

2020 Special-Status Plant Survey

Hemphill Diversion Structure Project

Placer County, California

Prepared For:

Nevada Irrigation District

January 2021



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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- Attachment C – Statement of Qualifications
- Attachment D – Plant Species Observed (June 28 and June 29, 2020)

LIST OF ACRONYMS AND ABBREVIATIONS

CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
ESA	Endangered Species Act

LIST OF ACRONYMS AND ABBREVIATIONS

MCV	A Manual of California Vegetation
MSL	Mean sea level
NID	Nevada Irrigation District
NOAA	National Oceanic and Atmospheric Administration
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
PCCP	Placer County Conservation Plan
Study Area	Hemphill Diversion Structure Project
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

On behalf of the Nevada Irrigation District, ECORP Consulting, Inc. conducted a special-status plant survey for a portion of the proposed approximately 98.05-acre Hemphill Diversion Structure Project (Study Area) located in Placer County, California. The Study Area includes private properties that were not accessible during the survey. The survey was only conducted within accessible areas, collectively referred to as the Survey Area. The inaccessible areas are collectively referred to as the Assessment Area. These areas are described in detail in the following section.

The purpose of the plant survey was to identify and map the locations of special-status plant species observed within the Survey Area. Due to differences in phenology, only a subset of the special-status species with potential to occur were identifiable at the time of the survey. These species are identified in Section 2.3. An additional survey is required to ensure complete survey coverage for the remaining target species.

1.1 Study Area Location

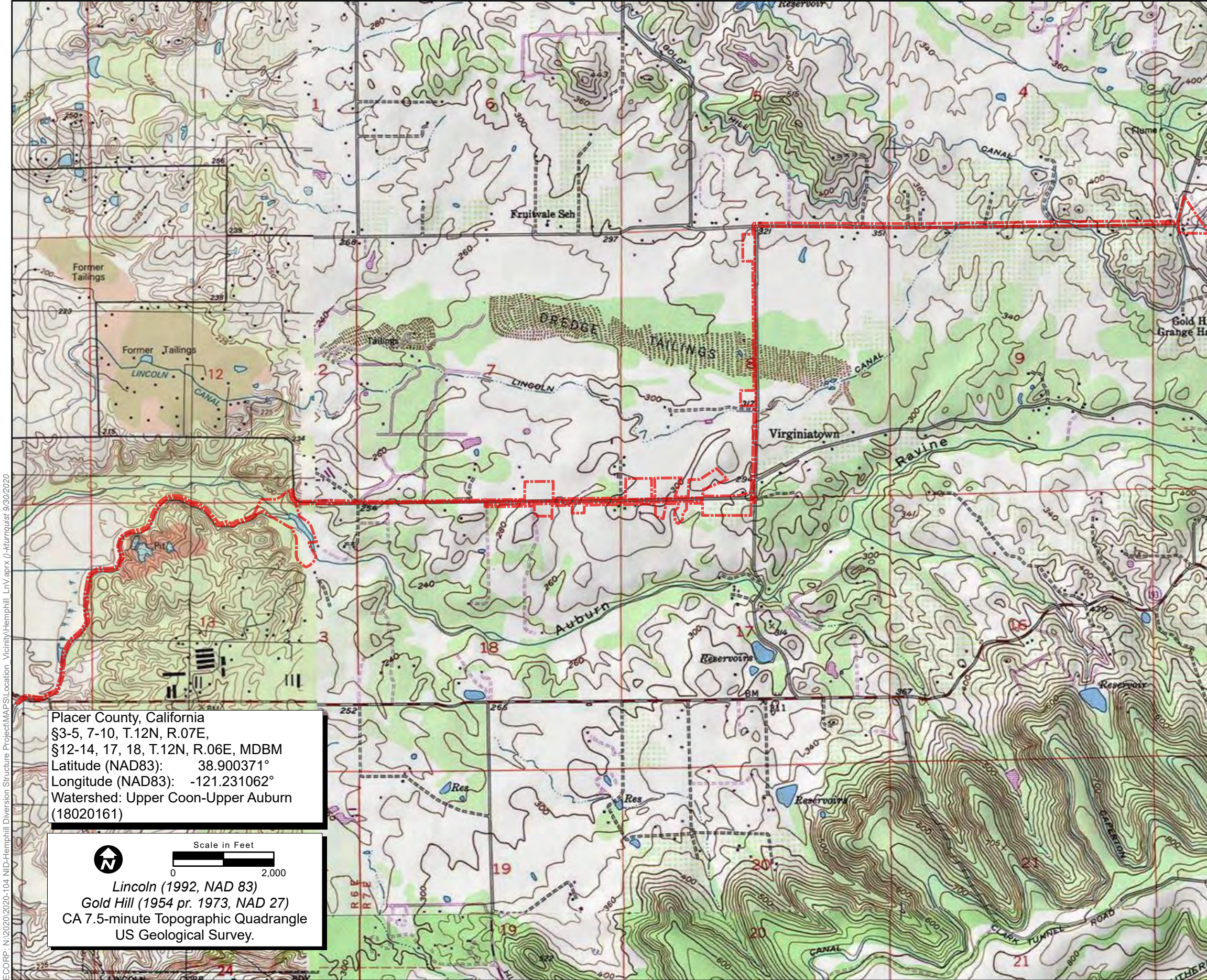
The Study Area is a linear corridor located along the extent of the Hemphill Canal from State Highway 193 just west of Oak Tree Lane near the city of Lincoln to Auburn Ravine and the Hemphill Diversion Structure. From the Diversion Structure, the Study Area continues along the Virginiatown Road east to Fowler Road, north on Fowler Road to Fruitvale Road, and east on Fruitvale Road to the Nevada Irrigation District (NID) maintenance yard at 1900 Gold Hill Road (Figure 1. *Project Location and Vicinity*). The previously described portions of the Study Area are collectively referred to as the Survey Area (depicted as Survey Area on Figure 2. *Survey Area*). The Study Area also includes portions of residential and agricultural parcels adjacent to the Virginiatown Road and Fowler Road rights-of-way, which are collectively referred to as the Assessment Area (depicted as Assessment Area in Figure 2).

The Study Area corresponds to portions of Sections 3-5 and 7-10, Township 12 North, and Range 7 East; and Sections 12-14, 17, and 18, Township 12 North, and Range 6 East within the "Gold Hill, California" and "Lincoln, California" 7.5-minute quadrangles (U.S. Geological Survey [USGS] 1954 photorevised 1973 and 1992, respectively). The approximate center of the Study Area is located at latitude 38.900371° and longitude -121.231062° (NAD83) within the Upper Coon-Upper Auburn Watershed (Hydrologic Unit Code #18020161; Natural Resources Conservation Service [NRCS], et al. 2019).


1.2 Definition of Special-Status Plant Species

For the purposes of this report, "special-status plants" are defined as vascular plants that meet one or more of the following:

- Plants listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA).
- Plants listed, proposed for listing, or candidates for future listing as threatened or endangered under the California ESA.



Map Contents

 Project Boundary - 98.05 ac.

Placer County, California
 §3-5, 7-10, T.12N, R.07E,
 §12-14, 17, 18, T.12N, R.06E, MDBM
 Latitude (NAD83): 38.900371°
 Longitude (NAD83): -121.231062°
 Watershed: Upper Coon-Upper Auburn
 (18020161)

Scale in Feet
 0 2,000

Lincoln (1992, NAD 83)
 Gold Hill (1954 pr. 1973, NAD 27)
 CA 7.5-minute Topographic Quadrangle
 US Geological Survey.

Sources: Esri, USGS

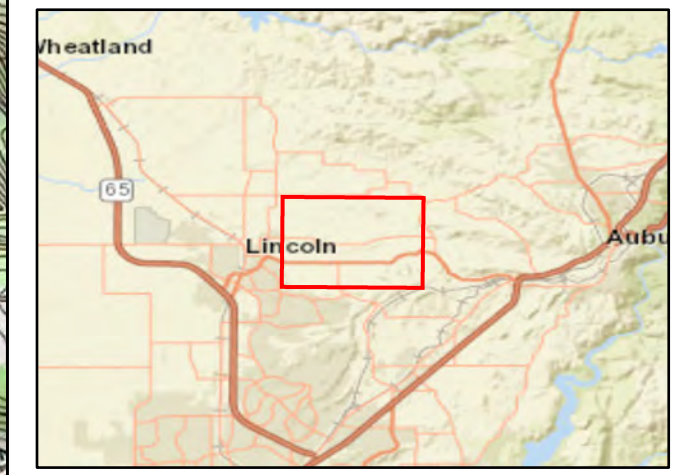


Figure 1. Project Location and Vicinity

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Map Features

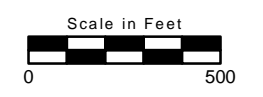
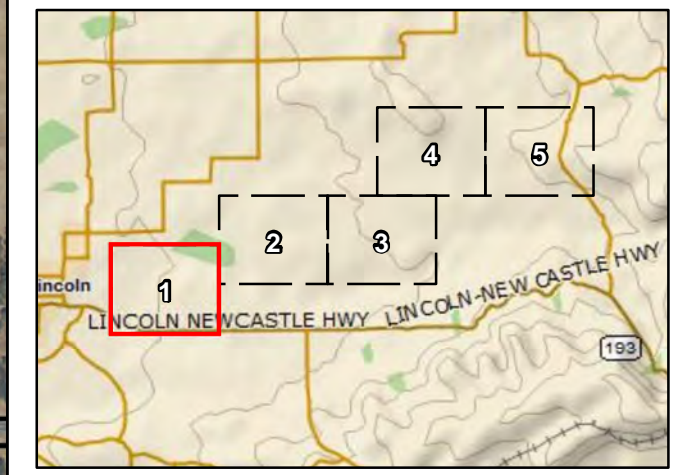
- Project Boundary - 98.05 ac.

Survey Type

- Survey Area
- Assessment Area

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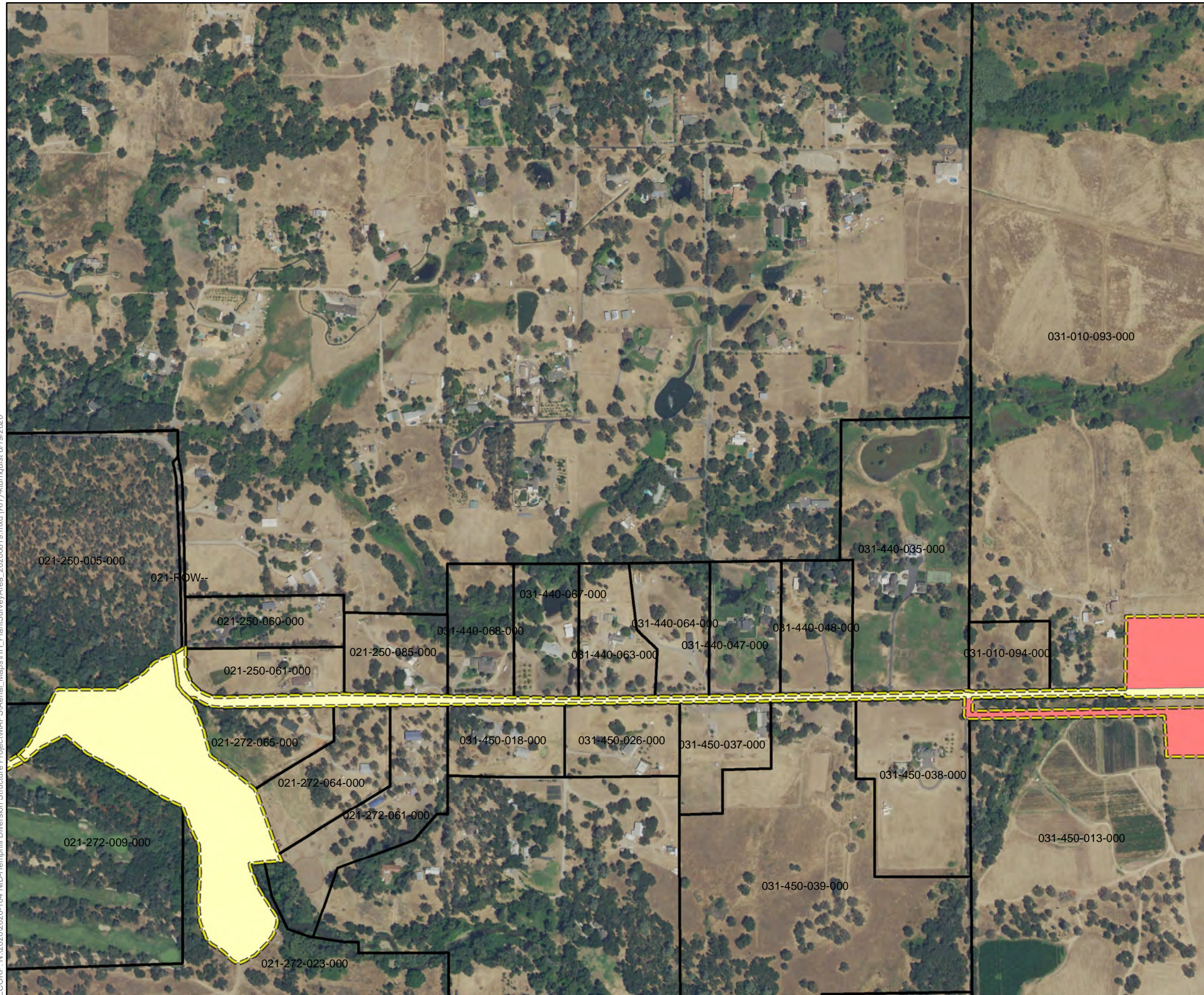
Sources: NAIP 2018



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Figure 2. Survey Area

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Map Features

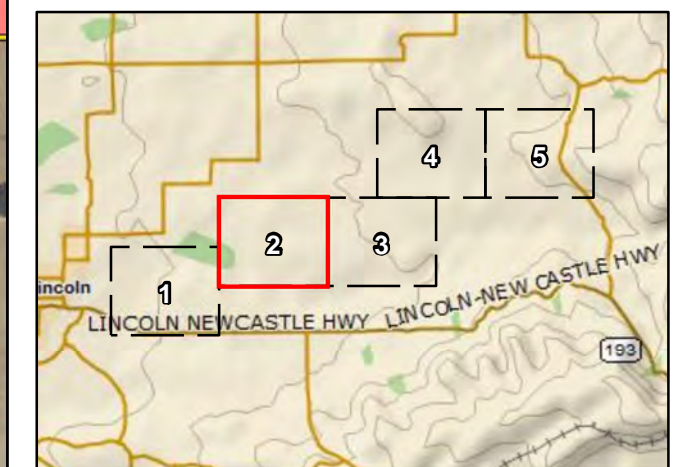
Project Boundary - 98.05 ac.

Survey Type

Survey Area

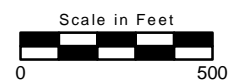
Assessment Area

Sources: NAIP 2018



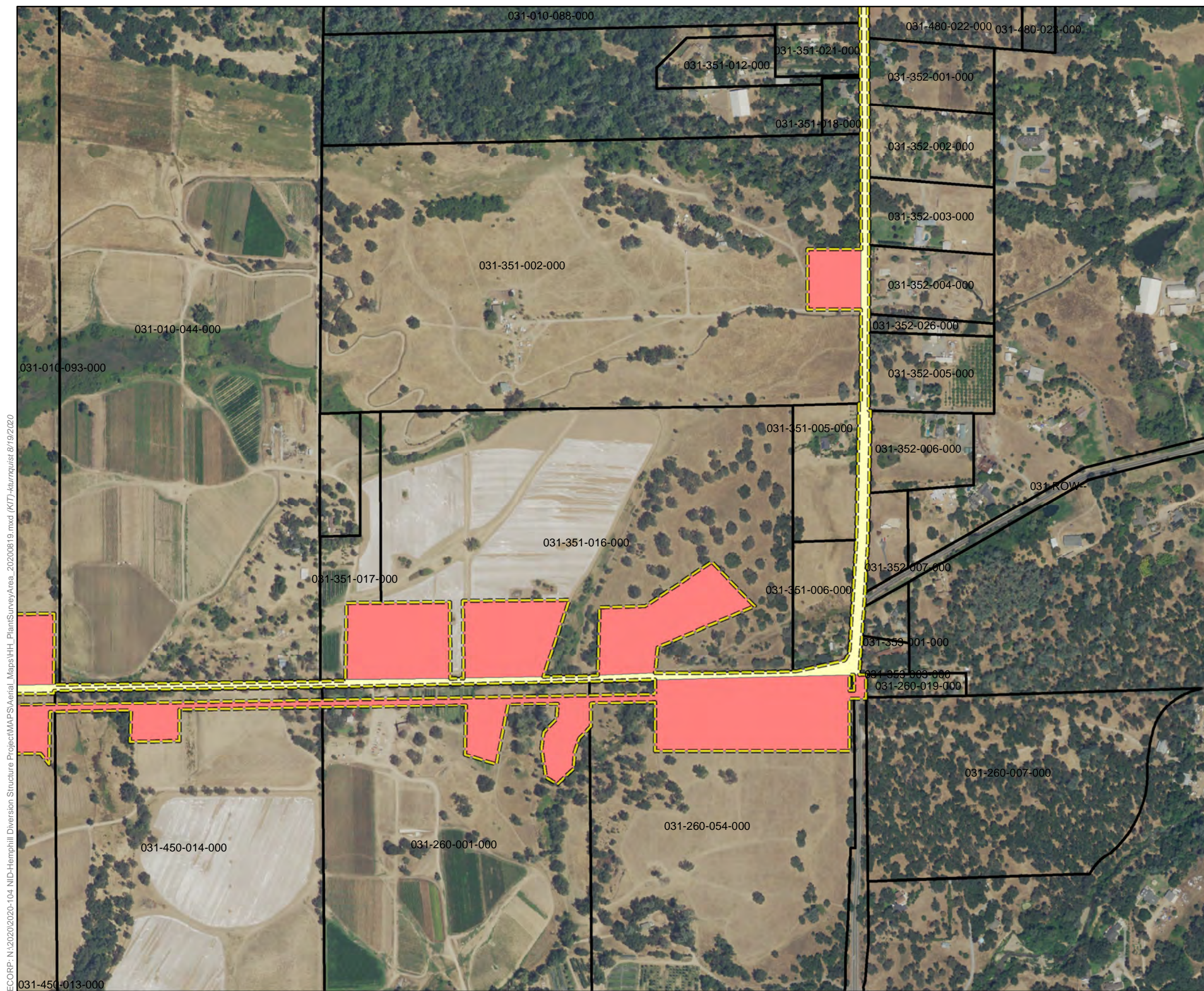
Map Date: 8/19/2020

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Figure 2. Survey Area



Map Features

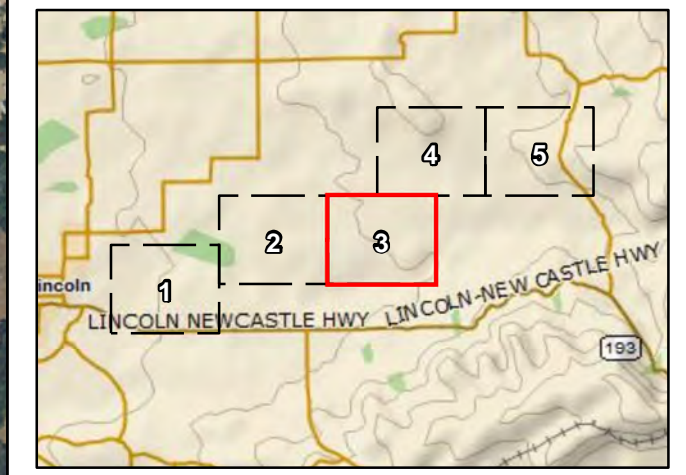
- Project Boundary - 98.05 ac.

