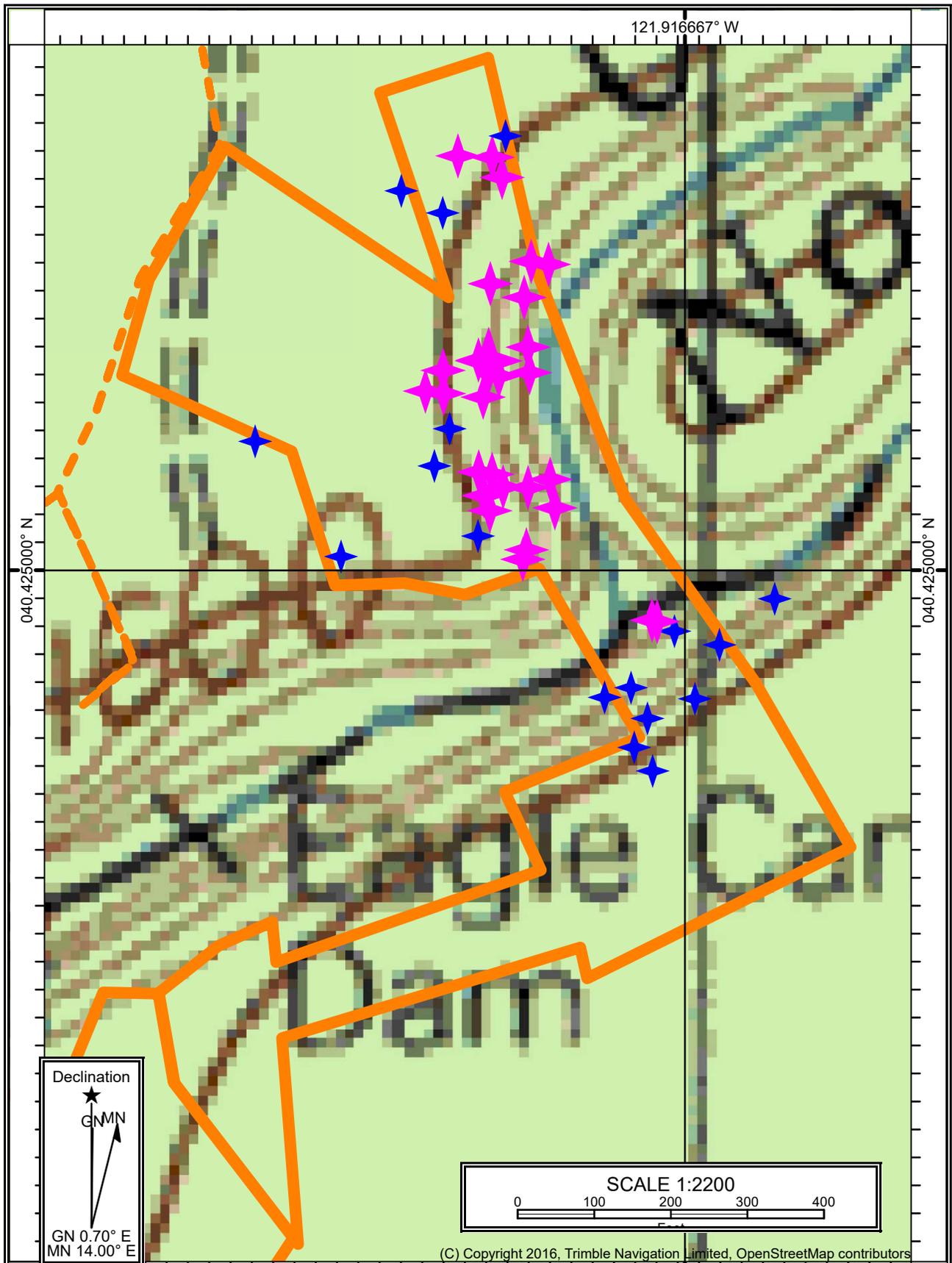


Figure 4b. *Fritillaria* (*Fritillaria* sp.) in Upper Barrier Study Area; Eagle Canyon Fish Passage Project; Shasta and Tehama Counties, CA; Surveys Conducted by John Dittes on April 5 & 10, 2018; Blue Stars Indicate Individual Plants or Isolated Colonies; Magenta Stars Represent Larger Colonies or Swaths of Plants Encountered on Transect