Survey Type

- Survey Area
- Assessment Area

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Sources: NAIP 2018



031-450-013-000

Map Date: 8/19/2020

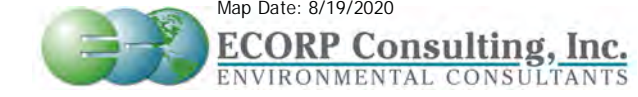
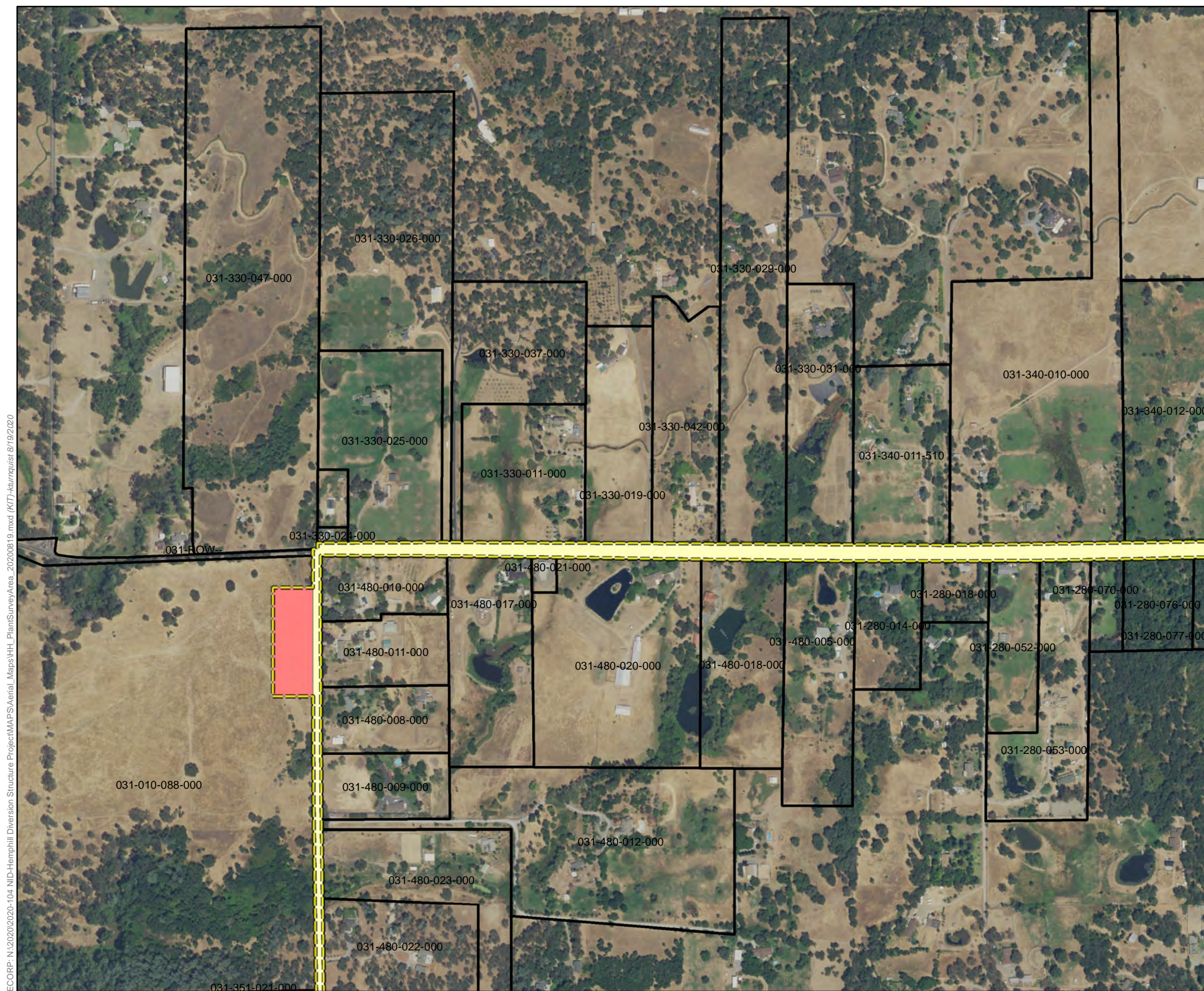


Figure 2. Survey Area



Map Features

- Project Boundary - 98.05 ac.

Survey Type

- Survey Area
- Assessment Area

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Sources: NAIP 2018

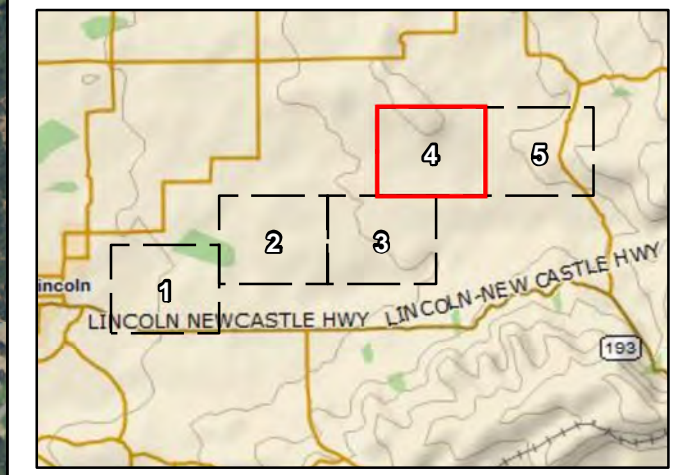
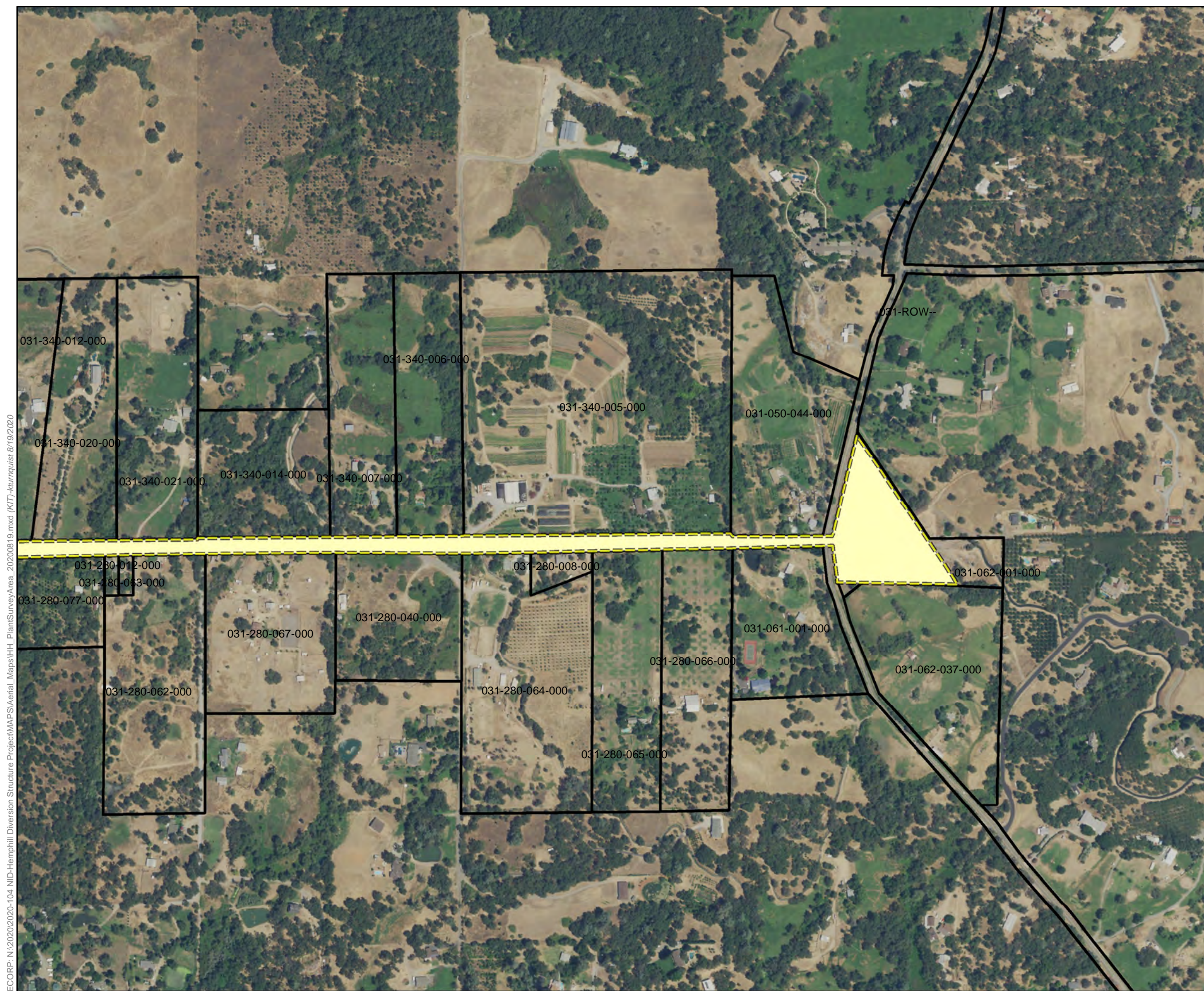


Figure 2. Survey Area



Map Features

- Project Boundary - 98.05 ac.

Survey Type

- Survey Area
- Assessment Area

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Sources: NAIP 2018

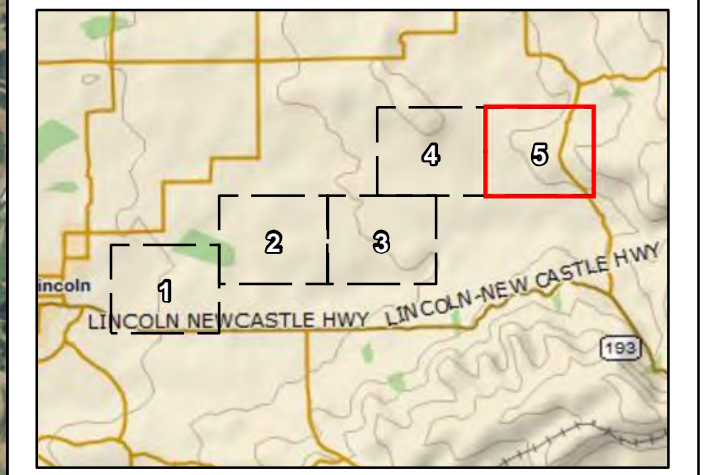


Figure 2. Survey Area

- Plants that meet the definitions of endangered or rare under Section 15380 of the State California Environmental Quality Act (CEQA) Guidelines.
- Plants listed as rare under the California Native Plant Protection Act (NPPA) (California Department of Fish and Game Code of California, Section 1900 et seq.).
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1B and 2] (see Section 1.3).
- Plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4).

1.3 California Rare Plant Ranks

The CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2020), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six ranks (i.e., CRPR).

The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by the California Department of Fish and Wildlife (CDFW) and the CNPS. The ranks are currently recognized in the California Natural Diversity Database (CNDDDB). The following are definitions of the CNPS CRPRs:

- CRPR 1A – presumed extirpated in California and either rare or extinct elsewhere.
- CRPR 1B – rare, threatened, or endangered in California and elsewhere.
- CRPR 2A – presumed extirpated in California, but more common elsewhere.
- CRPR 2B – rare, threatened, or endangered in California but more common elsewhere.
- CRPR 3 – a review list of plants about which more information is needed.
- CRPR 4 – a watch list of plants of limited distribution.

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 0.1 through 0.3, with 0.1 being the most threatened and 0.3 being the least threatened. Threat Ranks are generally assigned for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat).
- Threat Rank 0.2 – Moderately threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat).

- Threat Rank 0.3 – Not very threatened in California (<20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in assigning the Threat Rank, and differences in Threat Ranks do not constitute additional or different protection (CNPS 2020). Depending on the policy of the lead agency, substantial impacts to plants listed as CRPR 1A, 1B, 2, and 3 (regardless of threat rank) are typically considered significant under CEQA Guidelines Section 15380. For CRPR 4 species (regardless of threat rank), significance under CEQA is typically evaluated if the lead agency has determined those plants to be of local significance or regional importance. Such plants may be identified in local Habitat Conservation Plans or City or County General Plans.

1.4 Sensitive Natural Communities

The CDFW maintains the *California Natural Community List* (CDFW 2020), which provides a list of vegetation alliances, associations, and special stands as defined in the *Manual of California Vegetation* (MCV) (Sawyer et al. 2009), along with their respective State and global rarity ranks. Natural communities with a State rarity rank of S1, S2, or S3 are considered sensitive natural communities. Depending on the policy of the lead agency, impacts to sensitive natural communities may be considered significant under CEQA.

2.0 METHODS

2.1 Literature Review

Prior to conducting field surveys, background information was collected on the potential presence of special-status plants within or near the Study Area from a variety of sources. This included a review of resource agency species lists, literature review, online database query, voucher specimen review, and reference population review. The following resources were used as part of the literature review:

- CDFW CNDDDB record search for the “Gold Hill, California” and “Lincoln, California” 7.5-minute quadrangles and the 10 surrounding USGS quadrangles (CDFW 2020);
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2020); and
- CNPS’ electronic Inventory of Rare and Endangered Plants of California for the “Gold Hill, California” and “Lincoln, California” 7.5-minute quadrangles and the 10 surrounding USGS quadrangles (CNPS 2020).

2.2 Special-Status Plants Considered for the Study Area

Based on species occurrence information from the CNDDDB, the literature review, and general site knowledge, a list of special-status plant species requiring evaluation to determine their potential to occur within the Study Area was generated (Attachment A). Only special-status plants as defined in Section 1.2

were included in this analysis. Each of these species' potential to occur within the Study Area was assessed based on the following criteria:

- **Present** - Species was previously observed during field surveys or is known to occur within the Study Area based on documented occurrences within the CNDDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area based on site assessment or the literature research.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur, and/or the species is not known to occur within the vicinity of the Study Area based on CNDDDB records and other available documentation.
- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur within the vicinity of the Study Area based on CNDDDB records and other documentation.

2.3 Target Species

All of the species presented in Attachment A were evaluated for their potential to occur within the Study Area, and a target list of species was generated (Table 1). The target list includes all species determined to be present, have potential to occur, or have low potential to occur within the Study Area. Table 1 includes the listing status, a brief habitat description, the flowering period, and a determination on the potential to occur within the Study Area for each target species.

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Mexican mosquito fern (<i>Azolla microphylla</i>)	–	–	4.2	Marshes and swamps, ponds or slow-moving bodies of water (98'–328').	August	Potential to occur. Suitable habitat present onsite.
Big-scale balsamroot (<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>)	–	–	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland, sometimes on serpentinite soils (148'–5,102').	March–June	Potential to occur. Suitable habitat present onsite.
Valley brodiaea (<i>Brodiaea rosea</i> ssp. <i>vallicola</i>)	–	–	4.2	Occurs in old alluvial terraces and silty, sandy, or gravelly soils in vernal pools and swales within valley and foothill grassland (33'–1,100').	April–May	Potential to occur. Suitable habitat present onsite.
Hispid bird's-beak (<i>Chloropyron molle</i> ssp. <i>hispidum</i>)	–	–	1B.1	Alkaline soils in meadows and seeps, playas, and valley and foothill grasslands (3'–509').	June–September	Low potential to occur. While no suitable habitat was observed within the Survey Area, marginal habitat may be present within the Assessment Area.

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Brandegee's clarkia <i>(Clarkia biloba ssp. brandegeeeae)</i>	–	–	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246'–3,002').	May–July	Low potential to occur. Marginal habitat present onsite.
Dwarf downingia <i>(Downingia pusilla)</i>	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches) (Baldwin et al. 2012, CDFW 2020) (3'–1,460').	March–May	Potential to occur. Suitable habitat present onsite.
Stinkbells <i>(Fritillaria agrestis)</i>	–	–	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (33'–5,102').	March–June	Low potential to occur. Marginal habitat present onsite.
Butte County fritillary <i>(Fritillaria eastwoodiae)</i>	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentinite soils (164'–4,921').	March–June	Low potential to occur. Marginal habitat present onsite.
Boggs Lake hedge-hyssop <i>(Gratiola heterosepala)</i>	–	CE	1B.2	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Potential to occur. Suitable habitat present onsite.
Ahart's dwarf rush <i>(Juncus leiospermus var. ahartii)</i>	–	–	1B.2	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005) (98'–751').	March–May	Potential to occur. Suitable habitat present onsite.
Red Bluff dwarf rush <i>(Juncus leiospermus var. leiospermus)</i>	–	–	1B.1	Vernally mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools (115'–4,101').	March–June	Potential to occur. Suitable habitat present onsite.
Dubious pea <i>(Lathyrus sulphureus var. argillaceus)</i>	–	–	3	Cismontane woodland, lower montane coniferous forest and upper montane coniferous forest (492'–3,051').	April–May	Low potential to occur. Marginal habitat present onsite.

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Legenere (<i>Legenere limosa</i>)	–	–	1B.1	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005) (3'–2,887').	April–June	Potential to occur. Suitable habitat present onsite.
Humboldt lily (<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>)	–	–	4.2	Occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (295'–4,199').	May–August	Low potential to occur. Marginal habitat present onsite.
Pincushion navarretia (<i>Navarretia myersii</i> ssp. <i>myersii</i>)	–	–	1B.1	Often acidic soils in vernal pools (66'–1,083').	April–May	Potential to occur. While no suitable habitat was observed within the Survey Area, suitable habitat may be present within the Assessment Area.
Adobe navarretia (<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>)	–	–	4.2	Clay and sometimes serpentinite soils in vernal mesic valley and foothill grasslands and sometimes in vernal pools (328'–3,281').	April–June	Potential to occur. Suitable habitat present onsite.
Sacramento Orcutt grass (<i>Orcuttia viscida</i>)	FE	CE	1B.1	Vernal pools (98'–328').	April–July	Low potential to occur. While no suitable habitat was observed within the Survey Area, marginal habitat may be present within the Assessment Area.
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Potential to occur. Suitable habitat present onsite.

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Brazilian watermeal (<i>Wolffia brasiliensis</i>)	–	–	2B.3	Assorted shallow freshwater marshes and swamps (66'–328').	April–December	Potential to occur. Suitable habitat present onsite.

¹ Habitat descriptions for plant species are from the CNPS Inventory of Rare and Endangered Plants (CNPS 2020).

Status Codes:

ESA	Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered.
FT	FESA listed, Threatened.
CE	CESA or NPPA listed, Endangered.
1A	CRPR/Presumed extinct.
1B	CRPRs/Rare or Endangered in California and elsewhere.
2B	CRPR /Rare or Endangered in California, more common elsewhere.
0.1	Threat Rank/Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)

As discussed in Section 1.0, only a subset of the target species were identifiable at the time of the survey. These species include:

- Mexican mosquito fern (*Azolla microphylla*)
- Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)
- Hispid bird's-beak (*Chloropyron molle* ssp. *hispidum*)
- Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeae*)
- Stinkbells (*Fritillaria agrestis*)
- Butte County fritillary (*Fritillaria eastwoodiae*)
- Boggs Lake hedge-hyssop (*Gratiola heterosepala*)
- Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*)
- Legenere (*Legenere limosa*)
- Humboldt lily (*Lilium humboldtii* ssp. *humboldtii*)
- Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*)
- Sacramento Orcutt grass (*Orcuttia viscida*)
- Sanford's arrowhead (*Sagittaria sanfordii*)
- Brazilian watermeal (*Wolffia brasiliensis*)

An additional survey is required to ensure complete survey coverage for the remaining target species.

2.4 Reference Site Visits

Reference populations, where available, were visited to assess phenology and to observe morphology for target species. When reference populations were not available, herbarium specimens, photographs from Calflora (Calflora 2020) and Calphotos (Calphotos 2020), and *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012) were used as a reference. Attachment B identifies the reference source for each of the target species including the location of the population, dates of visits, and phenological stage of the species at the time of the field visits.

2.5 Field Surveys

A determinate-level field survey was conducted mostly in accordance with guidelines promulgated by USFWS (USFWS 2000), CDFW (CDFW 2018), and CNPS (CNPS 2001); however, only a subset of the target species were identifiable at the time of the survey. Those species are listed in Section 2.3. The survey was conducted on June 28 and June 29, 2020 by ECORP botanists Hannah Kang and Hannah Stone. A list of field personnel qualifications is included as Attachment C. The biologists walked meandering transects throughout the Survey Area to ensure complete coverage of all suitable habitat for all target species. The Assessment Area was not included in the field survey (Figure 2).

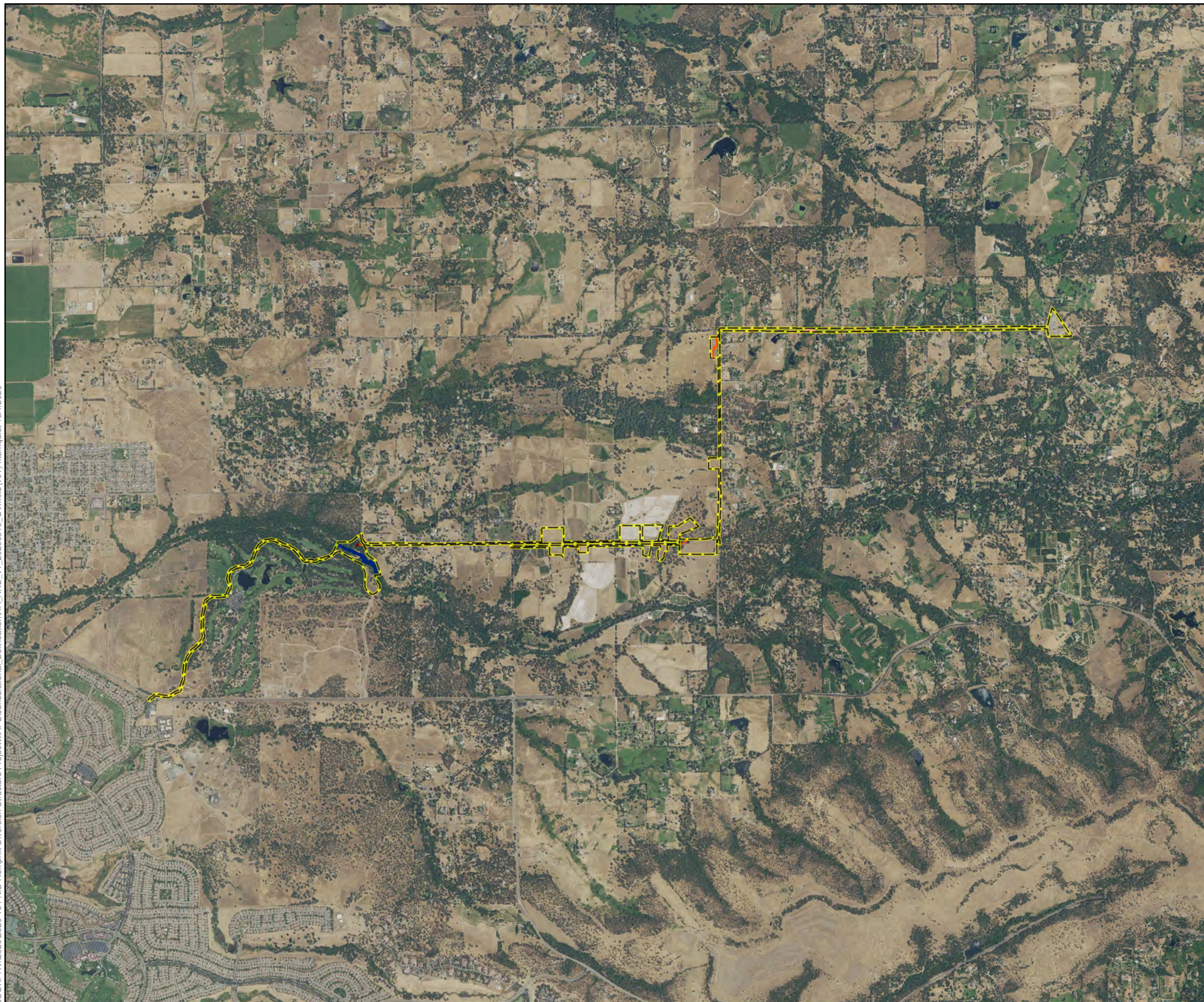
A complete list of all plants observed within the Survey Area was generated (Attachment D). All species were identified to the lowest possible taxonomic level required to assess rarity. Plant species identification, nomenclature, and taxonomy followed *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012). Vegetation community classification was based on the classification systems presented in the MCV (Sawyer et al. 2009).

3.0 EXISTING SITE CONDITIONS

The Study Area is located within flat to gently rolling terrain situated in the Sierra Nevada Foothills Subregion of the California Floristic Province (Baldwin et al. 2012). Elevations within the Study Area range from approximately 180 to 430 feet above mean sea level (MSL). Based on information gathered from the closest weather station, the average annual precipitation for the vicinity of the Study Area is approximately 20.3 inches (with the wettest period November-March), and average daily temperatures range from 41.5 degrees Fahrenheit (°F) in winter to 91.2°F in summer (National Oceanic and Atmospheric Administration [NOAA] 2020).

The Study Area is largely composed of developed areas including the Hemphill Canal, the Hemphill Diversion Structure, and associated dirt and gravel access roads; paved two-lane roads, portions of the Turkey Creek Golf Course, residential yards, agricultural fields, and the NID maintenance yard. Vegetation within undeveloped portions of the Study Area is primarily oak woodland, although annual grassland occurs on portions of rural residential parcels adjacent to the roadways; and patches of riparian, wetland, or ruderal vegetation is associated with aquatic features or disturbed areas. The Hemphill Canal and Auburn Ravine make up most of the aquatic resources within the Study Area, although there are multiple other aquatic resources along the roadways and within the Assessment Area (Figure 3. *Aquatic Resources Delineation*). A description for each vegetation community and aquatic resource type within the Study Area is presented in the following sections.

ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_ARL_v1_20200910_OV.mxd (KIT) kumquist 10/1/2020



Map Features









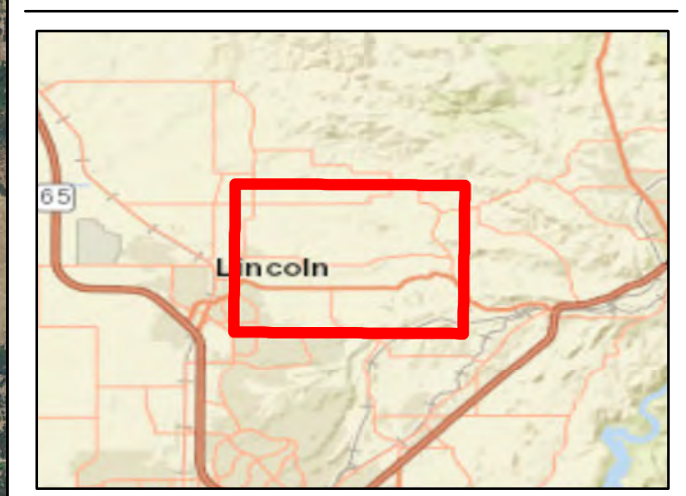
-  Project Areas - 98.05 ac.
- Aquatic Features - 5.387 Total Acres¹***
-  Creek - 2.779 ac.
-  Ditch - 1.384 ac.
-  Ephemeral Drainage - 0.014 ac.
-  Pond - 0.001 ac.
-  Riparian Wetland - 0.310 ac.
-  Seasonal Wetland - 0.074 ac.
-  Seasonal Wetland Swale - 0.826 ac.

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
 * The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.



Map Date: 10/1/2020

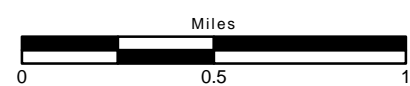


Figure 3. Aquatic Resources Delineation

ECORP: N120202020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200910.mxd (KIT)-kurnquist 10/1/2020



Map Features





-  Project Areas - 98.05 ac.
-  Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
-  Ditch
-  Ephemeral Drainage

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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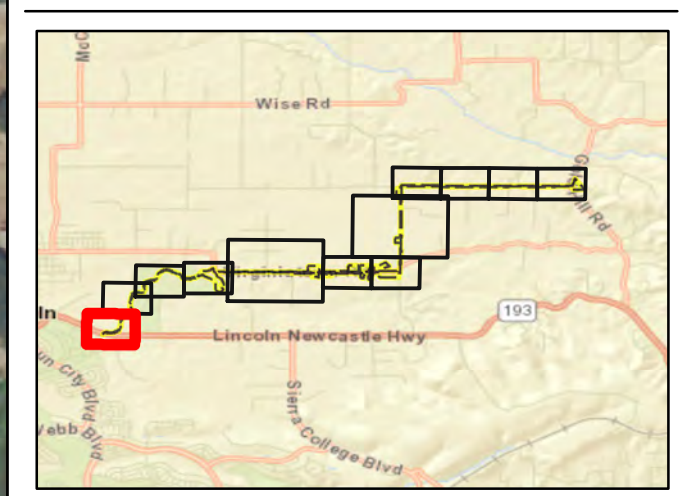


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200910.mxd (KIT)-kurnquist 10/1/2020



- Map Features**
- Project Areas - 98.05 ac.
 - Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Ditch
 - Ephemeral Drainage

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
 * The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

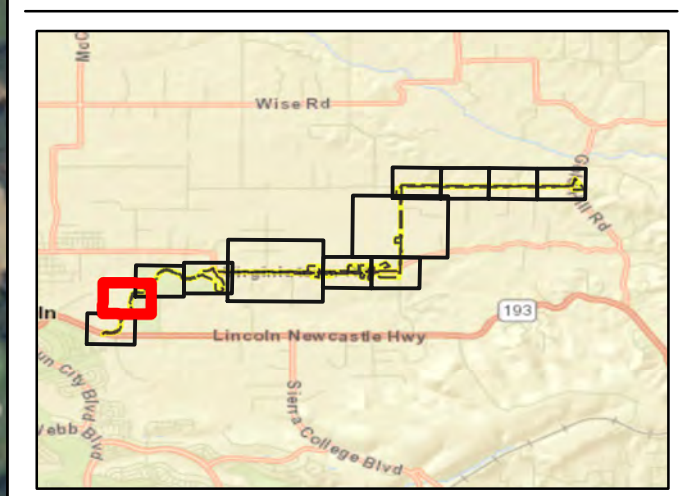


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200810.mxd (KIT)-kurnquist 10/1/2020



Map Features

Project Areas - 98.05 ac.

Reference Coordinate (NAD83)

Aquatic Features^{1*}

Ditch

Photo Source: NAIP 2018
Boundary Source: NID/ECORP
Delineator(s): Keith Kwan & Hannah Stone
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
^{*} The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

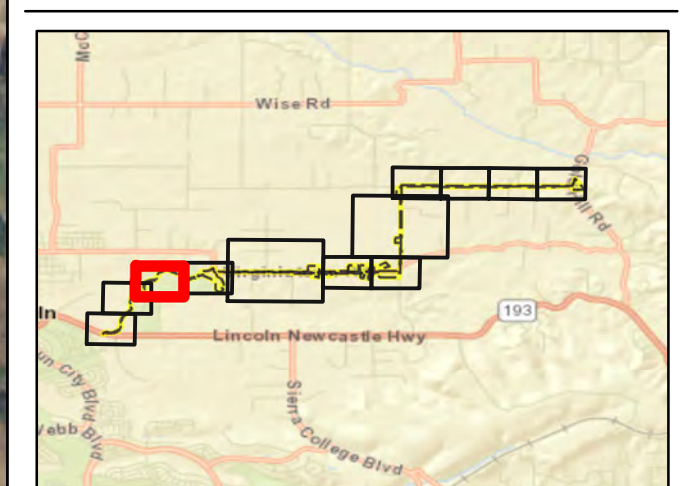


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project





Map Features

- Project Areas - 98.05 ac.
- + Reference Coordinate (NAD83)
- ⊗ Existing Culvert

Feature Type

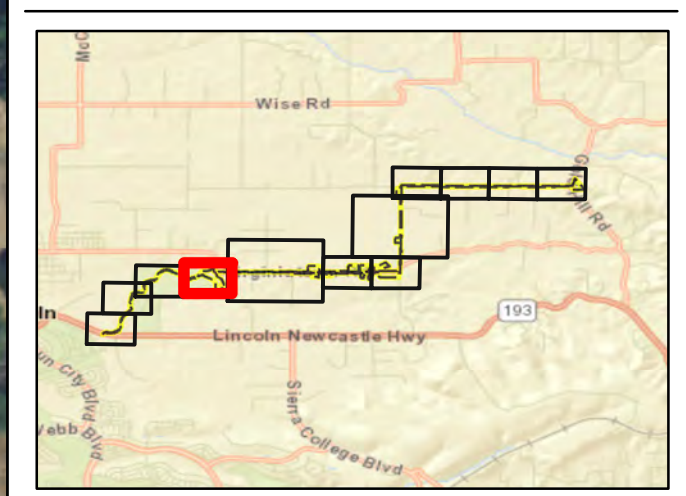
- Upland
- Waters

Aquatic Features^{1*}

- Creek
- Ditch
- Seasonal Wetland
- Seasonal Wetland Swale

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_ARC_v1_20200910.mxd (KIT)-kurnquist 10/1/2020

Figure 3. Aquatic Resources Delineation
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ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200810.mxd (KIT)-kurnquist 10/1/2020



Map Features


 Project Areas - 98.05 ac.

Photo Source: NAIP 2018
Boundary Source: NID/ECORP
Delineator(s): Keith Kwan & Hannah Stone
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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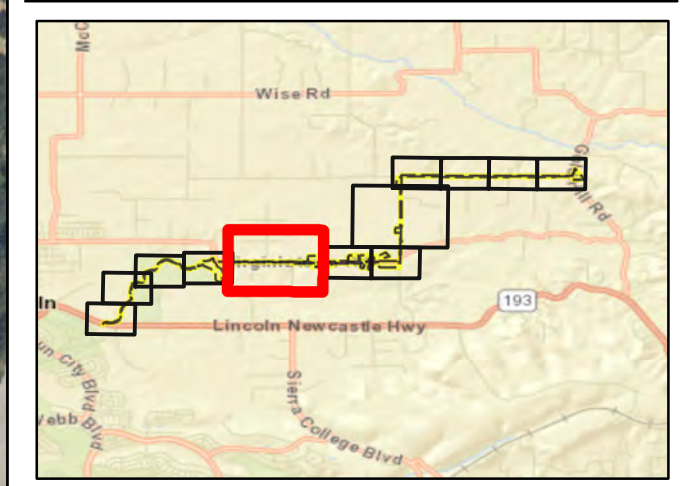


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



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Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Seasonal Wetland Swale

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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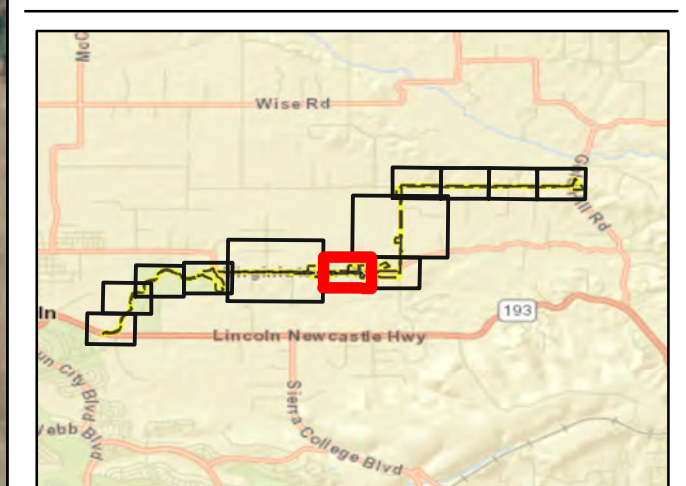
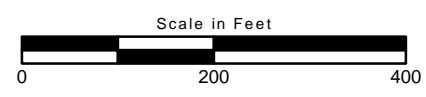


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



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Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)

Aquatic Features^{1*}

- Seasonal Wetland Swale

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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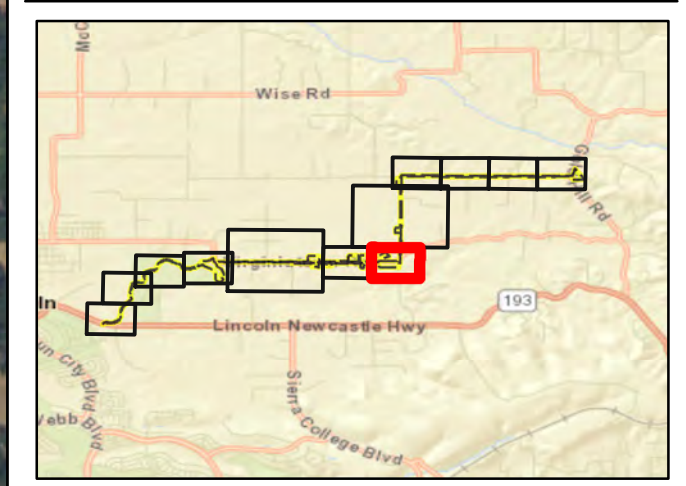


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_ARC_v1_20200810.mxd (KIT)-kurnquist 10/1/2020



- Map Features**
- Project Areas - 98.05 ac.
 - Reference Coordinate (NAD83)
 - Existing Culvert
- Aquatic Features^{1*}**
- Ditch
 - Seasonal Wetland Swale

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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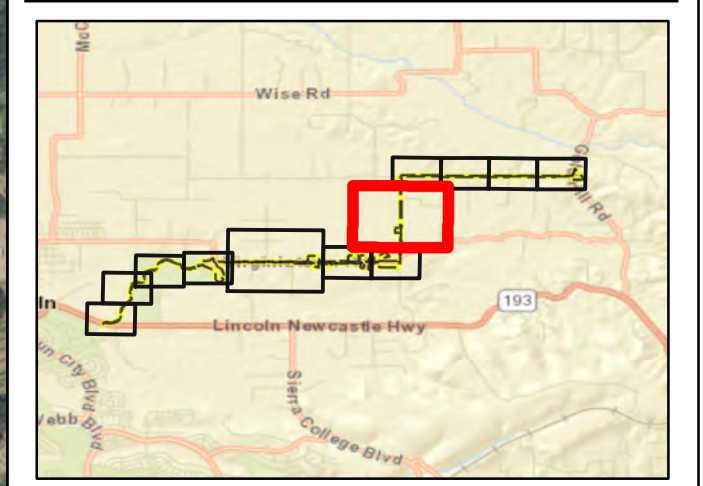


Figure 3. Aquatic Resources Delineation
 2020-104 NID-Hemphill Diversion Structure Project

ECORP: N120202020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200910.mxd (KIT)-kurnquist 10/1/2020



Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Seasonal Wetland Swale

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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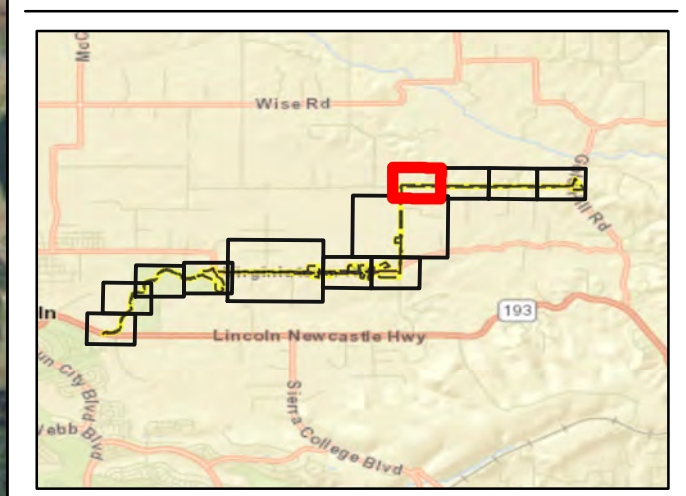


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project

ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_ARD_v1_20200810.mxd (KIT)-kurnquist 10/1/2020



Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Riparian Wetland
- Seasonal Wetland Swale

Photo Source: NAIP 2018
Boundary Source: NID/ECORP
Delineator(s): Keith Kwan & Hannah Stone
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

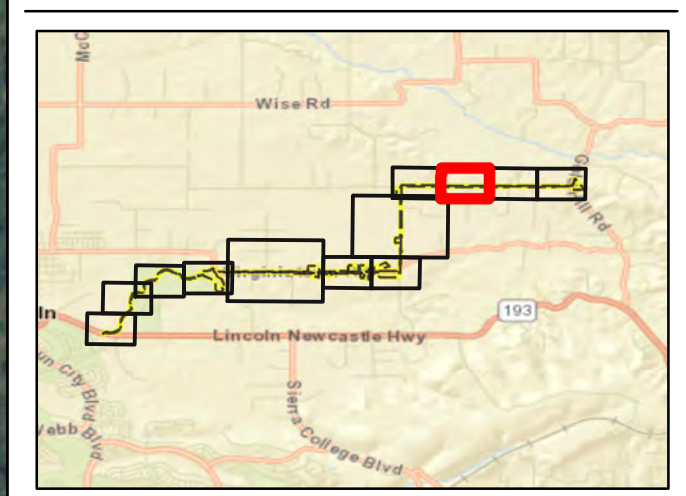


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_Ard_v1_20200910.mxd (KIT)-kurnquist 10/1/2020



Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Ditch
- Seasonal Wetland Swale

Photo Source: NAIP 2018
Boundary Source: NID/ECORP
Delineator(s): Keith Kwan & Hannah Stone
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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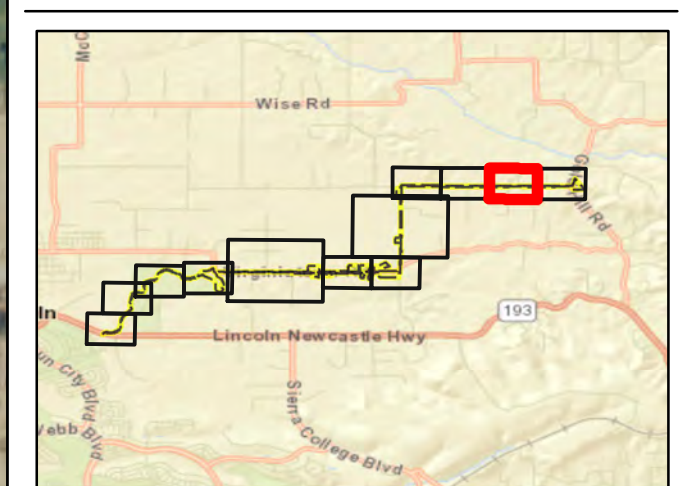
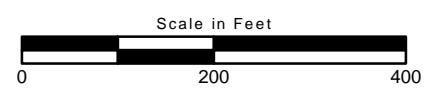


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Jurisdictional_Delineation\HH_AR_D_v1_20200810.mxd (KIT)-kurnquist 10/1/2020



Map Features

- Project Areas - 98.05 ac.
- Reference Coordinate (NAD83)
- Aquatic Features^{1*}**
- Ditch
- Pond

Photo Source: NAIP 2018
 Boundary Source: NID/ECORP
 Delineator(s): Keith Kwan & Hannah Stone
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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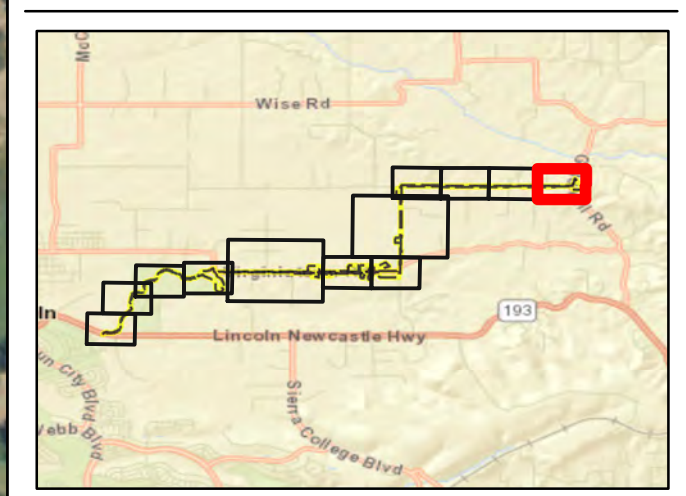


Figure 3. Aquatic Resources Delineation

2020-104 NID-Hemphill Diversion Structure Project



3.1 Vegetation Communities

The Study Area is located within the Placer County Conservation Program (PCCP) future growth area (Placer County et al. 2020). Large-scale mapping of PCCP land cover types has occurred within the PCCP area. As per survey protocol, vegetation communities within the Survey Area were identified at the vegetation alliance level according to the MCV (Sawyer et al. 2009). Vegetation communities based on the MCV are of finer scale and classification, which may align with PCCP land cover types on a macrogroup level. Each vegetation community is described below, as observed during the survey.