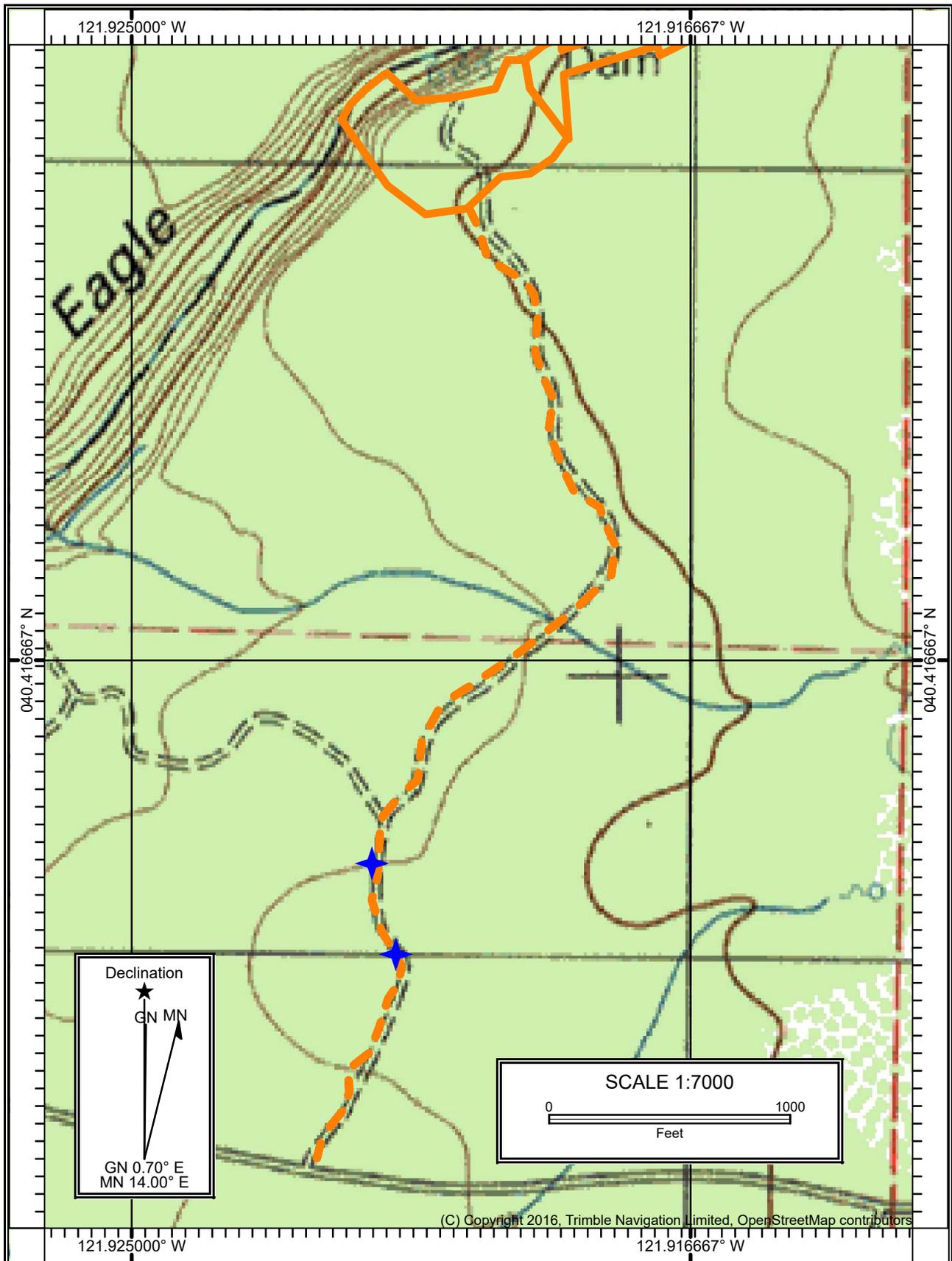


Figure 4c. *Fritillaria* (*Fritillaria* sp) Locations along Southern Access Road; Eagle Canyon Fish Passage Project; Shasta and Tehama Counties, CA; Dashed Gold Line Indicates Access Road; Solid Gold Line Indicated Lower and Upper Barrier Study Areas; Blues Stars Indicate *Fritillaria* (*Fritillaria* sp.) Plant Locations

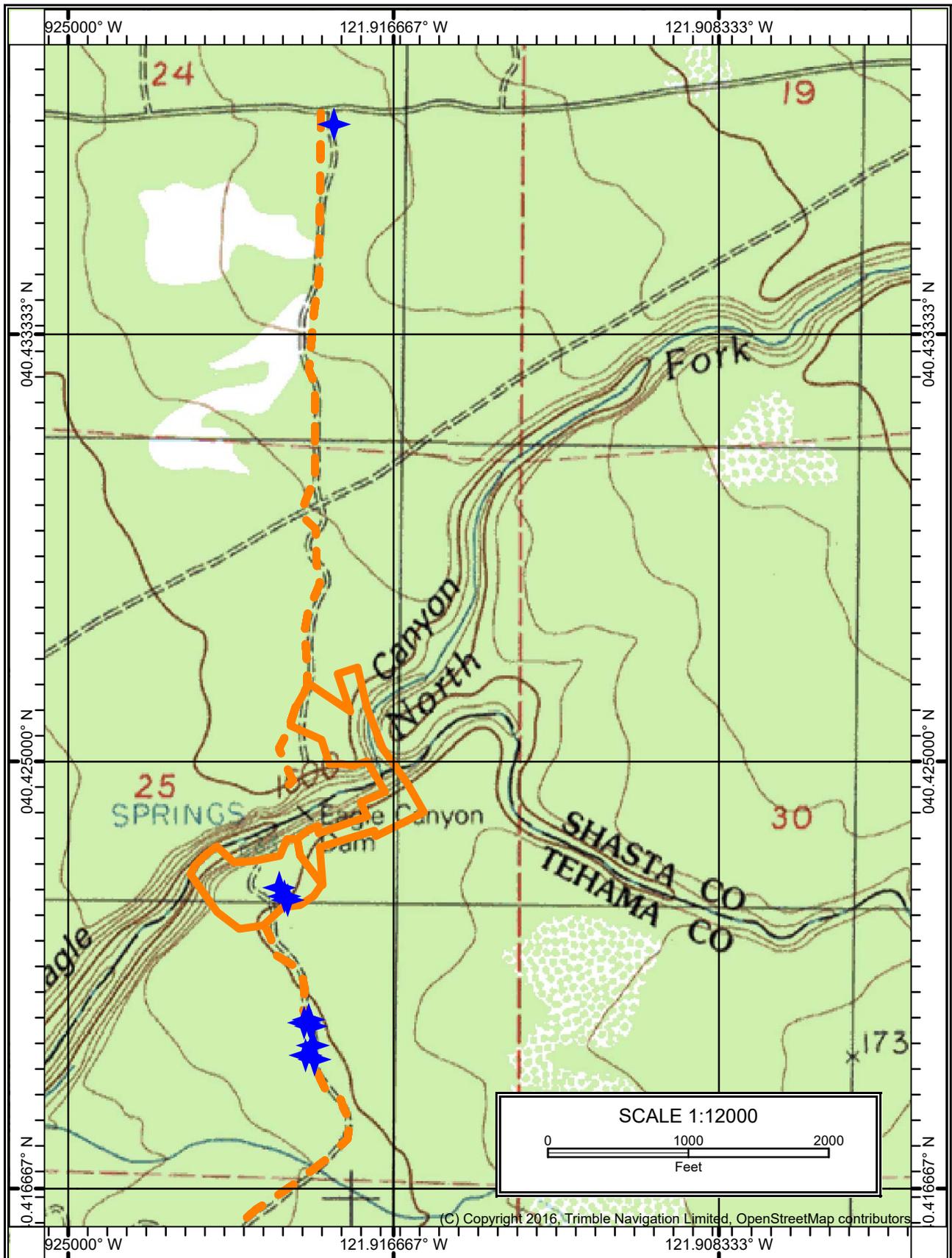


Figure 5. Woolly Meadowfoam (*Limnanthes floccosa* ssp. *floccosa*; CNPS Rank 4.2)
 Locations at the Eagle Canyon Fish Passage Project, Shasta and Tehama Counties, CA;
 Surveys ducted By John Dittes on April 5 & 10, 2018

Appendix-A; Table-1: Special-status Plant Species with Potential to Occur at the North Fork Battle Creek Eagle Canyon Fish Passage Improvement Lower and Upper Barrier Sites, Shasta and Tehama Counties, California