3.1.1 Interior Live Oak Woodland

Interior live oak (*Quercus wislizeni*) woodland occurs in drier habitats adjacent to the canal, in a remnant strip between the roads and residential properties, within the Assessment Area, and within the NID facility (Figure 4: *Vegetation Communities*). Interior live oak woodland within the Study Area is consistent with the *Quercus wislizeni* - Forest & Woodland Alliance (Sawyer et al. 2009) and includes several predominant oak species. Interior live oaks are dominant or codominant with blue oak (*Quercus douglasii*), and valley oaks (*Quercus lobata*) are scattered or clumped throughout. Dominant understory vegetation includes poison oak (*Toxicodendron diversilobum*), hedgehog dog-tail grass (*Cynosurus echinatus*), and field hedge parsley (*Torilis arvensis*).

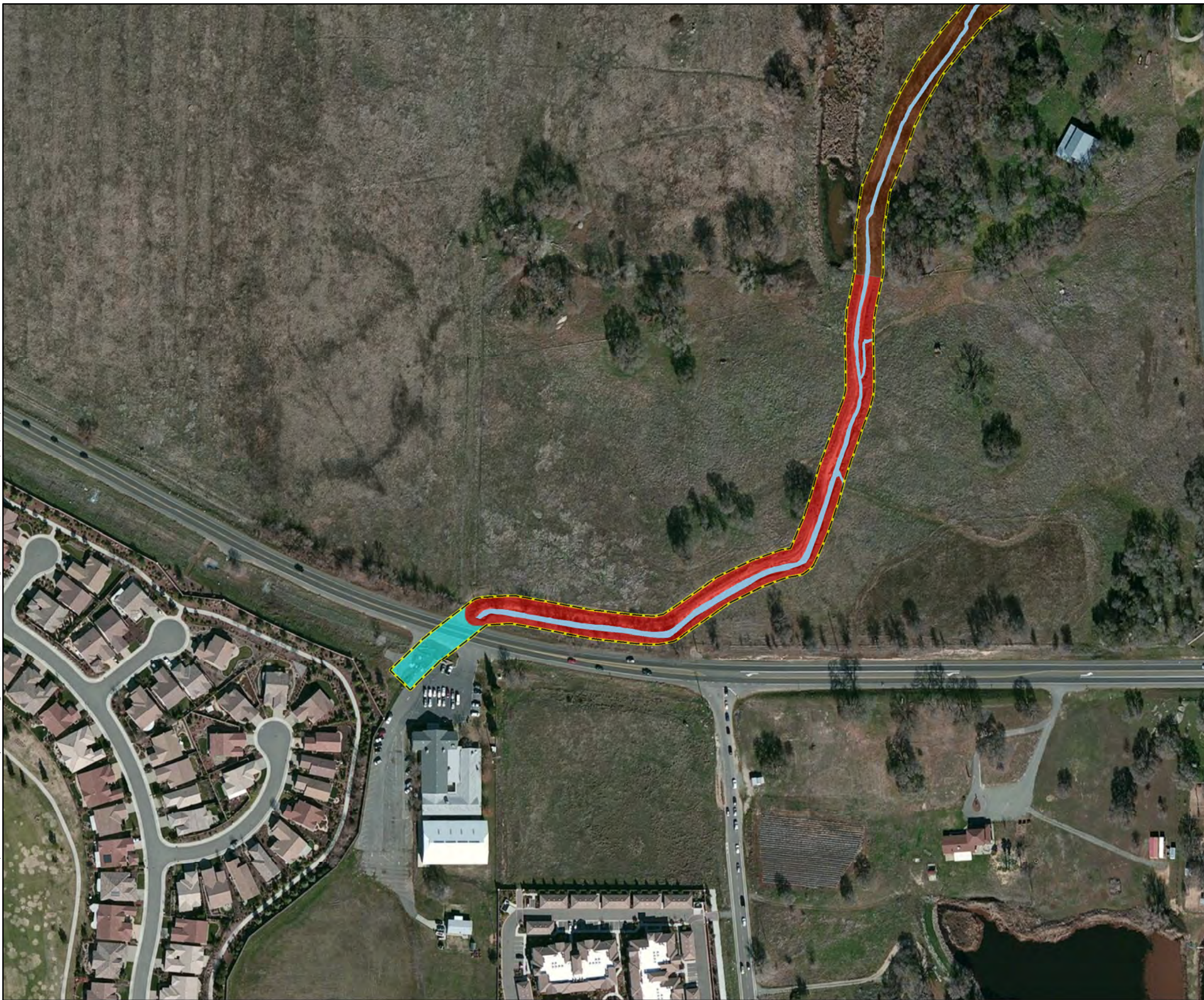
3.1.2 Valley Oak Woodland

Valley oak woodland occurs in more mesic areas along the canal, and between the creek and interior live oak woodlands. Valley oak woodland within the Study Area is consistent with the *Quercus lobata* Forest & Woodland Alliance (Sawyer et al. 2009). Valley oak is the dominant tree species, or co-dominant with interior live oak and/or blue oak. The valley oak woodland near the diversion dam includes a stand of mature California buckeye (*Aesculus californica*) and a stand of black walnuts (*Juglans hindsii*) within the subcanopy.

The valley oak woodland also includes a narrow riparian strip on both sides of Auburn Ravine. Within the riparian strip, white alder is the dominant tree species, although several other tree species are scattered or clumped throughout, including valley oaks, Fremont's cottonwoods (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), multiple willow species (sandbar willow [*Salix exigua*], arroyo willow [*Salix lasiolepis*], and Goodding's black willow [*Salix gooddingii*]), and black walnut. Dominant understory vegetation within upland areas includes poison-oak, hedgehog dog-tail grass, and field hedge parsley. Dominant understory vegetation within the narrow riparian strip includes Himalayan blackberry (*Rubus armeniacus*) and rice cutgrass (*Leersia oryzoides*).

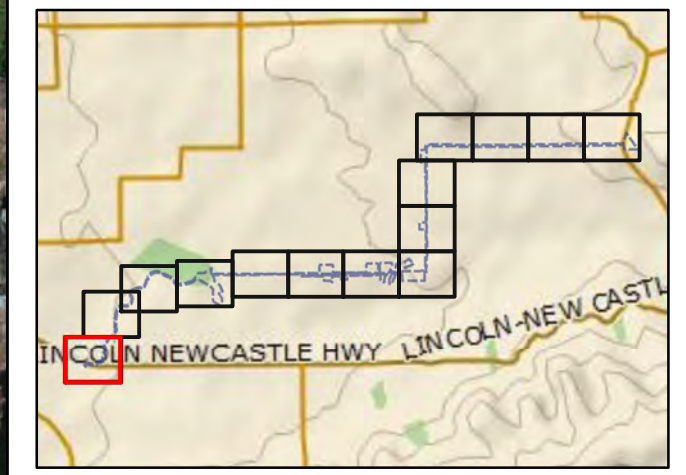
Valley oak woodland has a State rarity ranking of S1.1.

ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Vegetation_and_LandCover\HH_VegCover\HH_VegCommunities_20201013.mxd (KT)-kturquist 11/4/2020

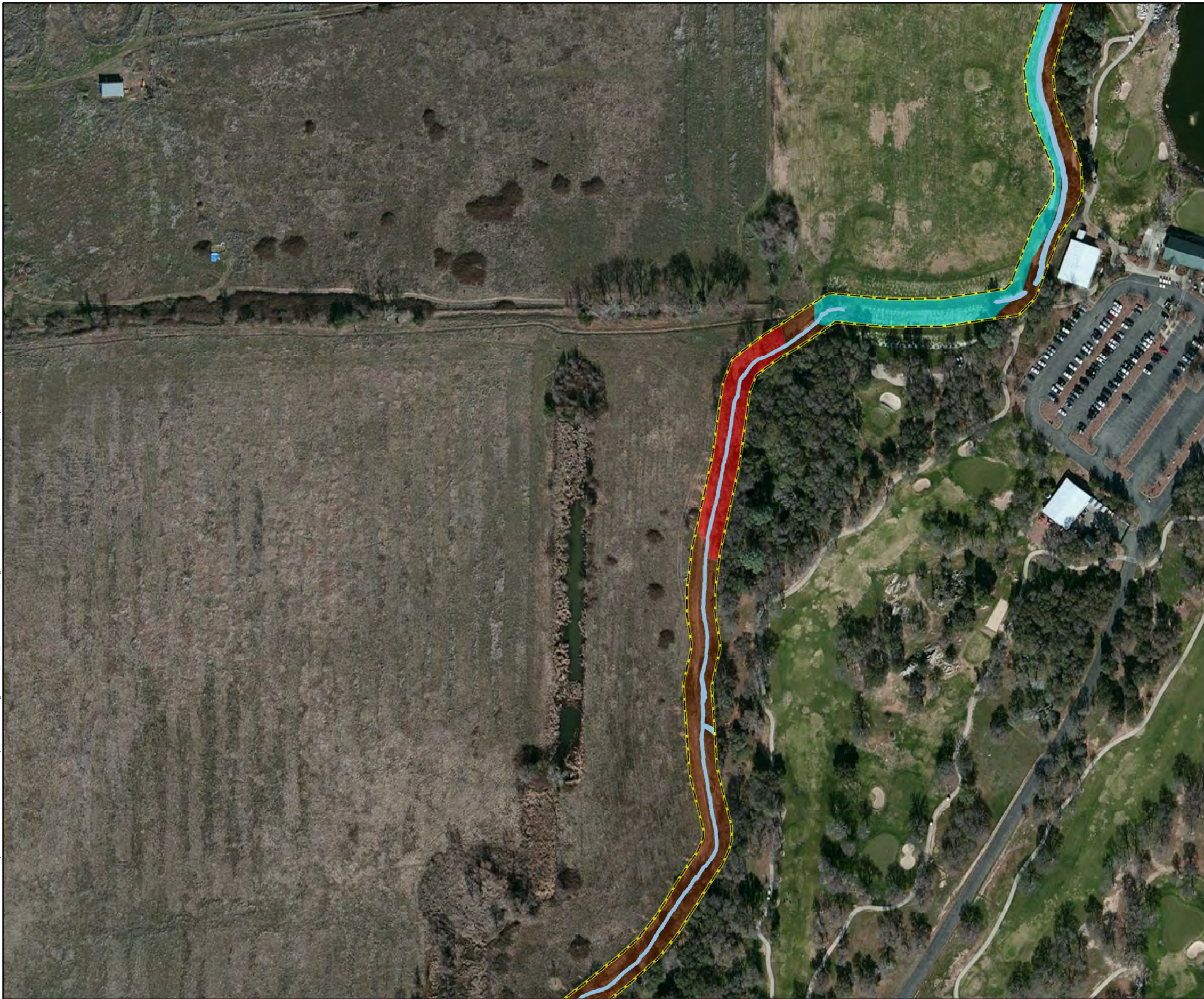


- Map Features**
- Project Areas - 98.05 ac.
- Vegetation Community**
- Annual Grassland - 22.51 ac.
 - Developed/Disturbed - 40.52 ac.
 - Interior Live Oak Woodland - 1.62 ac.
 - Live Oak Woodland - 12.02 ac.
 - Valley Oak Woodland - 18.52 ac.
- Aquatic Resources**
- Waters


Sources: Esri Imagery (Clarity View)




ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Vegetation_and_LandCover\HH_VegCommunities_20201013.mxd (KT)-kturquist 11/4/2020



Map Features


 Project Areas - 98.05 ac.

Vegetation Community

 Annual Grassland - 22.51 ac.

 Developed/Disturbed - 40.52 ac.

 Interior Live Oak Woodland - 1.62 ac.

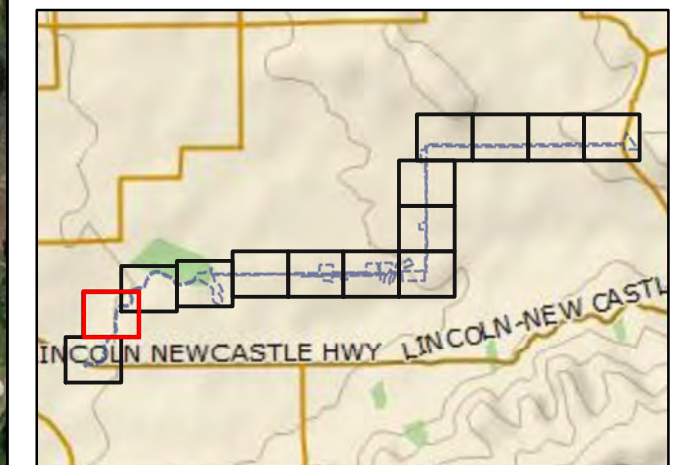
 Live Oak Woodland - 12.02 ac.

 Valley Oak Woodland - 18.52 ac.

Aquatic Resources

 Waters

Sources: Esri Imagery (Clarity View)



Map Date: 11/4/2020

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

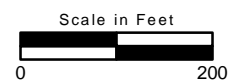


Figure 4. Vegetation Communities
Sheet 2 of 14

2020-104 NID-Hemphill Diversion Structure Project

ECORP_N120202020-104_NID-Hemphill Diversion Structure Project\MAPS\Vegetation_and_LandCover\HH_VegCommunities_20201013.mxd (KT)-kturquist 11/4/2020



Map Features

-  Project Areas - 98.05 ac.

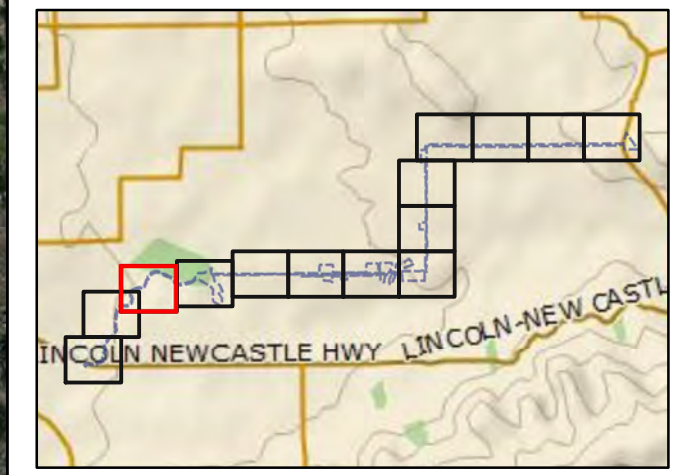
Vegetation Community

-  Annual Grassland - 22.51 ac.
-  Developed/Disturbed - 40.52 ac.
-  Interior Live Oak Woodland - 1.62 ac.
-  Live Oak Woodland - 12.02 ac.
-  Valley Oak Woodland - 18.52 ac.

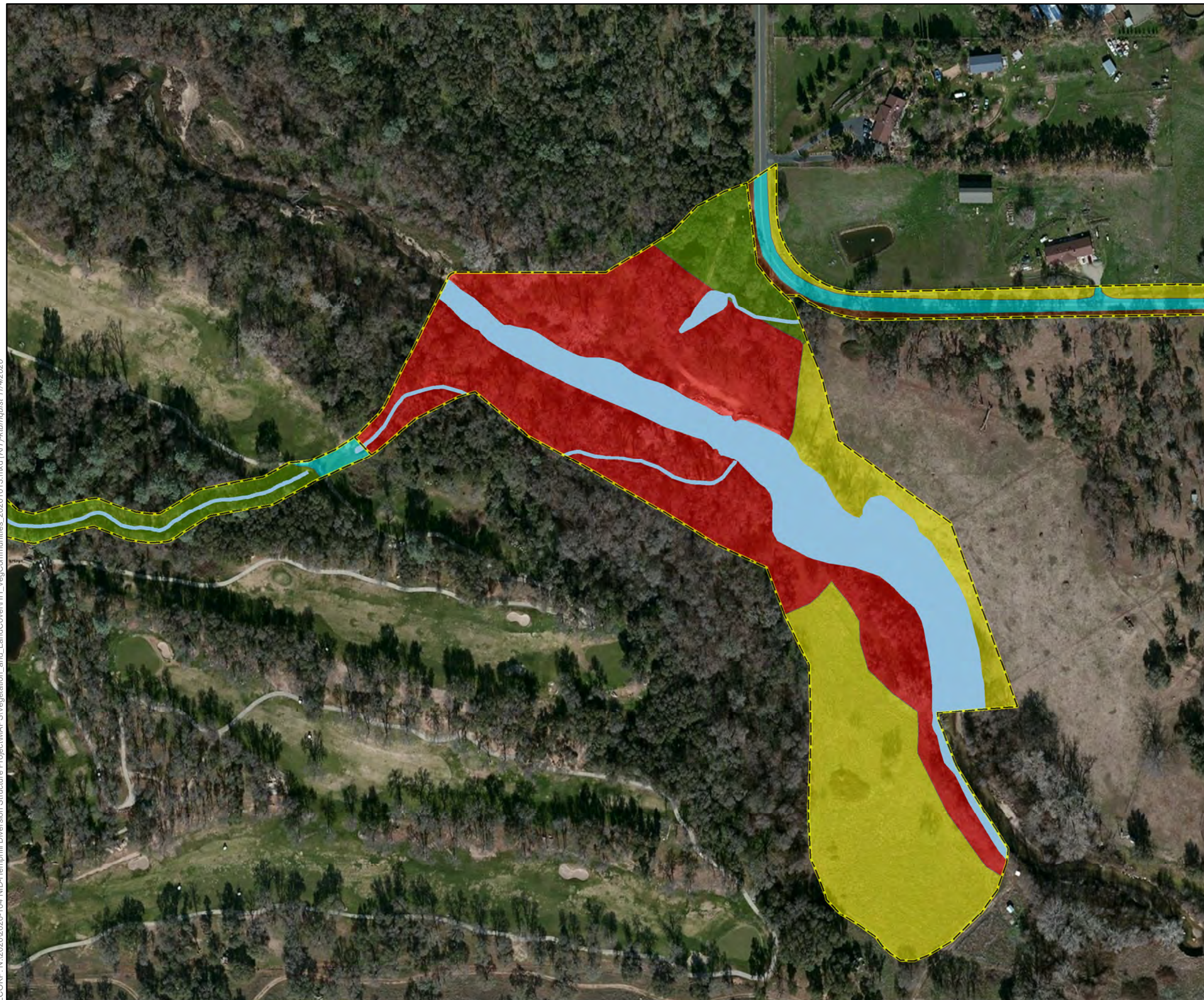
Aquatic Resources

-  Waters

Sources: Esri Imagery (Clarity View)



ECORP: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Vegetation_and_LandCover\HH_VegCommunities_20201013.mxd (KT)-kturquist 11/4/2020



Map Features

 Project Areas - 98.05 ac.

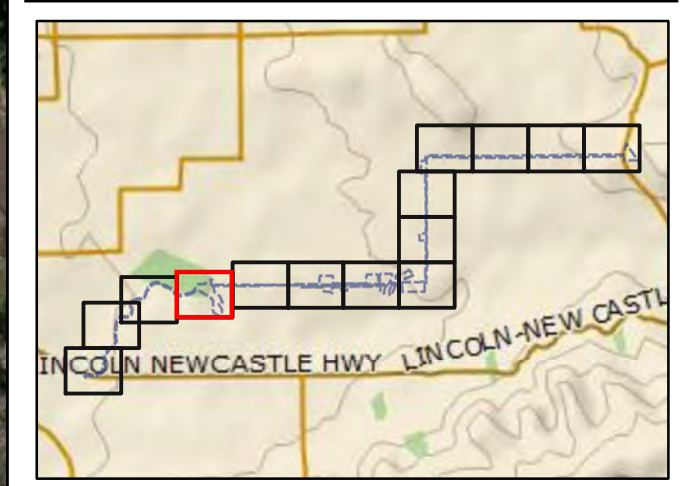
Vegetation Community

-  Annual Grassland - 22.51 ac.
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-  Valley Oak Woodland - 18.52 ac.

Aquatic Resources

 Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

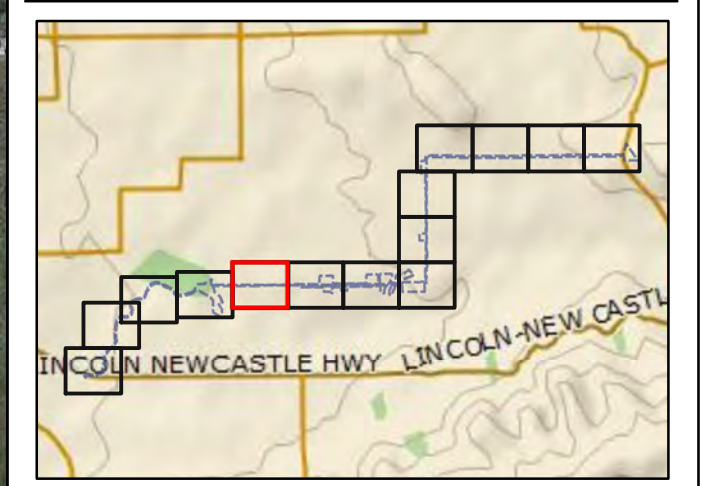
Vegetation Community

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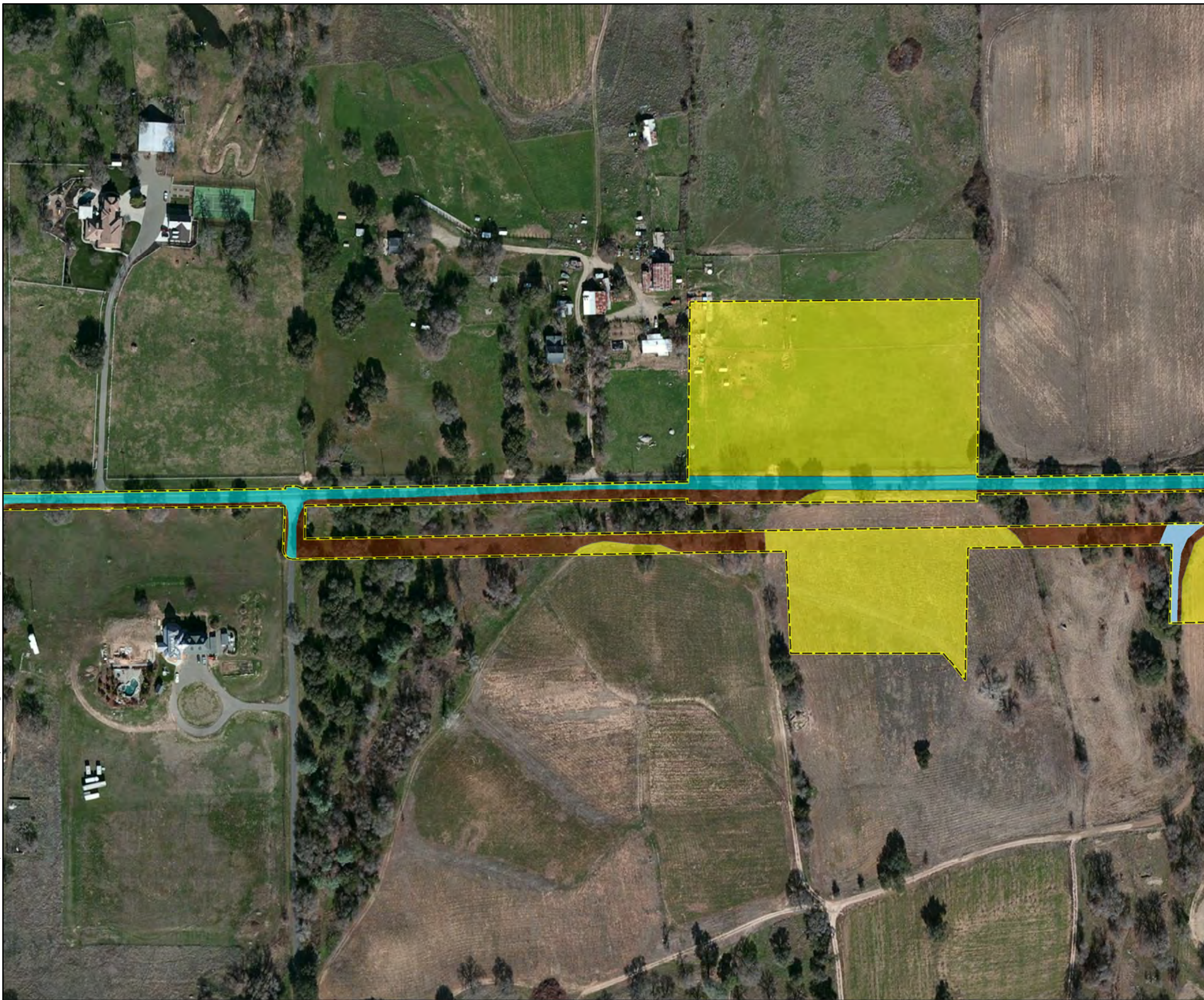
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

Vegetation Community

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Developed/Disturbed - 40.52 ac.

Interior Live Oak Woodland - 1.62 ac.

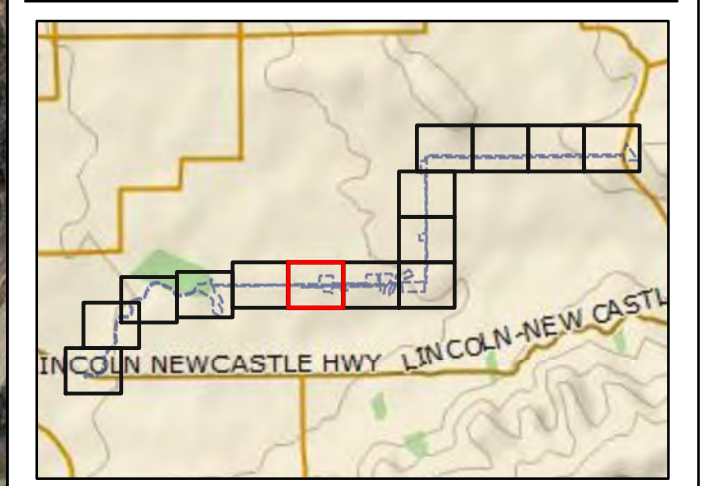
Live Oak Woodland - 12.02 ac.

Valley Oak Woodland - 18.52 ac.

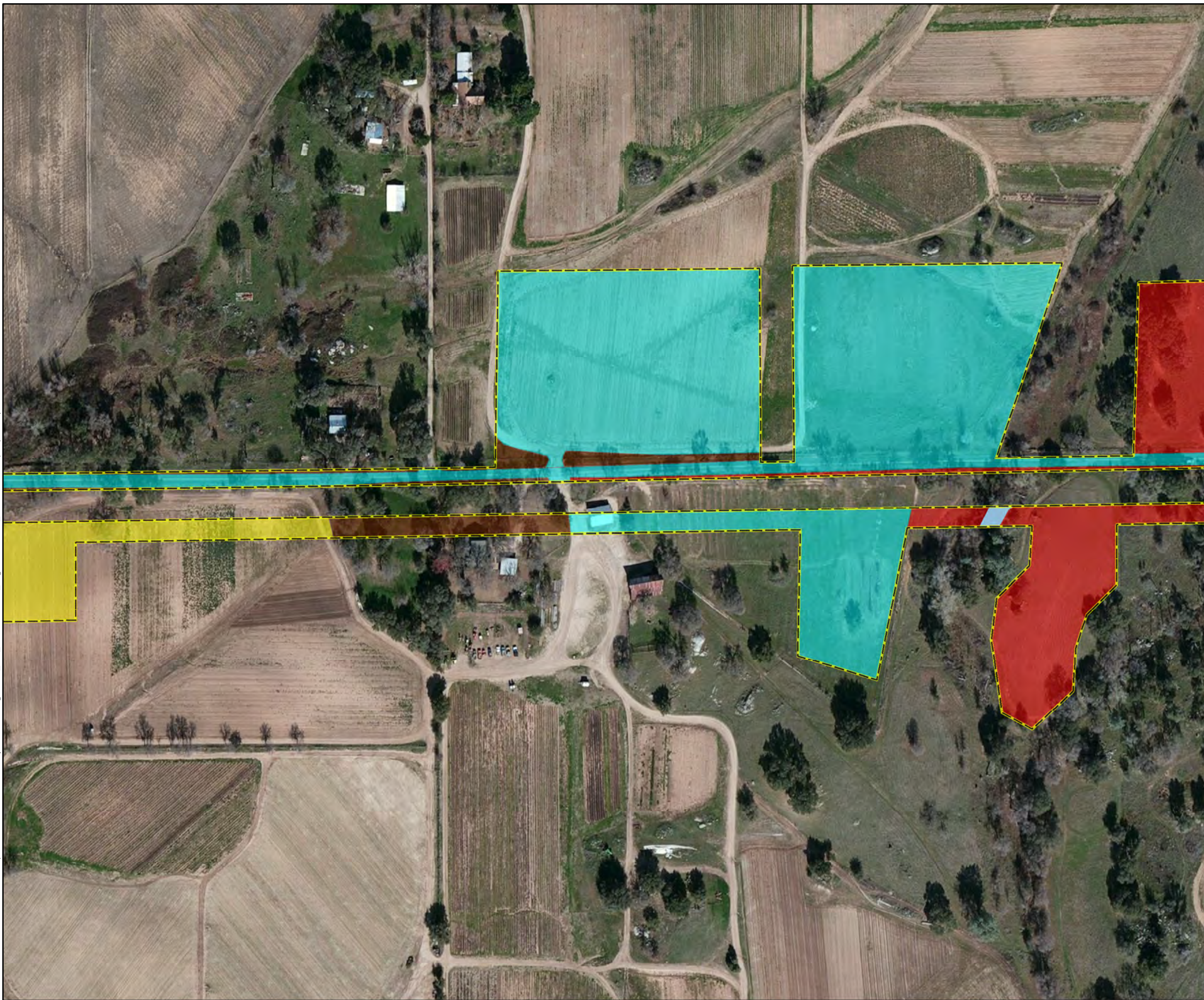
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

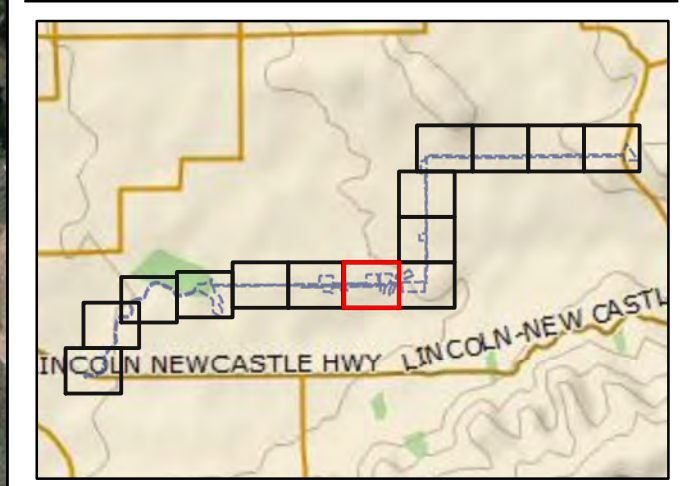
Vegetation Community

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- Developed/Disturbed - 40.52 ac.
- Interior Live Oak Woodland - 1.62 ac.
- Live Oak Woodland - 12.02 ac.
- Valley Oak Woodland - 18.52 ac.

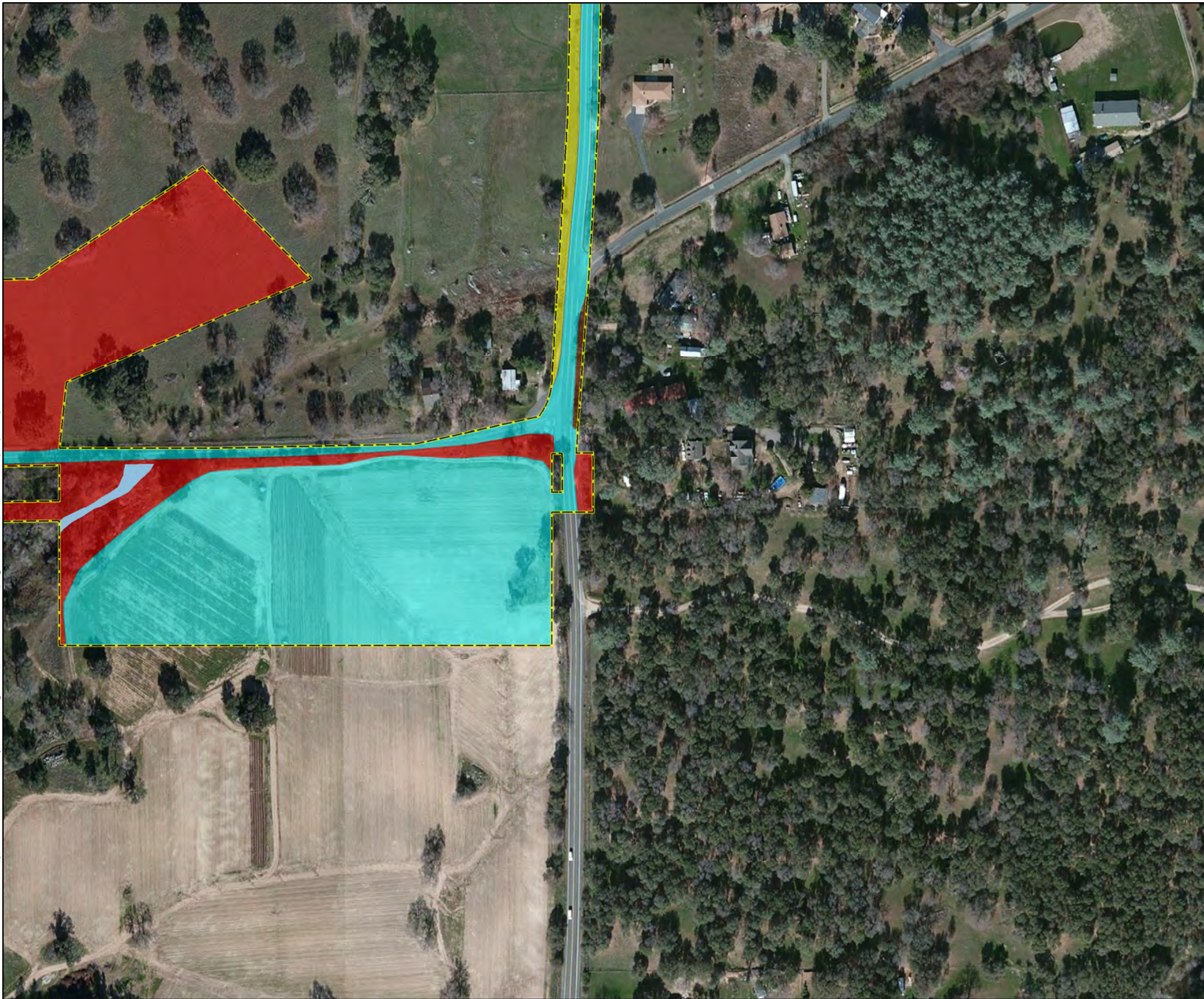
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

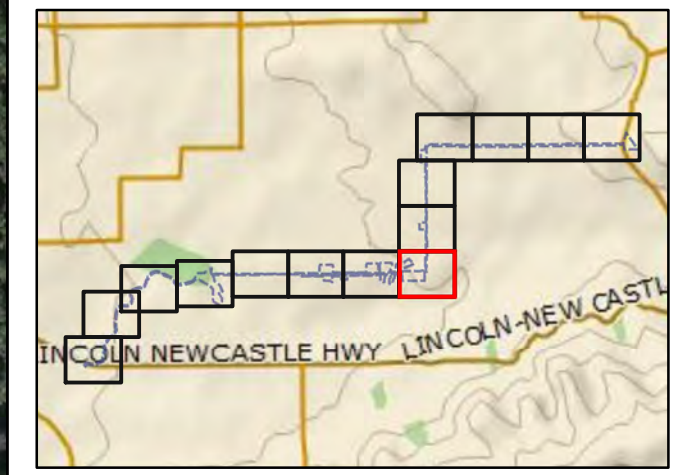
Vegetation Community

- Annual Grassland - 22.51 ac.
- Developed/Disturbed - 40.52 ac.
- Interior Live Oak Woodland - 1.62 ac.
- Live Oak Woodland - 12.02 ac.
- Valley Oak Woodland - 18.52 ac.

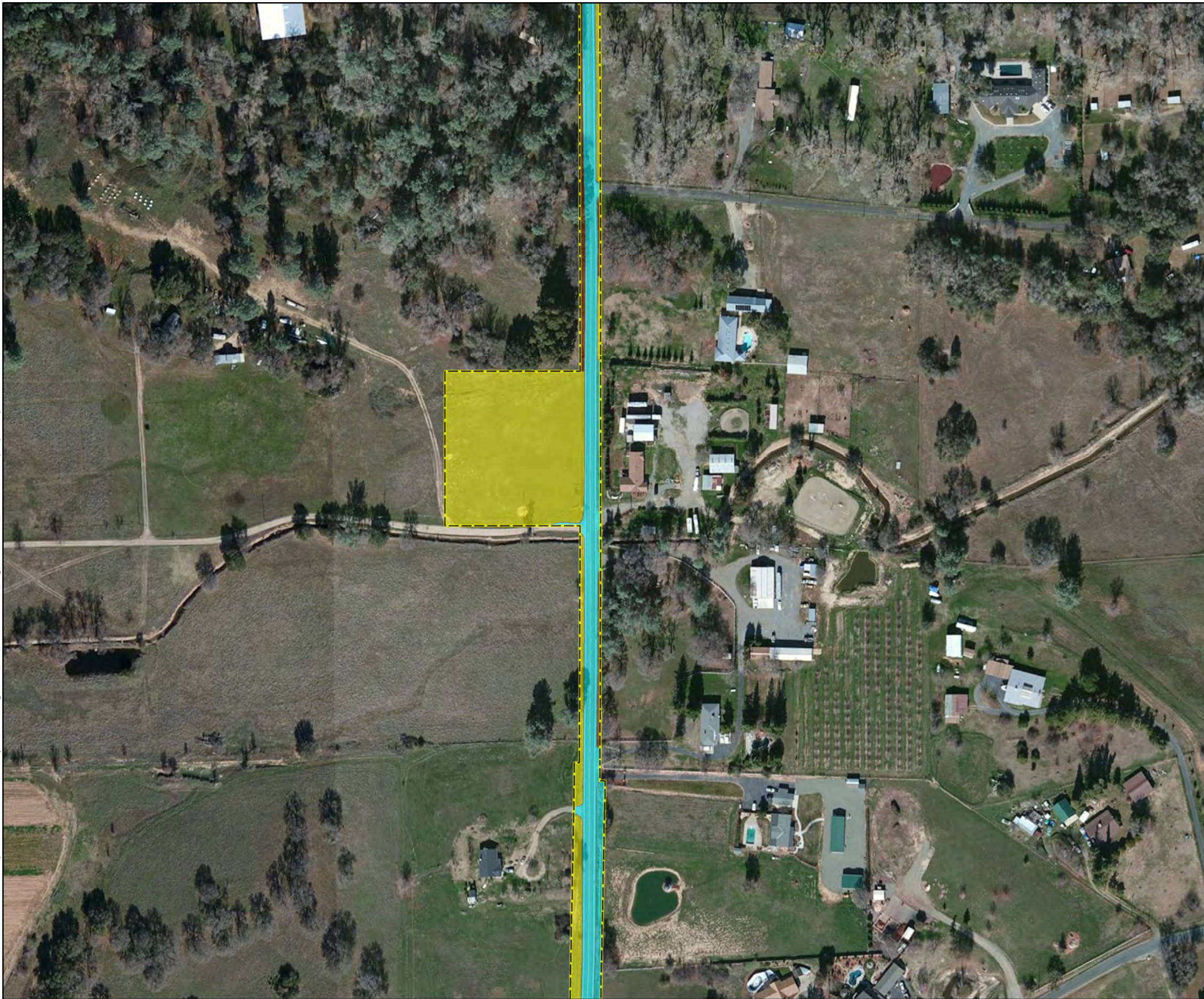
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

Vegetation Community

Annual Grassland - 22.51 ac.

Developed/Disturbed - 40.52 ac.

Interior Live Oak Woodland - 1.62 ac.