<i>Scientific Name</i> Common Name	CNPS Rank	Geographic Range	Elevation (meters)	Habitat/Plant Community Associations	Flowering Period
<i>Acmispon rubriflorus</i> Red-flowered Birds-foot Trefoil	1B.1 S2 G2	Colusa, Stanislaus, and Tehama counties	200 to 425	Cis Montane Woodland and Valley and Foothill Grasslands	April - June
<i>Agrostis hendersonii</i> Henderson's Bent Grass	3.2 S2 G2Q	Butte (?), Calaveras, Merced, Napa, Shasta, Tehama, and Tuolumne counties: Oregon	70 to 305	Valley and Foothill Grasslands (mesic), Vernal pools	April - June
<i>Allium sanbornii</i> var. <i>sanbornii</i> Sanborn's Onion	4.2 S3S4 G4T3T4	Butte, Calaveras, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, Tuolumne, and Yuba counties. Oregon	260 to 1,510	Usually serpentinite, gravelly; Chaparral, Cismontane Woodland, and Lower Montane Coniferous Forest	May - September
<i>Astragalus pauperculus</i> Depauperate Milk-vetch	4.3 S4 G4	Butte, Placer, Shasta, Tehama, and Yuba counties	60 to 1,215	Vernally mesic, volcanic; Chaparral, Cismontane Woodland and Valley and Foothill Grasslands	March - June
<i>Botrypus virginianus</i> Rattlesnake Fern	2B.2 S2 G5	Mendocino, Shasta, Siskiyou, and Trinity counties. Elsewhere outside of CA.	715 to 1,355	Streams, Bogs and Fens, Chaparral, Lower Montane Coniferous Forest (mesic), Meadows and Seeps, and Riparian Forest	June - September
<i>Bulbostylis capillaris</i> Thread-leaved Beakseed	4.2 S3 G5	Alpine, Butte, Fresno, Mariposa, Nevada, Plumas, Shasta, Sierra, Tehama, and Tuolumne counties. Elsewhere outside of CA.	395 to 2,075	Lower Montane Coniferous Forest, Meadows and Seeps, and Upper Montane Coniferous Forest	June - August
<i>Calochortus syntrophus</i> Callahan's Mariposa Lily	1B.1 S1 G1	Shasta and Tehama counties	525 to 1,145	Cismontane Woodland and Valley and Foothill Grasslands	May - June
<i>Clarkia borealis</i> ssp. <i>arida</i> Shasta Clarkia	1B.2 S2 G3T4	Shasta and Tehama counties	490 to 595	Cismontane Woodland and Lower Montane Coniferous Forest (openings)	June - August
<i>Crypthantha crinata</i> Silky Cryptantha	1B.2 S2 G2	Shasta and Tehama counties	61 to 1,215	Gravelly streambeds; Cismontane Woodland, Lower Montane Coniferous Forest, Riparian Forest, Riparian Woodland, and Valley and Foothill Grasslands	April - May

<i>Scientific Name</i> Common Name	CNPS Rank	Geographic Range	Elevation (meters)	Habitat/Plant Community Associations	Flowering Period
<i>Erythranthe glaucescens</i> Shield-bracted Monkeyflower	4.3 S3S4 G3G4	Butte, Colusa, Lake, Nevada, Shasta, and Tehama counties	60 to 1,240	Serpentinite seeps, sometimes streambanks; Chaparral, Cismontane Woodland, Lower Montane Coniferous Forest and Valley and Foothill Grasslands	February - September
<i>Euphorbia ocellata</i> ssp. <i>rattanii</i> Stony Creek Spurge	1B.2 S3 G4T3	Glenn and Tehama counties	65 to 800	Chaparral, Riparian Scrub (stream-banks), and Valley and Foothill Grasslands (sandy or rocky)	May - October
<i>Fritillaria eastwoodiae</i> Butte County Fritillary	3.2 S3 G3Q	Butte, Eldorado, Nevada, Placer, Plumas, Shasta, Tehama, and Yuba counties; Oregon	50 to 1,500	Sometimes serpentinite: Chaparral, Cismontane Woodland, and Lower Montane Coniferous Forest (openings)	March - June
<i>Gratiola heterosepala</i> Boggs Lake Hedge Hyssop	NL CE 1B.2 S2 G2	Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, and Tehama counties	10 to 2,375	Clay; Marshes and Swamps (lake margin) and Vernal Pools	April - August
<i>Hesperocyparis bakeri</i> Baker Cypress	4.2 S4 G4	Modoc, Plumas, Shasta, Siskiyou and Tehama counties. Oregon	820 to 1,995	Serpentinite or volcanic: Chaparral Cismontane Woodland Lower Montane Coniferous Forest	Evergreen
<i>Horkelia daucifolia</i> var. <i>indicta</i> Jepson's Horkelia	1B.1 S1 G4T1	Shasta, Siskiyou, and Tehama counties	240 to 670	Quaternary pyroclastic flows, clay, volcanic, vernal mesic, openings: Cismontane Woodland	April - June
<i>Ilamma bakeri</i> Baker's Globe Mallow	4.2 S3 G4	Colusa, Lake, Lassen, Mendocino, Modoc, Shasta, Siskiyou, Tehama, and Trinity counties. Oregon	1,000 to 2,500	Chaparral, Great Basin Shrub, Lower Montane Coniferous Forest, and Pinyon and Juniper Woodland	June - September
<i>Juncus digitatus</i> Finger Rush	1B.1 S1 G1	Nevada and Shasta counties	660 to 790	Cismontane Woodland (openings), Lower Montane Coniferous Forest (openings), and Vernal Pools (xeric)	April - June