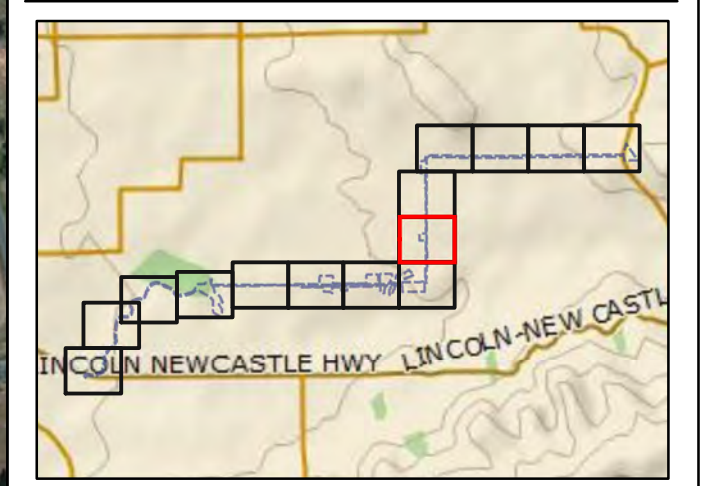
Live Oak Woodland - 12.02 ac.

Valley Oak Woodland - 18.52 ac.

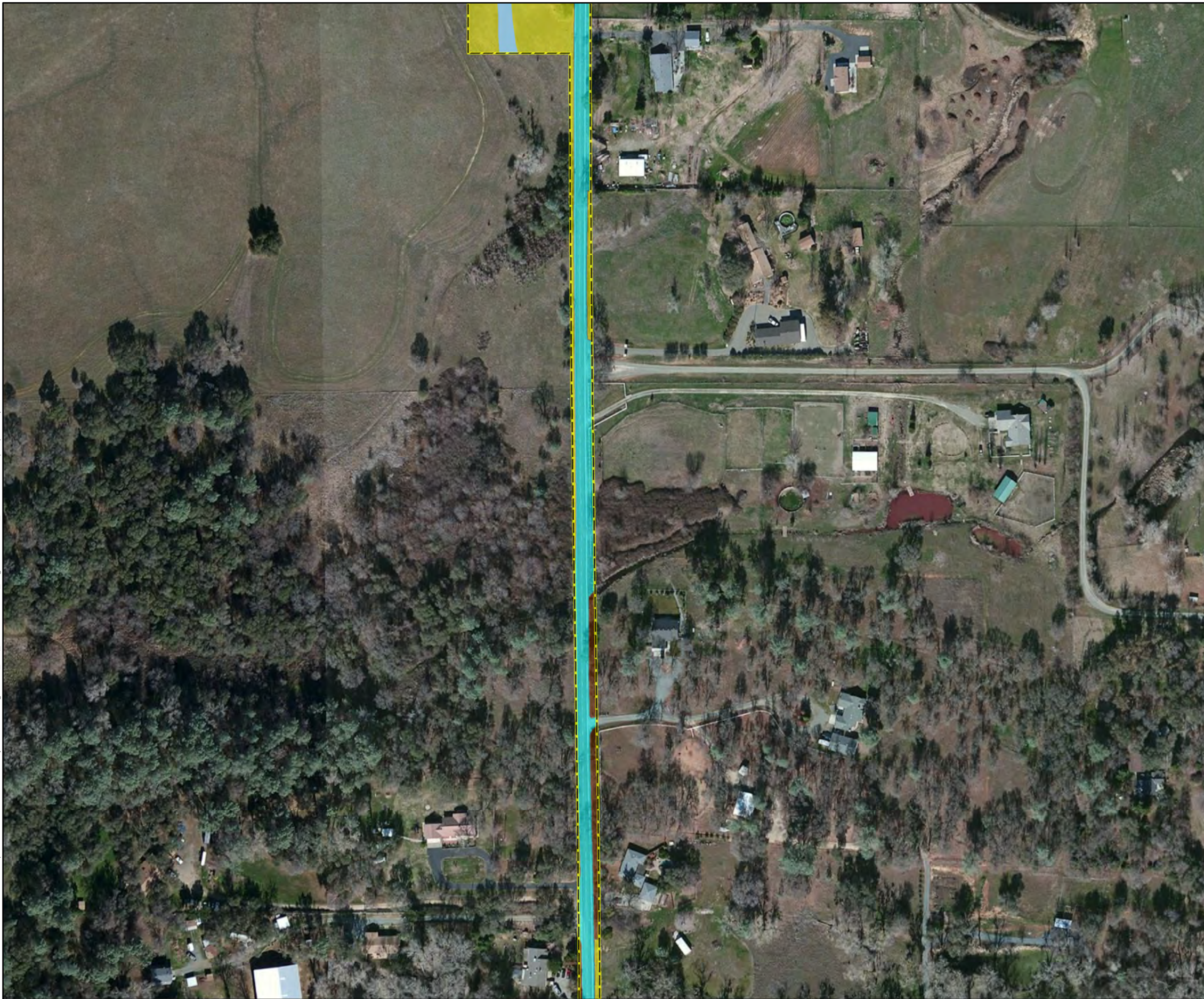
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

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Annual Grassland - 22.51 ac.

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Interior Live Oak Woodland - 1.62 ac.

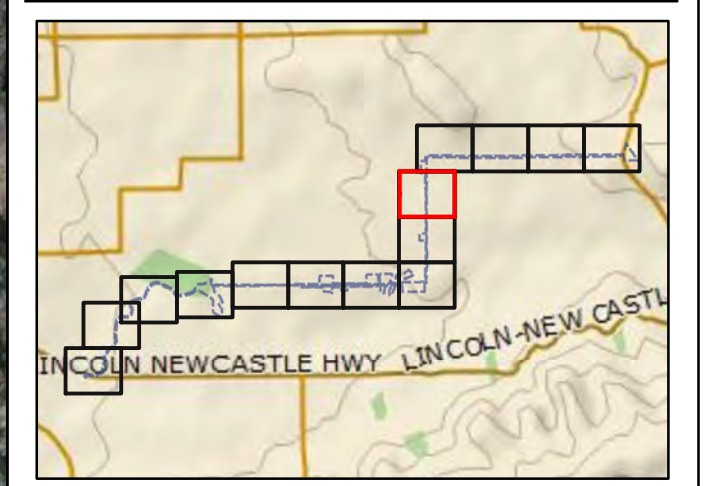
Live Oak Woodland - 12.02 ac.

Valley Oak Woodland - 18.52 ac.

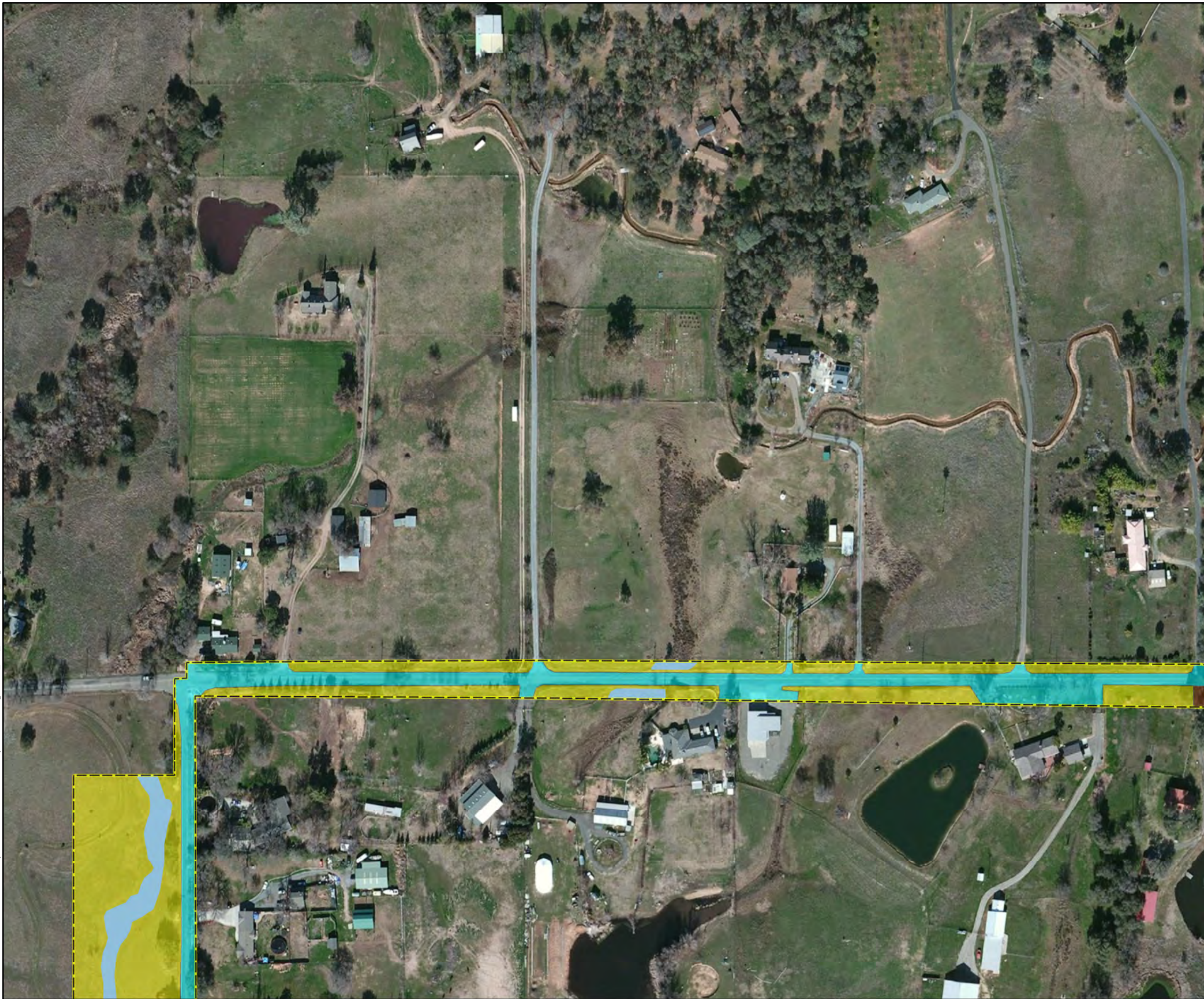
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)

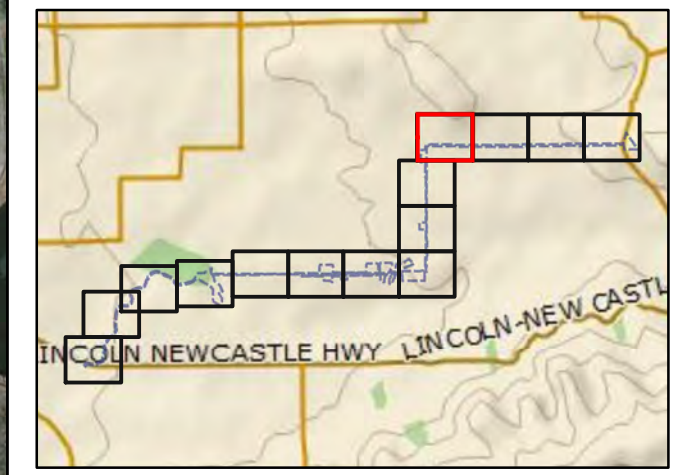


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- Map Features**
-  Project Areas - 98.05 ac.
- Vegetation Community**
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 -  Valley Oak Woodland - 18.52 ac.
- Aquatic Resources**
-  Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

Vegetation Community

Annual Grassland - 22.51 ac.

Developed/Disturbed - 40.52 ac.

Interior Live Oak Woodland - 1.62 ac.

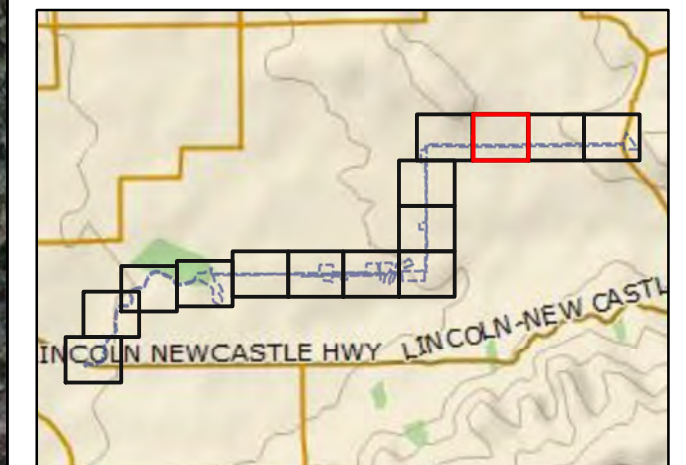
Live Oak Woodland - 12.02 ac.

Valley Oak Woodland - 18.52 ac.

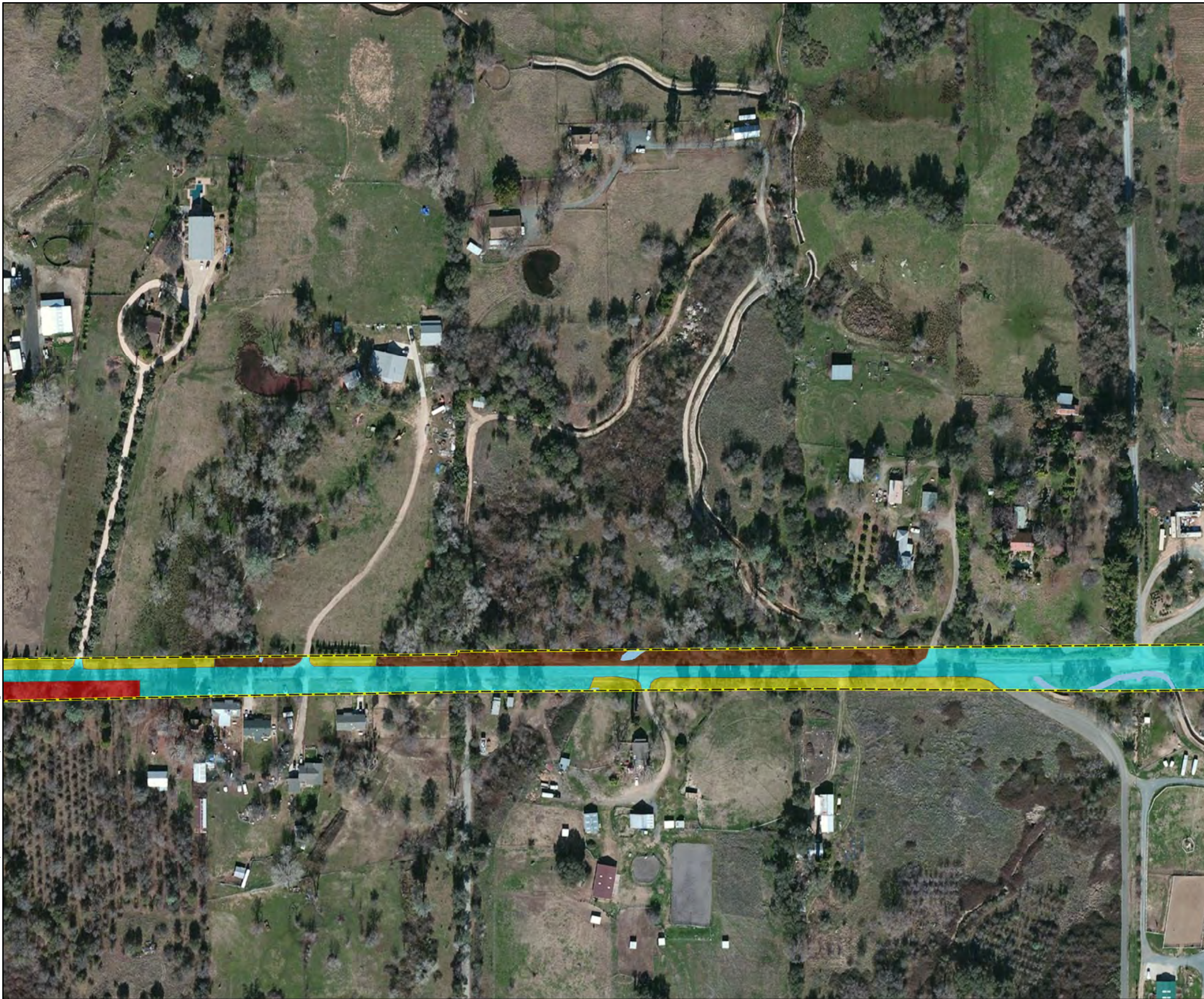
Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)

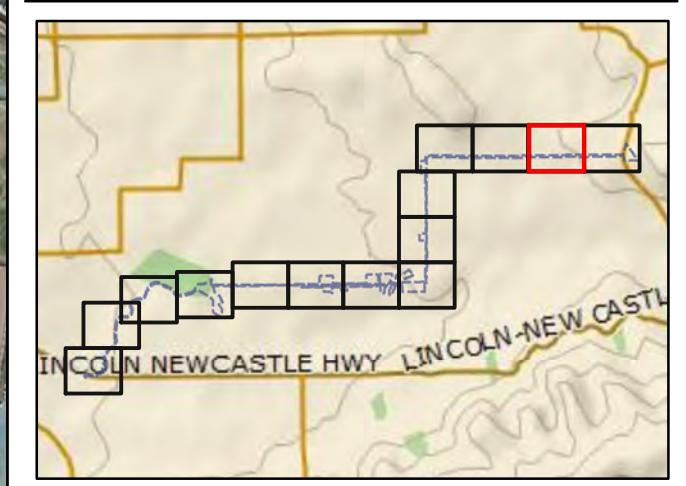


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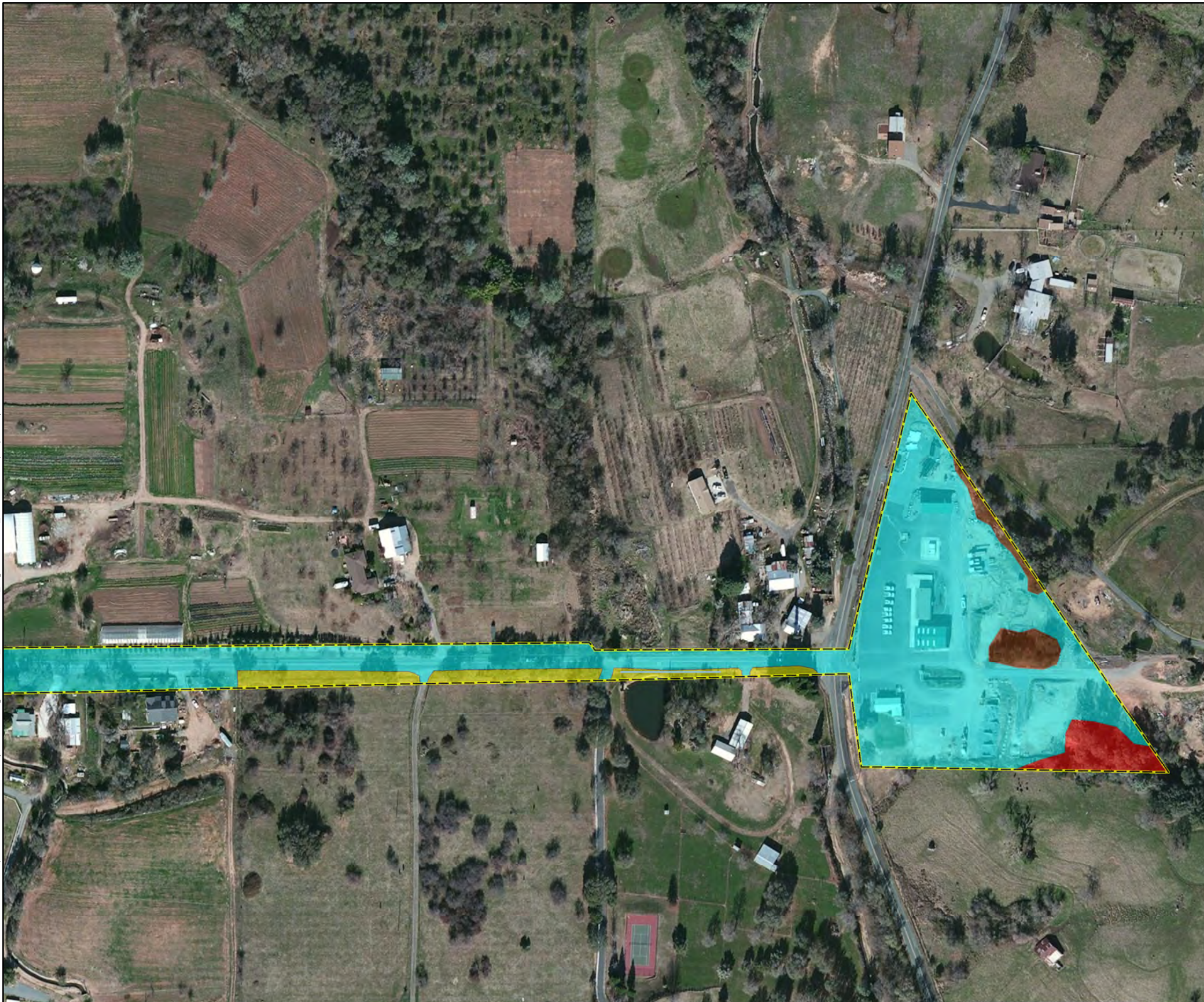


- Map Features**
-  Project Areas - 98.05 ac.
- Vegetation Community**
-  Annual Grassland - 22.51 ac.
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 -  Valley Oak Woodland - 18.52 ac.
- Aquatic Resources**
-  Waters

Sources: Esri Imagery (Clarity View)



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Map Features

Project Areas - 98.05 ac.

Vegetation Community

Annual Grassland - 22.51 ac.

Developed/Disturbed - 40.52 ac.

Interior Live Oak Woodland - 1.62 ac.

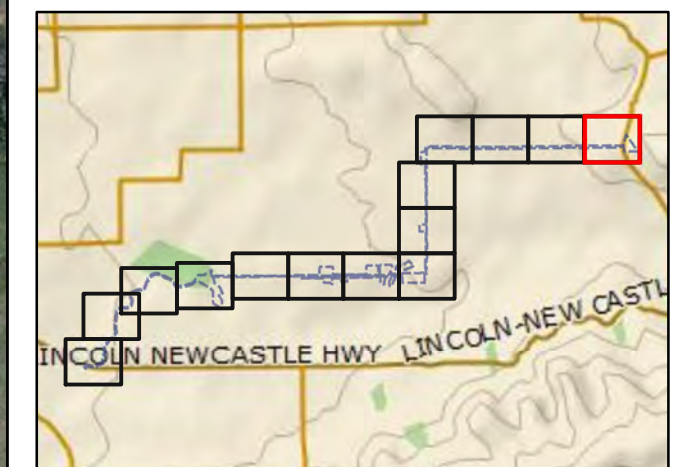
Live Oak Woodland - 12.02 ac.

Valley Oak Woodland - 18.52 ac.

Aquatic Resources

Waters

Sources: Esri Imagery (Clarity View)



Map Date: 11/4/2020

3.1.3 Annual Grassland

Annual grasslands are found mostly on rural residential properties and fallow agricultural fields within the Assessment Area (Figure 4). The annual grasslands onsite are dominated by annual grasses that were either mowed or grazed at the time of the survey. The annual grasslands are likely consistent with the *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance (Sawyer et al. 2009). Grasses were hard to identify due to the disturbance, but likely include common non-native species such as wild oats (*Avena* sp.) and brome (*Bromus* sp.). The dominant forb at the time of the survey was narrow tarplant (*Holcarpha virgata*).

3.1.4 Ruderal/Cultivated

Ruderal or cultivated vegetation are located within the developed and disturbed portions of the Study Area. These areas include the dirt and gravel access roads for the canals and diversion dam, portions of the shoulders for the paved roadways, and the NID facility.

Ruderal vegetation was found along the roads and within the disturbed areas of the NID facility. Common ruderal species along the road includes johnsongrass (*Sorghum halepense*), wild oats, shortpod mustard (*Hirschfeldia incana*), prickly lettuce (*Lactuca serriola*), and puncture vine (*Tribulus terrestris*). Common ruderal species within the developed/disturbed areas of the NID facility include Italian ryegrass (*Festuca perennis*), Canada horseweed (*Erigeron canadensis*), shortpod mustard, and johnsongrass.

Cultivated vegetation was found within the Assessment Area and the NID facility. Cultivated vegetation within the Assessment Area included row crops and ornamental species such as pears (*Pyrus* sp.), apples (*Malus* sp.), almonds (*Prunus dulcis*), deodar cedars (*Cedrus deodara*), coast redwood (*Sequoia sempervirens*), crape myrtle (*Lagerstroemia indica*), and glossy privet (*Ligustrum lucidum*). Cultivated vegetation within the NID facility include incense-cedar (*Calocedrus decurrens*), juniper (*Juniperus* sp.), silk tree (*Albizia julibrissin*), and oleander (*Nerium oleander*).

3.2 Aquatic Resources

A preliminary aquatic resource assessment was conducted for the Study Area (Figure 3). The aquatic resource types delineated within the Study Area and the associated vegetation are described in the following sections.

3.2.1 Wetlands

Seasonal Wetlands

Seasonal wetlands are ephemeral wet due to accumulation of surface runoff and rainwater within low-lying areas. Inundation periods tend to be relatively short and they are commonly dominated by nonnative annual and sometimes perennial hydrophytic species. One seasonal wetland was mapped within the Study Area. Dominant plants within the seasonal wetland onsite included tall flatsedge (*Cyperus eragrostis*) and common smartweed (*Persicaria hydropiper*).

Seasonal Wetland Swales

Seasonal wetland swales are generally linear wetland features that convey precipitation runoff and support a predominance of hydrophytic vegetation, but do not exhibit an ordinary high-water mark (OHWM). These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation for longer periods during the wet season. Three seasonal wetland swales occur in the eastern portion of the Study Area to the south of Auburn Ravine. Dominant plant species in the seasonal wetland swales included tall flatsedge, Italian ryegrass, dallis grass (*Paspalum dilatatum*), sticky tarweed (*Holocarpha virgata*), soft rush (*Juncus effusus*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*), Johnson grass (*Sorghum halepense*), broad-leaf cattail (*Typha latifolia*), and rough cockle-bur (*Xanthium strumarium*).

Riparian Wetlands

Riparian wetlands have been mapped in a low-lying area along Fruitvale Road. This wetland area appears to be artificially irrigated by runoff from upslope rural residences and adjacent irrigated pastures. Dominant plants found in the riparian wetland include Himalayan blackberry, sandbar willow, Goodding's black willow, and broad-leaf cattail.

3.2.2 Non-Wetland Waters

Ditch

Much of the western portion of the Study Area follows a NID ditch (Hemphill Canal), and short segments of ditch were also found along the road corridors. The Hemphill Canal is excavated, unlined, and maintained for water conveyance. Portions of the Hemphill Canal were devoid of vegetation. Dominant species within vegetated portions of the Hemphill Canal include tickseed (*Bidens tripartita*) and barnyard grass (*Echinochloa crus-galli*). Northern water plantain (*Alisma triviale*) was abundant along the edges, and waterweed (*Elodea* sp.) was prevalent within the water.

Pond

There is a small portion of one pond mapped within the Study Area. This pond is located on private property within the Assessment Area. Dominant vegetation consisted of tall flatsedge and dallis grass.

Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features typically convey runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year. Ephemeral drainages within the Study Area were located near the Hemphill Canal and were sparsely vegetated due to erosion and scouring.

Creek (Auburn Ravine)

Perennial creeks are linear features that exhibit a bed and bank, OHWM, and flow continuously throughout the year. The perennial creek (Auburn Ravine) mapped within the Study Area was sparsely and sometimes heavily vegetated depending on the depth and velocity of flowing water. Hydrophytic

vegetation was present along the banks of Auburn Ravine and in areas of sediment accumulation that provide a substrate suitable for plant establishment and growth. Vegetation within the faster-moving portion of the creek consists of white alder grove as described in Section 3.1. Dominant vegetation in the slow-moving waters of the creek includes patches of cattail (*Typha* sp.), soft rush (*Juncus effuses*), common smartweed (*Persicaria hydropiper*), rice cutgrass, and waterweed.

3.3 Soils

According to the *Web Soil Survey* (NRCS 2020), ten soil units, or types, have been mapped within the Study Area (Figure 5. *Natural Resources Conservation Service Soil Types*):

- (106) Andregg coarse sandy loam, 2 to 9 percent slopes, and
- (109) Andregg coarse sandy loam, 2 to 15 percent slopes, and
- (113) Andregg-Shenandoah complex, 2 to 15 percent slopes
- (129) Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
- (130) Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
- (173) Pits and dumps
- (180) Rubble land
- (184) Sierra sandy loam, 9 to 15 percent slopes
- (194) Xerofluvents, frequently flooded
- (197) Xerorthents, placer areas

The Andregg series consists of moderately deep, well drained soils that formed in material weathered mainly from granodiorite. The Caperton series consists of shallow, somewhat excessively drained moderately rapidly permeable soils that formed in material weathered mainly from granodiorite and quartz diorite. The Sierra series consists of deep to very deep, well drained soils that formed in material weathered from intrusive igneous rocks (NRCS 2020).

Pits and Dumps are sand and gravel pits, refuse dumps, and rock quarries. Rubble Land is cobbly and stony mine debris and tailings from dredge or hydraulic mining. Xerofluvents, frequently flooded, consist of narrow stringers of somewhat poorly drained recent alluvium adjacent to stream channel. Xerorthents, placer areas, consist of stony, cobbly, and gravelly material commonly adjacent to streams that have been placer mined (NRCS 2020).



Figure 5.
Natural Resources Conservation
Service Soil Types 1

- Map Features**
- Project Boundary - 98.05 ac.
- Series Number - Series Name**
- 106 - Andregg coarse sandy loam, 2 to 9 percent slopes
 - 109 - Andregg coarse sandy loam, rocky, 2 to 15 percent slopes
 - 113 - Andregg-Shenandoah complex, 2 to 15 percent slopes
 - 129 - Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
 - 130 - Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
 - 173 - Pits and dumps
 - 180 - Rubble land
 - 184 - Sierra sandy loam, 9 to 15 percent slopes
 - 194 - Xerofluvents, frequently flooded
 - 197 - Xerorthents, placer areas

Natural Resources Conservation Service (NRCS)
 Soil Survey Geographic (SSURGO) Database for
 Placer County, CA



Location: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Soils_and_Geology\Hemphill_Soils.aprx (-)kturquist 8/7/2020

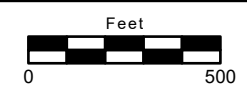




Figure 5.
Natural Resources Conservation
Service Soil Types 2

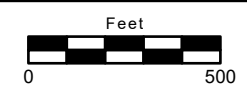
Map Features

- Project Boundary - 98.05 ac.
- Series Number - Series Name**
- 106 - Andregg coarse sandy loam, 2 to 9 percent slopes
- 109 - Andregg coarse sandy loam, rocky, 2 to 15 percent slopes
- 113 - Andregg-Shenandoah complex, 2 to 15 percent slopes
- 129 - Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
- 130 - Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
- 173 - Pits and dumps
- 180 - Rubble land
- 184 - Sierra sandy loam, 9 to 15 percent slopes
- 194 - Xerofluvents, frequently flooded
- 197 - Xerorthents, placer areas

Natural Resources Conservation Service (NRCS)
 Soil Survey Geographic (SSURGO) Database for
 Placer County, CA



Location: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Soils_and_Geology\Hemphill_Soils.aprx (-)turnquist 8/7/2020



Location: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Soils_and_Geology\Hemphill_Soils.aprx (-)turnquist 8/7/2020



Figure 5. Natural Resources Conservation Service Soil Types 3

Map Features

Project Boundary - 98.05 ac.

Series Number - Series Name

- 106 - Andregg coarse sandy loam, 2 to 9 percent slopes
- 109 - Andregg coarse sandy loam, rocky, 2 to 15 percent slopes
- 113 - Andregg-Shenandoah complex, 2 to 15 percent slopes
- 129 - Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
- 130 - Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
- 173 - Pits and dumps
- 180 - Rubble land
- 184 - Sierra sandy loam, 9 to 15 percent slopes
- 194 - Xerofluvents, frequently flooded
- 197 - Xerorthents, placer areas

Natural Resources Conservation Service (NRCS)
Soil Survey Geographic (SSURGO) Database for
Placer County, CA

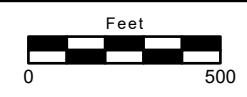




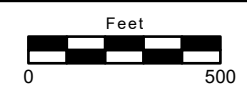
Figure 5.
Natural Resources Conservation
Service Soil Types 4

- Map Features**
- Project Boundary - 98.05 ac.
- Series Number - Series Name**
- 106 - Andregg coarse sandy loam, 2 to 9 percent slopes
 - 109 - Andregg coarse sandy loam, rocky, 2 to 15 percent slopes
 - 113 - Andregg-Shenandoah complex, 2 to 15 percent slopes
 - 129 - Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
 - 130 - Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
 - 173 - Pits and dumps
 - 180 - Rubble land
 - 184 - Sierra sandy loam, 9 to 15 percent slopes
 - 194 - Xerofluvents, frequently flooded
 - 197 - Xerorthents, placer areas

Natural Resources Conservation Service (NRCS)
 Soil Survey Geographic (SSURGO) Database for
 Placer County, CA



Location: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Soils_and_Geology\Hemphill_Soils.aprx (-ktturnquist 8/7/2020)





**Figure 5.
Natural Resources Conservation
Service Soil Types 5**

Map Features

- Project Boundary - 98.05 ac.
- Series Number - Series Name**
- 106 - Andregg coarse sandy loam, 2 to 9 percent slopes
- 109 - Andregg coarse sandy loam, rocky, 2 to 15 percent slopes
- 113 - Andregg-Shenandoah complex, 2 to 15 percent slopes
- 129 - Caperton gravelly coarse sandy loam, 2 to 30 percent slopes
- 130 - Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes
- 173 - Pits and dumps
- 180 - Rubble land
- 184 - Sierra sandy loam, 9 to 15 percent slopes
- 194 - Xerofluvents, frequently flooded
- 197 - Xerorthents, placer areas

Natural Resources Conservation Service (NRCS)
Soil Survey Geographic (SSURGO) Database for
Placer County, CA



Location: N:\2020\2020-104 NID-Hemphill Diversion Structure Project\MAPS\Soils_and_Geology\Hemphill_Soils.aprx (-) -kturquist 8/7/2020

4.0 SPECIES DESCRIPTIONS

Nineteen special-status plants were considered to be target species for the survey. However, as described in Section 1.0 and 2.0, only a subset of these species were identifiable during the survey. A description of each target species is provided in the following sections.

4.1 Mexican Mosquito Fern

Mexican mosquito fern (*Azolla microphylla*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual/perennial that occurs in marshes and swamps (e.g., ponds and slow-moving water) (CNPS 2020). Mexican mosquito fern blooms in August and is known to occur at elevations ranging from 98 to 328 feet above MSL (CNPS 2020). The current range for Mexican mosquito fern in California includes Butte, Colusa, Glenn, Inyo, Kern, Lake, Modoc, Nevada, Plumas, San Bernardino, Santa Clara, San Diego, and Tulare counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Mexican mosquito fern within five miles of the Study Area (CDFW 2020), the aquatic features onsite represent suitable habitat for this species. Mexican mosquito fern has potential to occur onsite.

4.2 Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous perennial that occurs in chaparral, cismontane woodlands, valley and foothill grassland, and occasionally on serpentinite soils (CNPS 2020). Big-scale balsamroot blooms from March through June and is known to occur at elevations ranging from 148 to 5,102 feet above MSL (CNPS 2020). Big-scale balsamroot is endemic to California; the current range of this species includes Alameda, Amador, Butte, Colusa, El Dorado, Lake, Mariposa, Napa, Placer, Santa Clara, Shasta, Solano, Sonoma, Tehama, and Tuolumne counties (CNPS 2020).

There is one documented CNDDDB occurrence of big-scale balsamroot within five miles of the Study Area (CDFW 2020), the woodlands and grasslands onsite represent suitable habitat for this species. Big-scale balsamroot has potential to occur onsite.

4.3 Valley Brodiaea

Valley brodiaea (*Brodiaea rosea* ssp. *vallicola*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a bulbiferous perennial herb that occurs in old alluvial terraces and silty, sandy, or gravelly soils in vernal pools, swales, and valley and foothill grassland (CNPS 2020). Valley brodiaea blooms from April through May and is known to occur at elevations ranging from 33 to 1,100 feet above MSL (CNPS 2020). Valley brodiaea is endemic to California; the current range of this species includes Butte, Calaveras, Nevada, Placer, Sacramento, San Joaquin, Sutter, and Yuba counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Valley brodiaea within five miles of the Study Area (CDFW 2020), the seasonal wetlands, seasonal wetland swales, and grasslands onsite represent suitable habitat for this species. Valley brodiaea has potential to occur onsite.

4.4 Hispid Bird's-Beak

Hispid bird's-beak (*Chloropyron molle* ssp. *hispidum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous, hemiparasite annual that occurs on alkaline soils in meadows and seeps, playas, and valley and foothill grasslands. Hispid bird's-beak blooms from June through September and is known to occur at elevations ranging from three feet to 509 feet above MSL (CNPS 2020). Hispid bird's-beak is endemic to California; the current range of this species includes Alameda, Fresno, Kern, Merced, Placer, and Solano counties (CNPS 2020).

There is one documented CNDDDB occurrence of Hispid bird's-beak within five miles of the Study Area (CDFW 2020). While no suitable alkaline habitat was observed within the Survey Area, marginal habitat may be present within the Assessment Area. Hispid bird's-beak has potential to occur onsite.

4.5 Brandegee's Clarkia

Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 plant. This species is an herbaceous annual that occurs in chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (CNPS 2020). Brandegee's clarkia blooms from May through July and is known to occur at elevations ranging from 246 to 3,002 feet above MSL (CNPS 2020). Brandegee's clarkia is endemic to California, and the current range of this species includes Butte, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yuba counties (CNPS 2020).

There are three documented CNDDDB occurrences of Brandegee's clarkia within five miles of the Study Area (CDFW 2020). The woodlands onsite represent marginal habitat for this species. Brandegee's clarkia has low potential to occur onsite.

4.6 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 2B.2 species. This species is an herbaceous annual that occurs in vernal pools and mesic areas in valley and foothill grasslands (CNPS 2020). Dwarf downingia also appears to have an affinity for slight disturbance since it has been found in manmade features such as tire ruts, scraped depressions, stock ponds, and roadside ditches (Baldwin et al. 2012, CDFW 2020). This species blooms from March through May and is known to occur at elevations ranging from 3 to 1,460 feet above MSL (CNPS 2020). The current range of this species in California includes Amador, Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties (CNPS 2020).

There are six documented CNDDDB occurrence of dwarf downingia within five miles of the Study Area (CDFW 2020). The mesic areas onsite represent suitable habitat for this species. Dwarf downingia has potential to occur onsite.

4.7 Stinkbells

Stinkbells (*Fritillaria agrestis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in clay, sometimes serpentinite areas in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (CNPS 2020). Stinkbells bloom from March to June and is known to occur at elevations ranging from 33 to 5,102 feet above MSL (CNPS 2020). This species is endemic to California; its current range includes Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Stanislaus, Tuolumne, Ventura, and Yuba counties, and is considered to be extirpated from Santa Cruz and San Mateo counties (CNPS 2020).

While there are no documented CNDDDB occurrences of stinkbells within five miles of the Study Area (CDFW 2020), the woodlands and grasslands onsite represent marginal habitat for this species. Stinkbells has low potential to occur onsite.

4.8 Butte County Fritillary

Butte County fritillary (*Fritillaria eastwoodiae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3.2 species. This species is an herbaceous bulbiferous perennial that occurs in chaparral, cismontane woodland, and lower montane coniferous forest, and is occasionally found on serpentinite soils (CNPS 2020). Butte County fritillary blooms from March to June and is known to occur at elevations ranging from 164 to 4,921 feet above MSL (CNPS 2020). The current range of this species in California includes Butte, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, and Yuba counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Butte County fritillary within five miles of the Study Area (CDFW 2020), the woodlands onsite represent marginal habitat for this species. Butte County fritillary has low potential to occur onsite.

4.9 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not listed pursuant to the federal ESA, is listed as endangered pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in clay in marshes and swamps (lake margins), and vernal pools (CNPS 2020). Boggs Lake hedge-hyssop blooms from April through August and is known to occur at elevations ranging from 33 to 7,792 feet above MSL (CNPS 2020). The current range of this species in California includes Fresno, Lake, Lassen, Madera, Mendocino, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama counties (CNPS 2020).

There is one documented CNDDDB occurrences of Boggs Lake hedge-hyssop within five miles of the Study Area (CDFW 2020). The aquatic features onsite represent suitable habitat for this species. Boggs Lake hedge-hyssop has potential to occur onsite.

4.10 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in mesic areas in valley and foothill grasslands (CNPS 2020). This species also appears to have an affinity for slight disturbance since it has been found on farmed fields and gopher turnings (USFWS 2005). Ahart's dwarf rush blooms from March through May and is known to occur at elevations ranging from 98 to 751 feet above MSL (CNPS 2020; USFWS 2005). Ahart's dwarf rush is endemic to California; the current range of this species includes Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba counties (CNPS 2020).

There is one documented CNDDDB occurrence of Ahart's dwarf rush within five miles of the Study Area (CDFW 2020). The mesic areas within the grasslands onsite represent suitable habitat for this species. Ahart's dwarf rush has potential to occur onsite.

4.11 Red Bluff Dwarf Rush

Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal mesic areas in chaparral, cismontane woodland, meadows, seeps, valley and foothill grasslands, and vernal pools (CNPS 2020). Red Bluff dwarf rush blooms from March through June and is known to occur at elevations ranging from 115 to 4,101 feet above MSL (CNPS 2020). Red Bluff dwarf rush is endemic to California; the current range of this species includes Butte, Placer, Shasta, and Tehama counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Red Bluff dwarf rush within five miles of the Study Area (CDFW 2020), the mesic areas within the woodlands and grasslands onsite represent marginal habitat for this species. Bluff dwarf rush has low potential to occur onsite.