<i>Scientific Name</i> Common Name	CNPS Rank	Geographic Range	Elevation (meters)	Habitat/Plant Community Associations	Flowering Period
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff Dwarf Rush	1B.1 S2 G2T2	Butte, Placer, Shasta, and Tehama counties	35 to 1,250	Valley and Foothill Grasslands (mesic)	March - June
<i>Legenere limosa</i> Legenere	1B.1 S2 G2	Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus*, Tehama, and Yuba counties	1 to 880	Vernal Pools	April - June
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> Woolly Meadowfoam	4.2 S3 G4T4	Butte, Lake, Lassen, Napa, Shasta, Siskiyou, Tehama, and Trinity counties; Oregon	60 to 1,335	Vernally mesic; Chaparral, Cismontane Woodland, Valley and Foothill Grasslands and Vernal Pools	March - June
<i>Navarretia heterandra</i> Tehama Navarretia	4.3 S4 G4	Butte, Colusa, Lake, Napa, Shasta, Tehama, Trinity, and Yuba counties; Oregon	30 to 1,010	Valley and Foothill Grasslands (mesic), Vernal Pools	April - June
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's Navarretia	1B.1 S2 G4T2	Colusa, Glenn, Lake, Lassen, Mendocino, Mariposa, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties	5 to 1,740	Mesic; Cismontane Woodland, Lower Montane Coniferous Forest, Meadows and Seeps, Valley and Foothill Grasslands and Vernal Pools	April - July
<i>Navarretia subuligera</i> Awl-leaved Navarretia	4.3 S4 G4	Amador, Butte, Del Norte, Lake, Mendocino, Modoc, Napa, Shasta, and Tehama counties; Oregon	150 to 1,100	Rocky, mesic: Chaparral, Cismontane Woodland, and Lower Montane Coniferous Forest	April - August
<i>Orcuttia tenuis</i> Slender Orcutt Grass	FT CE 1B.1 S2 G2	Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou, and Tehama	35 to 1,760	Vernal Pools (often gravelly)	May - October
<i>Paronychia ahartii</i> Ahart's Paronychia	1B.1 S3 G3	Butte, Shasta, and Tehama counties	30 to 510	Cismontane Woodland, Valley and Foothill Grasslands and Vernal Pools	February - June
<i>Piperia colemanii</i> Coleman's Rein Orchid	4.3 S4 G4	Butte, Calaveras, Colusa, Eldorado, Fresno, Madera, Mariposa, Placer, Plumas, Shasta, Siskiyou, Tehama, Tulare, and Tuolumne counties	1,200 to 2,300	Often sandy: Chaparral and Lower Montane Coniferous Forest	June - August
<i>Polygonum bidwelliae</i> Bidwell's Knotweed	4.3 S4 G4	Butte, Shasta, and Tehama counties	60 to 1,200	Chaparral, Cismontane Woodland and Valley and Foothill Grasslands	April - July

<i>Scientific Name</i> Common Name	CNPS Rank	Geographic Range	Elevation (meters)	Habitat/Plant Community Associations	Flowering Period
<i>Rhynchospora capitellata</i> Brownish Beaked-rush	2B.2 S1 G5	Butte, Marin, Napa, and Sonoma counties	45 to ,1010	Bogs and Fens, Lower Montane Coniferous Forest, Meadows and Seeps, and Marshes and Swamps (freshwater)	May - July
<i>Sagittaria sanfordii</i> Sanfords Arrowhead	1B.2 S3 G3	Butte, Del Norte, Eldorado, Fresno, Mariposa, Merced, Orange*, Placer, Sacramento, San Bernardino, San Joaquin, Shasta, Solano, Tehama, Ventura*, and Yuba counties	0 to 650	Marshes and Swamps (assorted shallow freshwater)	May - November
<i>Sidalcea celata</i> Redding Checkerbloom	3 S2S3 G2G3	Shasta, Siskiyou, and Tehama counties	135 to 1,525	Sometimes serpentinite: Cismontane Woodland	April - August
<i>Sidalcea gigantea</i> Giant Checkerbloom	4.3 S3 G3	Butte, Nevada, Plumas, Shasta, Sierra, Tehama, and Yuba counties	670 to 1,950	Meadows and Seeps, Lower Montane Coniferous Forest, and Upper Montane Coniferous Forest	January - October
<i>Streptanthus longsiliquus</i> Long-fruit Jewelflower	4.3 S3 G3	Butte, Shasta, and Tehama counties	715 to 1,500	Openings: Cismontane Woodland and Lower Montane Coniferous Forest	April - September

- * Status Codes: **California Rare Plant Rank:**
1B: Plants Rare, Threatened, or Endangered in CA and elsewhere
2B: Plants Rare, Threatened or Endangered in CA but more common elsewhere
3: More Information Needed
4: Plants of Limited Distribution-A watch list
0.1: Seriously Threatened in California (over 80% of occurrences / high degree and immediacy of threat
0.2: Moderately Threatened in California (20-80% / Moderate degree and immediacy of threat
0.3 Not very threatened in California (less than 20% of occurrences) / Low degree or no current threats known
* = May be extirpated from County; (?) = Uncertain about distribution or identity

Global Ranking

- G1** = Critically Imperiled- At a 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 population (often 20 or fewer), steep declines, or other factors.
G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few population (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.
Other Global Symbols
Q = The element is very rare, but there are taxonomic questions associated with it.
T = T- Rank reflects the global situation of just the subspecies or variety.

State Ranking

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

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

S3 = State Ranking – 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.

Appendix B-Table 2. Vascular Plant Species Identified During 2018 Field Survey; Eagle Canyon Fish Passage Project; North Fork Battle Creek; Shasta and Tehama Counties, CA; Surveys and Species ID by John Dittes

SCIENTIFIC NAME				Native / Introduced	COMMON NAME
ADOXACEAE					MUSKROOT FAMILY
<i>Sambucus</i>	<i>nigra</i>	ssp.	<i>caerulea</i>	N	Blue Elderberry
AGAVACEAE					AGAVE FAMILY
<i>Chlorogalum</i>	<i>angustifolium</i>			N	Narrow-leaved Soap-plant
<i>Chlorogalum</i>	<i>pomeridianum</i>	var.	<i>pomeridianum</i>	N	Wavy-leaved Soap-plant
ALLIACEAE					ONION FAMILY
<i>Allium</i>	<i>amplectens</i>			N	Clasping Onion
AMARANTHACEAE					AMARANTH FAMILY
<i>Amaranthus</i>	<i>albus</i>			I	Tumbleweed
ANACARDIACEAE					SUMAC FAMILY
<i>Rhus</i>	<i>aromatica</i>			N	Skunkbrush
<i>Toxicodendron</i>	<i>diversilobum</i>			N	Western Poison-oak
APIACEAE					CARROT FAMILY
<i>Lomatium</i>	<i>caruifolium</i>	var.	<i>denticulatum</i>	N	Foothill Lomatium
<i>Lomatium</i>	<i>dissectum</i>	var.	<i>multifidum</i>	N	Fern-leaved Lomatium
<i>Lomatium</i>	<i>marginatum</i>	var.	<i>purpureum</i>	N	Margined Lomatium
<i>Lomatium</i>	<i>utriculatum</i>			N	Bladder Lomatium
<i>Sanicula</i>	<i>bipinnatifida</i>			N	Purple Sanicle
<i>Sanicula</i>	<i>crassicaulis</i>			N	Pacific Sanicle
<i>Sanicula</i>	<i>tuberosa</i>			N	Turkey-pea
<i>Tauschia</i>	<i>hartwegii</i>			N	Hartweg's Tauschia
<i>Torilis</i>	<i>arvensis</i>			I	Tall Sock-destroyer, Hedge Parsley
<i>Torilis</i>	<i>nodosa</i>			I	Knotted Hedge-parsley
ARISTOLOCHACEAE					GINSENG FAMILY
<i>Aristolochia</i>	<i>californica</i>			N	California Pipevine
ASTERACEAE					SUNFLOWER FAMILY
<i>Achillea</i>	<i>millefolium</i>			N	Yarrow
<i>Achyrachaena</i>	<i>mollis</i>			N	Blow-wives
<i>Agoseris</i>	<i>heterophylla</i>			N	Annual Agoseris
<i>Agoseris</i>	<i>grandiflora/retrorsa ?</i>			N	Pre-reproductive Agoseris
<i>Arnica</i>	<i>discoidea</i>			N	Rayless Arnica
<i>Calycadenia</i>	sp. (<i>truncata ?</i>)			N	Tarweed (pre-flowering; not <i>C. oppositifolia</i>)
<i>Centaurea</i>	<i>melitensis</i>			I	Tocalote
<i>Centaurea</i>	<i>solstitialis</i>			I	Yellow Starthistle
<i>Centromadia</i>	<i>fitchii</i>			N	Fitch's Spikeweed
<i>Eriophyllum</i>	<i>lanatum</i>	var.	<i>grandiflorum</i>	N	Large-flowered Woolly-sunflower
<i>Europappus</i>	<i>lindleyi</i>			N	Silverpuffs
<i>Helianthella</i>	<i>californica</i>	var.	<i>nevadensis</i>	N	Sierra Nevada Helianthella
<i>Hesperis</i>	<i>acaulis</i>	var.	<i>robustior</i>	N	Robust Evax
<i>Hypochaeris</i>	<i>glabra</i>			I	Smooth Cat's-ear
<i>Lagophylla</i>	<i>glandulosa</i>			N	Glandular Hareleaf
<i>Lasthenia</i>	<i>californica</i>			N	California Goldfields
<i>Lasthenia</i>	<i>fremontii</i>			N	Fremont's Goldfields
<i>Layia</i>	<i>fremontii</i>			N	Fremont's Tidytops
<i>Leontodon</i>	<i>saxatilis</i>			I	Long-beaked Hawkbit
<i>Lessingia</i>	<i>virgata</i>			N	Wand Lessingia
<i>Logfia</i>	<i>gallica</i>			N	Narrow-leaved Filago
<i>Madia</i>	<i>gracilis</i>			N	Slender Tarweed
<i>Matricaria</i>	<i>discoidea</i>			I	Common Pineapple-weed
<i>Micropus</i>	<i>californicus</i>	var.	<i>californicus</i>	N	Slender Cottonweed
<i>Microseris</i>	<i>acuminata</i>			N	Sierra Foothill Microseris
<i>Psilocarphus</i>	<i>oregonus</i>			N	Oregon Woolly-marbles
<i>Silybum</i>	<i>marianum</i>			I	Milk-thistle
<i>Senecio</i>	<i>vulgare</i>			I	Old Man of Spring
<i>Uropappus</i>	<i>lindleyi</i>			N	Silver-puffs
BERBERIDACEAE					BARBERRY FAMILY
<i>Berberis</i>	<i>aquifolium</i>	var.	<i>dictyota</i>	N	Jepson's Barberry
BETULACEAE					BIRCH FAMILY
<i>Alnus</i>	<i>rhombifolia</i>			N	White Birch
BLECHNACEAE					CHAIN FERN FAMILY
<i>Woodwardia</i>	<i>fimbriata</i>			N	Giant Chain Fern
BORAGINACEAE					BORAGE FAMILY
<i>Amsinckia</i>	<i>intermedia</i>			N	Common Fiddleneck
<i>Amsinckia</i>	sp.			N	Fiddleneck (post-flowering)
<i>Cryptantha</i>	<i>flaccida</i>			N	Weak-stemmed Cryptantha
<i>Cynoglossum</i>	<i>grande</i>			N	Hound's-tongue

Appendix B-Table 2. Vascular Plant Species Identified During 2018 Field Survey; Eagle Canyon Fish Passage Project; North Fork Battle Creek; Shasta and Tehama Counties, CA; Surveys and Species ID by John Dittes

<i>Eriodictyon</i>	<i>californicum</i>			N	California Yerba-santa
<i>Heliotropium</i>	<i>curassavicum</i>	var.	<i>oculatum</i>	N	Heliotrope
<i>Nemophila</i>	<i>heterophylla</i>			N	Variable-leaved Nemophila
<i>Nemophila</i>	<i>pedunculata</i>			N	Meadow Nemophila
<i>Plagiobothrys</i>	<i>austiniae</i>			N	Austin's Popcorn-flower
<i>Plagiobothrys</i>	<i>canescens</i>			N	Common Popcorn-flower
<i>Plagiobothrys</i>	<i>greenei</i>			N	Greene's Popcorn-flower
<i>Plagiobothrys</i>	<i>nothofulvus</i>			N	Common Popcorn-flower
<i>Plagiobothrys</i>	<i>shastensis</i>			N	Shasta Popcorn-flower
<i>Plagiobothrys</i>	<i>stipitatus</i>	var.	<i>micranthus</i>	N	Small-flowered Popcorn-flower
<i>Pectocarya</i>	<i>pusilla</i>			N	Little Pectocarya
BRASSICACEAE					MUSTARD FAMILY
<i>Athysanus</i>	<i>pusillus</i>			N	Petty Athysanus
<i>Capsella</i>	<i>bursa-pastoris</i>			I	Shepherd's Purse
<i>Cardamine</i>	<i>oligosperma</i>			N	Western Bittercress
<i>Draba</i>	<i>verna</i>			N	Spring Whitlow-grass
<i>Hirschfeldia</i>	<i>incana</i>			I	Hoary Mustard
<i>Lepidium</i>	<i>nitidum</i>			N	Shiny Pepper-grass
<i>Lepidium</i>	<i>strictum</i>			N	Upright Pepper-grass
<i>Nasturtium</i>	<i>officinale</i>			N	Watercress
<i>Sisymbrium</i>	<i>officinale</i>			I	Hedge-mustard
<i>Thysanocarpus</i>	<i>curvipes</i>			N	Spokepod
CACTACEAE					CACTUS FAMILY
<i>Opuntia</i>	sp. (no flowers/fruit)			N/I ?	Opuntia (May be CA Native; 1 plant introduced here)
CALYCANTHACEAE					CALYCANTHUS FAMILY
<i>Calycanthus</i>	<i>occidentalis</i>			N	Western Spicebush
CAPRIFOLIACEAE					HONESUCKLE FAMILY
<i>Lonicera</i>	<i>interrupta</i>			N	Chaparral Honeysuckle
<i>Symphoricarpos</i>	<i>albus</i>	var.	<i>laevigatus</i>	N	Common Snowberry
CARYOPHYLLACEAE					PINK FAMILY
<i>Cerastium</i>	<i>glomeratum</i>			I	Sticky Mouse-eared Chickweed
<i>Herniaria</i>	<i>hirsuta</i>	var.	<i>hirsuta</i>	I	Herniaria
<i>Minuartia</i>	sp.			N	Annual Sandwort (cismontana/californica)
<i>Petrorhagia</i>	<i>dubia</i>			I	Grass Pink
<i>Sagina</i>	<i>apetela</i>			N	Dwarf Pearlwort
<i>Scleranthus</i>	<i>annuus</i>			I	Knawel
<i>Silene</i>	<i>gallica</i>			I	Windmill-pink
<i>Spergularia</i>	sp.			I	Sandspurry
<i>Stellaria</i>	<i>media</i>			I	Common Chickweed
<i>Stellaria</i>	<i>nitens</i>			N	Shiny Starwort
COMANDRACEAE					TOADFLAX FAMILY
<i>Comandra</i>	<i>umbellata</i>	ssp.	<i>californica</i>	N	Bastard Toadflax
CONVOLVULACEAE					MORNING-GLORY FAMILY
<i>Calystegia</i>	<i>occidentalis</i>	ssp.	<i>occidentalis</i>	N	Western Morning-glory
<i>Convolvulus</i>	<i>arvensis</i>			I	Bindweed
CRASSULACEAE					STONECROP FAMILY
<i>Crassula</i>	<i>aquatica</i>			N	Water Pygmyweed
<i>Crassula</i>	<i>connata</i>			N	Pygmyweed
<i>Dudleya</i>	<i>cymosa</i>	ssp.	<i>cymosa</i>	N	Canyon Dudleya
<i>Sedella</i>	<i>pumila</i>			N	Dwarf Stonecrop
<i>Sedum</i>	<i>spatulifolium</i>			N	Broad-leaved Stonecrop
CUCURBITACEAE					CUCUMBER FAMILY
<i>Marah</i>	<i>fabacea</i>	var.	<i>agrestis</i>	N	California Manroot
CUPRESSACEAE					CYPRESS FAMILY
<i>Juniperus</i>	<i>californica</i>			N	California Juniper
CYPERACEAE					SEDGE FAMILY
<i>Carex</i>	<i>nudata</i>			N	Torrent Sedge
<i>Eleocharis</i>	<i>acicularis</i>			N	Needle Spike-rush
DRYOPTERIDACEAE					WOOD FERN FAMILY
<i>Polystichum</i>	<i>imbricans</i>	ssp.	<i>imbricans</i>	N	Narrow-leaved Sword Fern
EQUISETACEAE					HORSETAIL FAMILY
<i>Equisetum</i>	sp.			N	Horsetail
ERICACEAE					HEATH & WINTERGREEN FAMILY
<i>Arctostaphylos</i>	<i>manzanita</i>	ssp.	<i>manzanita</i>		Big Manzanita
<i>Arctostaphylos</i>	<i>viscida</i>	ssp.	<i>viscida</i>	N	White-leaved Manzanita
EUPHORBIACEAE					SPURGE FAMILY
<i>Chamaesyce</i>	<i>maculata</i>			I	Spotted Spurge
<i>Croton</i>	<i>setigerus</i>			N	Turkey-mullein

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FABACEAE					PEA FAMILY
<i>Acmispon</i>	<i>americanus</i>	var.	<i>americanus</i>	N	Spanish Lotus
<i>Acmispon</i>	<i>brachycarpum</i>			N	Foothill Lotus
<i>Acmispon</i>	<i>parviflorus</i>			N	Small-flowered Lotus
<i>Acmispon</i>	<i>wranglianus</i>			N	Wrangel Lotus
<i>Astragalus</i>	<i>gambelianus</i>			N	Gambel's Milk-vetch
<i>Cercis</i>	<i>occidentalis</i>			N	Western Redbud
<i>Lupinus</i>	<i>bicolor</i>			N	Bicolored Lupine
<i>Medicago</i>	<i>minima</i>			I	Hairy Bur-clover
<i>Medicago</i>	<i>polymorpha</i>			I	California or Common Bur-clover
<i>Trifolium</i>	<i>albopurpureum</i>			N	Indian Clover
<i>Trifolium</i>	<i>depauperatum</i>		?	N	Cowbag Clover
<i>Trifolium</i>	<i>bifidum</i>	var.	<i>decipiens</i>	N	Deceptive Clover
<i>Trifolium</i>	<i>ciliolatum</i>			N	Foothill Clover
<i>Trifolium</i>	<i>dubium</i>			I	Little Hop Clover
<i>Trifolium</i>	<i>glomeratum</i>			I	Sessile-headed Clover
<i>Trifolium</i>	<i>hirtum</i>			I	Rose Clover
<i>Trifolium</i>	<i>microcephalum</i>			N	Small-headed Clover
<i>Trifolium</i>	<i>variegatum</i>			N	White-tipped Clover
<i>Trifolium</i>	<i>wildenovii</i>			N	Tomcat Clover
<i>Vicia</i>	<i>villosa</i>			I	Winter Vetch
FAGACEAE					OAK FAMILY
<i>Quercus</i>	<i>chrysolepis</i>	var.	<i>chrysolepis</i>	N	Canyon Live Oak
<i>Quercus</i>	<i>douglasii</i>			N	Blue Oak
<i>Quercus</i>	<i>kelloggii</i>			N	California Black Oak
<i>Quercus</i>	<i>wislizenii</i>	var.	<i>wislizenii</i>	N	Interior Live Oak
GENTIANACEAE					GENTIAN FAMILY
<i>Centaurium</i>	<i>tenuiflorum</i>			I	June Centaury
<i>Cicendia</i>	<i>quadrangularis</i>			N	Timwort
GERANIACEAE					GERANIUM FAMILY
<i>Erodium</i>	<i>botrys/brachycarpum</i>			I	Long-beaked Stork's-bill
<i>Erodium</i>	<i>cicutarium</i>			I	Red-stemmed Filaree
<i>Geranium</i>	<i>dissectum</i>			I	Cut-leaf Geranium
<i>Geranium</i>	<i>molle</i>			I	Dove's-foot Geranium
HYPERICACEAE					ST. JOHN'S-WORT FAMILY
<i>Hypericum</i>	<i>perforatum</i>			I	Klamathweed
ISOETACEA					QUILLWORT FAMILY
<i>Isoetes</i>	<i>muttallii</i>			N	Nuttal's Quillwort
JUNCACEAE					RUSH FAMILY
<i>Juncus</i>	<i>bufonius</i>	var.	<i>bufonius</i>	N	Common Toad Rush
<i>Juncus</i>	<i>bufonius</i>	var.	<i>occidentalis</i>	N	Round-fruited Toad Rush
<i>Juncus</i>	<i>capitatus</i>			I	Leafy-bracted Dwarf Rush
LAMIACEAE					MINT FAMILY
<i>Mentha</i>	<i>pulegium</i>			I	Pennyroyal
<i>Pogogyne</i>	<i>zizyphoroides</i>			N	Sacramento Valley Pogogyne
<i>Stachys</i>	sp.			N	Hedge-nettle (pre-flowering)
<i>Trichostema</i>	<i>lanceolatum</i>			N	Vinegar-weed
LAURACEAE					LAUREL FAMILY
<i>Umbellularia</i>	<i>californica</i>			N	California Bay
LILIACEAE					LILY FAMILY
<i>Calochortus</i>	<i>luetus</i>			N	Suncups
<i>Calochortus</i>	<i>monophyllus</i>			N	Yellow Star-lily
<i>Erythronium</i>	<i>multiscapideum</i>			N	Sierra Fawn-lily
<i>Fritillaria</i>	<i>affinis</i>			N	Checkered Fritillary
<i>Fritillaria</i>	<i>eastwoodiae</i>			N	Butte County Fritillary
<i>Fritillaria</i>	<i>recurva</i>			N	Scarlet Fritillary
LINACEAE					FLAX FAMILY
<i>Linum</i>	<i>bienne</i>			I	Pale Flax
LYTHRACEAE					LOOSESTRIFE FAMILY
<i>Lythrum</i>	<i>hyssopifolium</i>			I	Hyssop Loosestrife
MALVACEAE					MALLOW FAMILY
<i>Fremontodendron</i>	<i>californicum</i>			N	California Flannelbush
<i>Sidalcea</i>	<i>hartwegii</i>			N	Hartweg's Checkerbloom
MONTIACEAE					PURSELANE FAMILY
<i>Calandrinia</i>	<i>ciliata</i>			N	Redmaids
<i>Claytonia</i>	<i>parviflora</i>			N	Small-flowered Miner's Lettuce
MORACEAE					MULBERRY FAMILY
<i>Ficus</i>	<i>carica</i>			I	Edible Fig

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MYRSINACEAE					MYRSINE FAMILY
<i>Anagallis</i>	<i>arvensis</i>			I	Scarlet Pimpernel
ONAGRACEAE					EVENNING PRIMROSE FAMILY
<i>Clarkia</i>	<i>lassenensis</i>			N	Lassen Clarkia
<i>Clarkia</i>	<i>purpurea</i>			N	Purple Clarkia
<i>Epilobium</i>	<i>brachycarpum</i>			N	Tall Annual Willowherb
<i>Epilobium</i>	<i>torreyi</i>			N	Torrey's Spike-primrose
OROBANCHACEAE					BROOMRAPE FAMILY
<i>Castilleja</i>	<i>attenuata</i>			N	Valley Tassel
<i>Triphysaria</i>	<i>eriantha</i>	ssp.	<i>eriantha</i>	N	Johnnytuck
PAPAVERACEAE					POPPY FAMILY
<i>Eschscholzia</i>	<i>lobbii</i>			N	Fryingpan Poppy
PHRYMACEAE					LOPSEED FAMILY
<i>Erythranthe</i>	<i>gutattus</i>			N	Seep Monkey-flower
PINACEAE					PINE FAMILY
<i>Pinus</i>	<i>sabiniana</i>			N	Foothill Pine
PLANTAGINACEAE					PLANTAIN FAMILY
<i>Collinsia</i>	<i>sparsiflora</i>	var.	<i>collina</i>	N	Foothill Collinsia
<i>Keckiella</i>	<i>lemmonii</i>			N	Lemmon's Keckiella
<i>Plantago</i>	<i>coronopus</i>			I	Cut-leaved Plantain
<i>Plantago</i>	<i>erecta</i>			N	Erect Plantain
<i>Plantago</i>	<i>elongata</i>			N	Elongate Plantain
<i>Veronica</i>	<i>arvensis</i>			I	Field Speedwell
<i>Veronica</i>	<i>peregrina</i>	ssp.	<i>xalapensis</i>	N	Purslane Speedwell
POACEAE					GRASS FAMILY
<i>Aira</i>	<i>caryophyllea</i>			I	Silver European Hairgrass
<i>Aristida</i>	<i>oligantha</i>			N	Three-awn
<i>Avena</i>	<i>barbata</i>			I	Slender Wild Oat
<i>Brachypodium</i>	<i>distachyon</i>			I	False Brome
<i>Briza</i>	<i>minor</i>			I	Lesser Quaking-grass
<i>Bromus</i>	<i>hordeaceus</i>			I	Soft Chess
<i>Bromus</i>	<i>madritensis</i>	ssp.	<i>madritensis</i>	I	Foxtail Chess
<i>Bromus</i>	<i>madritensis</i>	ssp.	<i>rubens</i>	I	Red Brome
<i>Bromus</i>	<i>sterilis</i>			I	Proverty Brome
<i>Cynosurus</i>	<i>echinatus</i>			I	Hedgehog Dogtail
<i>Deschampsia</i>	<i>danthonioides</i>			N	Annual Hairgrass
<i>Elymus</i>	<i>caput-medusae</i>			I	Medusa-head
<i>Festuca</i>	<i>perennis</i>			I	Annual Ryegrass
<i>Festuca</i>	<i>bromoides</i>			I	Brome Fescue
<i>Festuca</i>	<i>microstachys</i>			N	Small Fescue
<i>Festuca</i>	<i>myuros</i>			I	Rattail Fescue
<i>Gastridium</i>	<i>phleoides</i>			I	Nitgrass
<i>Hordeum</i>	<i>marinum</i>	ssp.	<i>gussoneanum</i>	I	Mediterranean Barley
<i>Melica</i>	<i>californica</i>			N	California Melic
<i>Melica</i>	<i>torreyana</i>			N	Torrey's Melic
<i>Poa</i>	<i>annua</i>			I	Annual Bluegrass
<i>Poa</i>	<i>bulbosa</i>			I	Bulbous Bluegrass
<i>Poa</i>	<i>secunda</i>	ssp.	<i>secunda</i>	N	One-sided Bluegrass
<i>Polypogon</i>	<i>maritimus</i>			I	Mediterranean Beardgrass
<i>Polypogon</i>	<i>monspeliensis</i>			I	Annual Beard Grass
<i>Stipa</i>	<i>cernua/pulchra</i>			N	Needlegrass
POLEMONIACEAE					PHLOX FAMILY
<i>Gilia</i>	<i>tricolor</i>	ssp.	<i>tricolor</i>	N	Bird's-eye Gilia
<i>Leptosiphon</i>	<i>bicolor</i>			N	Bicolored Leptosiphon
<i>Leptosiphon</i>	<i>ciliatus</i>			N	Whiskerbrush
<i>Navarretia</i>	<i>pubescens</i>			N	Downy Navarretia
<i>Navarretia</i>	<i>tagetina</i>			N	Marigold Navarretia
POLYGALACEAE					MILKWORT FAMILY
<i>Polygala</i>	<i>cornuta</i>	var.	<i>cornuta</i>	N	Sierra Milkwort
POLYGONACEAE					BUCKWHEAT FAMILY
<i>Chorizanthe</i>	<i>polygonoides</i>	var.	<i>polygonoides</i>	N	Knotweed Spineflower
<i>Eriogonum</i>	<i>nudum</i>	var.	<i>pubiflorum</i>	N	Naked-stemmed Buckwheat
<i>Polygonum</i>	<i>aviculare</i>	ssp.	<i>depressum</i>	I	Common Knotweed
<i>Polygonum</i>	<i>californicum</i>			N	California Knotweed
<i>Pterostegia</i>	<i>drymerioides</i>			N	Granny's Hairnet
POLYPODIACEAE					POLYPODY FAMILY
<i>Polypodium</i>	<i>calirhiza</i>			N	Intermediate Polypody

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PRIMULACEAE					PRIMROSE FAMILY
<i>Dodecatheon</i>	<i>hendersonii</i>	ssp.	<i>patula</i>	N	Lowland Shooting-star
PTERIDACEAE					BRACKEN FAMILY
<i>Adiantum</i>	<i>aleuticum</i>			N	Five-finger Fern
<i>Adiantum</i>	sp.			N	Maiden-Hair Fern
<i>Pellaea</i>	<i>mucronata</i>	var.	<i>californica</i>	N	California Bird's-foot Fern
<i>Pentagramma</i>	<i>triangularis</i>	ssp.	<i>triangularis</i>	N	Gold-Backed Fern
RANUNCULACEAE					BUTTERVUP FAMILY
<i>Aquilegia</i>	<i>formosa</i>			N	Crimson Columbine
<i>Clematis</i>	<i>lasiantha</i>			N	Chaparral Honeysuckle
<i>Delphinium</i>	<i>nudicaule</i>			N	Red Larkspur
<i>Delphinium</i>	<i>patens</i>	ssp.	<i>patens</i>	N	Spreading Larkspur
<i>Delphinium variegatum</i>				N	Royal Larkspur
<i>Ranunculus</i>	<i>hebecarpus</i>			I	Pubescent-fruited Buttercup
<i>Ranunculus</i>	<i>muricatus</i>			I	Prickle-seeded Buttercup
<i>Ranunculus</i>	<i>occidentalis</i>	var.	<i>occidentalis</i>	N	Western Buttercup
RHAMNACEAE					BUCKTHORN FAMILY
<i>Ceanothus</i>	<i>cuneatus</i>	var.	<i>cuneatus</i>	N	Buckbrush
<i>Ceanothus</i>	<i>integerrimus</i>	var.	<i>macrothyrsus</i>	N	Deerbrush
<i>Frangula</i>	<i>californica</i>	ssp.	<i>tomentella</i>	N	Hoary Coffeeberry
<i>Rhamnus</i>	<i>ilicifolia</i>			N	Holly-leaved Redberry
ROSACEAE					ROSE FAMILY
<i>Aphanes</i>	<i>occidentalis</i>			N	Western Lady's-mantle
<i>Cerocarpus</i>	<i>betuloides</i>	var.	<i>betuloides</i>	N	Birch-leaved Mountain-mahogany
<i>Rubus</i>	<i>armeniacus</i>			I	Himalayan Blackberry
<i>Rubus</i>	<i>ursinus</i>			N	California Blackberry
<i>Galium</i>	<i>aparine</i>			N	Cleavers
<i>Galium</i>	<i>parisiense</i>			I	Wall Bedstraw
<i>Galium</i>	<i>porrigens</i>	var.	<i>tenue</i>	N	Narrow-leaved Climbing Bedstraw
<i>Sherardia</i>	<i>arvensis</i>			I	Field-madder
SAPINDACEAE					SOAPBERRY FAMILY
<i>Aesculus</i>	<i>californica</i>			N	California Buckeye
SELAGINACEAE					SPIKEMOSS FAMILY
<i>Selaginella</i>	<i>hansenii</i>			N	Hansen's Spike-moss
SMILACACEAE					SMILAX FAMILY
<i>Smilacina</i>	<i>californica</i>			N	California Greenbrier
SOLANACEAE					NIGHTSHADE FAMILY
<i>Solanum</i>	<i>parishii</i>			N	Parish's Nighthshade
STYRACACEAE					STORAX FAMILY
<i>Styrax</i>	<i>redivivus</i>			N	California Snowbell
TAXACEAE					YEW FAMILY
<i>Torreya</i>	<i>californica</i>			N	California Nutmeg
TECOPHILAECEAE					BRODIAEA FAMILY
<i>Odontostomum</i>	<i>hartwegii</i>			N	Hartweg's Odontostomum
THEMIDACEAE					BRODIAEA FAMILY
<i>Brodiaea</i>	sp.			N	Post Flowering/In Fruit
<i>Dichelostemma</i>	<i>capitatum</i>			N	Blue Dicks
<i>Dichelostemma</i>	<i>multiflorum</i>			N	Round-toothed Ookow
<i>Dichelostemma</i>	<i>volubile</i>			N	Twining Ookow
<i>Triteleia</i>	<i>hyacinthina</i>			N	Wild Hyacinth
VALERIANACEAE					VALERIAN FAMILY
<i>Plectritis</i>	<i>ciliosa</i>			N	Pink Plectritis
VITACEAE					GRAPE FAMILY
<i>Vitis</i>	<i>californica</i>			N	California Wild Grape
"N" Indicates Native					
"I" Indicates Non-Native					