4.12 Dubious Pea

Dubious pea (*Lathyrus sulphureus* var. *argillaceus*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 3 species. This species is an herbaceous perennial that occurs in cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest (CNPS 2020). Dubious pea blooms from April through May and is known to occur at elevations ranging from 492 to 3,051 feet above MSL (CNPS 2020). Dubious pea is endemic to California; the current range of this species includes Calaveras, El Dorado, Nevada (distribution or identity is uncertain), Placer, Shasta, and Tehama counties (CNPS 2020).

While there are no documented CNDDDB occurrences of dubious pea within five miles of the Study Area (CDFW 2020), the woodlands onsite provide marginally suitable habitat for this species. Therefore, dubious pea has low potential to occur onsite.

4.13 Legenere

Legenere (*Legenere limosa*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species (CNPS 2020). This species is an herbaceous annual that occurs in a variety of

seasonally inundated environments including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005). Legenere blooms from April through June and is known to occur at elevations ranging from 3 feet to 2,887 feet above MSL (CNPS 2020). Legenere is endemic to California; the current range of this species includes Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, San Joaquin, Shasta, San Mateo, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties; is believed to be extirpated from Stanislaus County (CNPS 2020).

There are three documented CNDDDB occurrences of legenere within five miles of the Study Area (CDFW 2020). The aquatic features onsite represent suitable habitat for this species. Legenere has potential to occur onsite.

4.14 Humboldt Lily

Humboldt lily (*Lilium humboldtii* ssp. *humboldtii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (CNPS 2020). Humboldt lily blooms from May through August and is known to occur at elevations ranging from 295 to 4,199 feet above MSL (CNPS 2020). Humboldt lily is endemic to California; the current range of this species includes Amador, Butte, Calaveras, El Dorado, Fresno, Mariposa, Nevada, Placer, Tehama, Tuolumne, and Yuba counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Humboldt lily within five miles of the Study Area (CDFW 2020), the woodlands onsite represent marginal habitat for this species. Humboldt lily has low potential to occur onsite.

4.15 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii* ssp. *myersii*) is not listed pursuant to either the federal or California ESAs but is designated as a CNPS 1B.1 species. This species is an herbaceous annual that occurs in vernal pools that are often acidic (CNPS 2020). Pincushion navarretia blooms in April to May and is known to occur at elevations ranging from 66 to 1,083 feet above MSL (CNPS 2020). Pincushion navarretia is endemic to California; the current range of this species includes Amador, Calaveras, Merced, Placer, and Sacramento counties (CNPS 2020).

There is one documented CNDDDB occurrence of pincushion navarretia within five miles of the Study Area (CDFW 2020). While no suitable vernal pool habitat was observed within the Survey Area, suitable habitat may be present within the Assessment Area. Pincushion navarretia has potential to occur onsite.

4.16 Adobe Navarretia

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in clay and sometimes serpentinite substrates in mesic areas in valley and foothill grassland and sometimes in vernal pools (CNPS 2020). Adobe navarretia blooms between April and June and is known to occur at elevations ranging from 328 to 3,281 feet above MSL (CNPS 2020). Adobe navarretia is

endemic to California; its current range includes Alameda, Butte, Contra Costa, Colusa, Fresno, Kern, Merced, Monterey, Placer, Sutter, and Tulare counties (CNPS 2020).

While there are no documented CNDDDB occurrences of adobe navarretia within five miles of the Study Area (CDFW 2020), the mesic areas of the grasslands onsite represent suitable habitat for this species. Adobe navarretia has potential to occur onsite.

4.17 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is listed as endangered pursuant to both the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools (CNPS 2020). The median area of occupied pools discovered prior to 1988 was 0.69 acre and ranged from 0.25 to 2.03 acres (USFWS 2005). Sacramento Orcutt grass blooms from April through July and is known to occur at elevations ranging from 98 to 328 feet above MSL (CNPS 2020). Sacramento Orcutt grass is endemic to California and to the southeastern Sacramento Valley (Keeler-Wolf et al. 1998, as cited in USFWS 2005), with all known occurrences restricted to Sacramento County. Known occurrences of this species within the general region are limited to a small area east of Mather Field, Phoenix Field Ecological Reserve, Phoenix Park (introduced population), and an area near Rancho Seco Lake (USFWS 2005).

While there are no documented CNDDDB occurrences of Sacramento Orcutt grass within five miles of the Study Area (CDFW 2020) and no suitable vernal pool habitat was observed within the Survey Area, marginal habitat may be present within the Assessment Area. Sacramento Orcutt grass has potential to occur onsite.

4.18 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in shallow, freshwater marshes and swamps (CNPS 2020). Sanford's arrowhead blooms from May through October, and is known to occur at elevations ranging from sea level to 2,133 feet above MSL (CNPS 2020). Sanford's arrowhead is endemic to California; the current range of this species includes Butte, Del Norte, El Dorado, Fresno, Merced, Mariposa, Marin, Napa, Orange, Placer, Sacramento, San Bernardino, San Joaquin, Shasta, Solano, Tehama, Tulare, Ventura, and Yuba counties; it is believed to be extirpated from both Orange and Ventura counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Sanford's arrowhead within five miles of the Study Area (CDFW 2020), the aquatic features onsite represent suitable habitat for this species. Sanford's arrowhead has potential to occur onsite.

4.19 Brazilian Watermeal

Brazilian watermeal (*Wolffia brasiliensis*) is not listed pursuant to either the federal or California ESA, but is designated as a CRPR 2B.3 species. This species is an herbaceous perennial that occurs in assorted shallow freshwater marshes and swamps (CNPS 2020). Brazilian watermeal blooms from April through December

and is known to occur at elevations ranging from 66 to 328 feet above MSL (CNPS 2020). The current range for Brazilian watermeal in California includes Butte, Glenn, Sutter and Yuba counties (CNPS 2020).

While there are no documented CNDDDB occurrences of Sanford's arrowhead within five miles of the Study Area (CDFW 2020), the aquatic features onsite represent suitable habitat for this species. Brazilian watermeal has potential to occur onsite.

5.0 RESULTS AND CONCLUSION

The Study Area includes a Survey Area and an Assessment Area, as described in Section 1.0 and depicted on Figure 2. The special-status plant survey was conducted within the Survey Area, and did not include the Assessment Area.

No special-status plant species were documented within the Survey Area during the 2020 late season special-status plant survey. However, as previously stated, only a subset of the target species were identifiable at the time of the survey. These species include Mexican mosquito fern, big-scale balsamroot, hispid bird's beak, Brandegee's clarkia, stinkbells, Butte County fritillary, Boggs Lake hedge-hyssop, Red Bluff dwarf rush, legenera, Humboldt lily, adobe navarretia, Sacramento Orcutt grass, Sanford's arrowhead, and Brazilian watermeal. An additional survey is required to ensure complete survey coverage for the remaining target species.

One sensitive natural community, *Quercus lobata* Forest & Woodland Alliance (Valley oak woodland), was documented within the Study Area (Figure 4). Valley oak woodland has a State rarity rank of S3.

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LIST OF ATTACHMENTS

Attachment A – Potentially Occurring Special-Status Plant Species

Attachment B – Target Species Reference Source

Attachment C – Statement of Qualifications

Attachment D – Plant Species Observed (June 28 and June 29, 2020)

ATTACHMENT A

Potentially Occurring Special-Status Plant Species

Attachment B. Potentially Occurring Special-Status Plant Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Jepson's onion <i>(Allium jepsonii)</i>	–	–	1B.2	Serpentinite or volcanic soils in chaparral, cismontane woodland, and lower montane coniferous forests (984'–4,331').	April–August	Absent. Outside of elevational range.
Sanborn's onion <i>(Allium sanbornii</i> var. <i>sanbornii)</i>	–	–	4.2	Chaparral, cismontane woodland, and lower montane coniferous forests, usually with gravelly, serpentinite soils (853'–4,954').	May–September	Absent. Outside of elevational range.
Mexican mosquito fern <i>(Azolla microphylla)</i>	–	–	4.2	Marshes and swamps, ponds or slow-moving bodies of water (98'–328').	August	Potential to occur. Suitable habitat present onsite.
Big-scale balsamroot <i>(Balsamorhiza macrolepis</i> var. <i>macrolepis)</i>	–	–	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland, sometimes on serpentinite soils (148'–5,102').	March–June	Potential to occur. Suitable habitat present onsite.
Valley brodiaea <i>(Brodiaea rosea</i> ssp. <i>vallicola)</i>	–	–	4.2	Occurs in old alluvial terraces and silt, sandy, or gravelly soils in vernal pools and swale within valley and foothill grassland (33'–1,100').	April–May	Potential to occur. Suitable habitat present onsite.
Stebbins' morning-glory <i>(Calystegia stebbinsii)</i>	FE	CE	1B.1	Gabbroic or serpentine soils in chaparral and cismontane woodland (607'–3,576').	April–July	Absent. No suitable habitat onsite.
Chaparral sedge <i>(Carex xerophila)</i>	–	–	1B.2	Serpentinite or gabbroic soils within chaparral, cismontane woodland, and lower montane coniferous forest (1,444'–2,526').	March–June	Absent. No suitable habitat onsite.
Pine Hill ceanothus <i>(Ceanothus roderickii)</i>	FE	CR	1B.1	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland (804'–3,576').	April–June	Absent. No suitable habitat onsite.
Red Hills soaproot <i>(Chlorogalum grandiflorum)</i>	–	–	1B.2	Serpentinite or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest, occasionally on non-ultramafic soils (804'–5,545').	May–June	Absent. Outside of elevational range.

Attachment B. Potentially Occurring Special-Status Plant Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Hispid bird's-beak <i>(Chloropyron molle ssp. hispidum)</i>	–	–	1B.1	Alkaline soils in meadows and seeps, playas, and valley and foothill grasslands (3'–509').	June–September	Low potential to occur. While no suitable habitat was observed within the Study Area, marginal habitat may be present within areas that are inaccessible (i.e. private property).
Brandegee's clarkia <i>(Clarkia biloba ssp. brandegeae)</i>	–	–	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246'–3,002').	May–July	Low potential to occur. Marginal habitat present onsite.
Streambank spring beauty <i>(Claytonia parviflora ssp. grandiflora)</i>	–	–	4.2	Occurs in rocky cismontane woodland (820'–3,937').	February–May	Absent. Outside of elevational range.
Bisbee Peak rush-rose <i>(Crocانthemum suffrutescens)</i>	–	–	3.2	Often gabbroic or lone soil or in burned or disturbed areas within chaparral (246'–2,198').	April–August	Absent. No suitable habitat onsite.
Dwarf downingia <i>(Downingia pusilla)</i>	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches) (Baldwin et al. 2012, CDFW 2018) (3'–1,460').	March–May	Potential to occur. Suitable habitat present onsite.
Stinkbells <i>(Fritillaria agrestis)</i>	–	–	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (33'–5,102').	March–June	Low potential to occur. Marginal habitat present onsite.
Butte County fritillary <i>(Fritillaria eastwoodiae)</i>	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentinite soils (164'–4,921').	March–June	Low potential to occur. Marginal habitat present onsite.
El Dorado bedstraw <i>(Galium californicum ssp. sierrae)</i>	FE	CR	1B.2	Gabbroic soil in chaparral, cismontane woodland and lower montane coniferous forest communities (328'–1,919').	May–June	Absent. No suitable habitat onsite.

Attachment B. Potentially Occurring Special-Status Plant Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Boggs Lake hedge-hyssop <i>(Gratiola heterosepala)</i>	–	CE	1B.2	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Potential to occur. Suitable habitat present onsite.
Ahart's dwarf rush <i>(Juncus leiospermus var. ahartii)</i>	–	–	1B.2	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005) (98'–751').	March–May	Potential to occur. Suitable habitat present onsite.
Red Bluff dwarf rush <i>(Juncus leiospermus var. leiospermus)</i>	–	–	1B.1	Vernally mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools (115'–4,101').	March–June	Potential to occur. Suitable habitat present onsite.
Dubious pea <i>(Lathyrus sulphureus var. argillaceus)</i>	–	–	3	Cismontane woodland, lower montane coniferous forest and upper montane coniferous forest (492'–3,051').	April–May	Low potential to occur. Marginal habitat present onsite.
Legenere <i>(Legenere limosa)</i>	–	–	1B.1	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005) (3'–2,887').	April–June	Potential to occur. Suitable habitat present onsite.
Humboldt lily <i>(Lilium humboldtii ssp. humboldtii)</i>	–	–	4.2	Occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (295'–4,199').	May–August	Low potential to occur. Marginal habitat present onsite.
Pincushion navarretia <i>(Navarretia myersii ssp. myersii)</i>	–	–	1B.1	Often acidic soils in vernal pools (66'–1,083').	April–May	Potential to occur. While no suitable habitat was observed within the Study Area, suitable habitat may be present within areas that are inaccessible (i.e. private property).
Adobe navarretia <i>(Navarretia nigelliformis ssp. nigelliformis)</i>	–	–	4.2	Clay and sometimes serpentinite soils in vernal mesic valley and foothill grasslands and sometimes in vernal pools (328'–3,281').	April–June	Potential to occur. Suitable habitat present onsite.

Attachment B. Potentially Occurring Special-Status Plant Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential to Occur On-site
	ESA	CESA	Other			
Sacramento Orcutt grass <i>(Orcuttia viscida)</i>	FE	CE	1B.1	Vernal pools (98'–328').	April–July	Low potential to occur. While no suitable habitat was observed within the Study Area, marginal habitat may be present within areas that are inaccessible (i.e. private property).
Layne's ragwort <i>(Packera layneae)</i>	FT	CR	1B.2	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland communities (656'–3,560').	April–August	Absent. No suitable habitat onsite.
Sanford's arrowhead <i>(Sagittaria sanfordii)</i>	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Potential to occur. Suitable habitat present onsite.
Oval-leaved viburnum <i>(Viburnum ellipticum)</i>	–	–	2B.3	Chaparral, cismontane woodland, and lower montane coniferous forest communities (705'–4,593').	May–June	Absent. Outside of elevational range.
Brazilian watermeal <i>(Wolffia brasiliensis)</i>	–	–	2B.3	Assorted shallow freshwater marshes and swamps (66'–328').	April–December	Potential to occur. Suitable habitat present onsite.
El Dorado County mule ears <i>(Wyethia reticulata)</i>	–	–	1B.2	Clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest communities (607'–2,067').	April–August	Absent. Outside of geographic range.

Status Codes:

- ESA Endangered Species Act
- CESA California Endangered Species Act
- FE FESA listed, Endangered.
- FT FESA listed, Threatened.
- CE CESA or NPPA listed, Endangered.
- CR CESA- or NPPA-listed, Rare.
- 1A CRPR/Presumed extinct.
- 1B California Rare Plant Ranks (CRPRs)/Rare or Endangered in California and elsewhere.
- 2B CRPR /Rare or Endangered in California, more common elsewhere.
- 3 CRPR/Plants About Which More Information is Needed – A Review List.
- 4 CRPR/Plants of Limited Distribution – A Watch List.
- 0.1 Threat Rank/Seriously threatened in California (over 80 percent of occurrences threatened / high degree and immediacy of threat)
- 0.2 Threat Rank/Moderately threatened in California (20-80 percent occurrences threatened / moderate degree and immediacy of threat)
- 0.3 Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

ATTACHMENT B

Target Species Reference Source

Target Species Reference Source ¹				
Common Name (Scientific Name)	Location of Observation	Dates of Observation	Phenology	Remarks
Mexican mosquito fern <i>(Azolla microphylla)</i>	Calphotos, Calflora	N/A	Vegetative	
Big-scale balsamroot <i>(Balsamorhiza macrolepis var. macrolepis)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Valley brodiaea <i>(Brodiaea rosea ssp. vallicola)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Hispid bird's-beak <i>(Chloropyron molle ssp. hispidum)</i>	Rocklin, CA	06/02/2020	Flowering	
Brandegee's clarkia <i>(Clarkia biloba ssp. brandegeae)</i>	Auburn, CA	06/08/2020	25% flowering, 85% vegetative	
Dwarf downingia <i>(Downingia pusilla)</i>	Rio Linda, CA Elverta, CA	03/06/2020 4/1/2020	Mostly vegetative, few flowering 100% flowering	

¹ Calphotos (<https://calphotos.berkeley.edu/>), Calflora, herbarium specimens, and/or The Jepson Manual were used as reference for any species not listed in this table.

Target Species Reference Source ¹				
Common Name (Scientific Name)	Location of Observation	Dates of Observation	Phenology	Remarks
Stinkbells <i>(Fritillaria agrestis)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Boggs Lake hedge-hyssop <i>(Gratiola heterosepala)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Ahart's dwarf rush <i>(Juncus leiospermus var. ahartii)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Red Bluff dwarf rush <i>(Juncus leiospermus var. leiospermus)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Dubious pea <i>(Lathyrus sulphureus var. argillaceus)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.

Target Species Reference Source ¹				
Common Name (Scientific Name)	Location of Observation	Dates of Observation	Phenology	Remarks
Legenere <i>(Legenere limosa)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Humboldt lily <i>(Lilium humboldtii ssp. humboldtii)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Pincushion navarretia <i>(Navarretia myersii ssp. myersii)</i>	Fair Oaks, CA	03/30/2020	90% flowering, 10% vegetative	

Target Species Reference Source ¹				
Common Name (Scientific Name)	Location of Observation	Dates of Observation	Phenology	Remarks
Shining navarretia <i>(Navarretia nigelliformis ssp. radians)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.
Sacramento Orcutt grass <i>(Orcuttia viscida)</i>	Sacramento, CA	06/02/2020	98% flowering, 2% vegetative	
Sanford's arrowhead <i>(Sagittaria sanfordii)</i>	Granite Bay, CA	05/13/20	20% flowering, 80% vegetative	
Brazilian watermeal <i>(Wolffia brasiliensis)</i>	Calphotos, Calflora	N/A	Flowering	Local timing for flowering was assessed using photographs from Calphotos and information from CNPS and the Jepson Manual, due to reference sites being unavailable.

ATTACHMENT C

Statement of Qualifications

Attachment C

Statement of Qualifications

Hannah Kang

Assistant Biologist, ECORP Consulting, Inc.

Hannah Kang is a botanist specializing in plant taxonomy, special-status surveys, and general floristic surveys. Miss Kang has two years of professional experience conducting botanical surveys, including surveys for special-status plants throughout Northern California and the Tahoe Basin. She is experienced in conducting focused and general floristic surveys, sensitive plant surveys, arborist surveys, and general surveys for nonnative plants.

Hannah Stone

Staff Biologist, ECORP Consulting, Inc.

Hannah Stone is a biologist with more than eight years of professional experience in botanical, forest inventory, and ecological data collection. She is experienced in leading and conducting floristic surveys, special-status plant surveys, vegetation community mapping, invasive plant species mapping, and habitat assessments. She is also experienced in preparing technical reports including special-status plant reports, Biological Resource Assessments, biological evaluations/biological assessments (BAs) for Forest Service projects, BAs for Section 7 consultation, and National Environmental Policy Act compliance documents.

ATTACHMENT D

Plant Species Observed (June 28 and June 29, 2020)

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
ADOXACEAE	MUSKROOT FAMILY
<i>Sambucus nigra</i> subsp. <i>caerulea</i>	Blue elderberry
AGAVACEAE	AGAVE FAMILY
<i>Agave</i> sp.*	Agave (cultivated)
<i>Chlorogalum pomeridianum</i>	Wavyleaf soap plant
ALISMATACEAE	WATER-PLANTAIN FAMILY
<i>Alisma triviale</i>	Northern water plantain
AMARANTHACEAE	AMARANTH FAMILY
<i>Amaranthus albus</i> *	Pigweed amaranth
ANACARDIACEAE	SUMAC FAMILY
<i>Pistacia terebinthus</i> *	Turpentine tree (cultivated)
<i>Toxicodendron diversilobum</i>	Poison oak
APIACEAE	CARROT FAMILY
<i>Conium maculatum</i> *	Poison hemlock
<i>Daucus carota</i> *	Queen Anne's lace
<i>Foeniculum vulgare</i> *	Sweet fennel
<i>Torilis arvensis</i> *	Field hedge parsley
APOCYNACEAE	DOGBANE FAMILY
<i>Asclepias fascicularis</i>	Narrow-leaf milkweed
<i>Nerium oleander</i> *	Oleander
<i>Vinca major</i> *	Periwinkle
ARACEAE	ARUM FAMILY
<i>Lemna minuta</i>	Least duckweed
ARALIACEAE	IVY FAMILY
<i>Hedera helix</i> *	English ivy
ARECACEAE	PALM FAMILY
<i>Washingtonia robusta</i> *	Mexican fan
ARISTOLOCHIACEAE	PIPEVINE FAMILY
<i>Aristolochia californica</i>	California pipevine
ASTERACEAE	SUNFLOWER FAMILY
<i>Artemisia douglasiana</i>	Mugwort

An asterisk (*) indicates a non-native species.

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
ASTERACEAE	SUNFLOWER FAMILY
<i>Baccharis pilularis</i>	Coyote bush
<i>Bidens tripartita</i> *	Tickseed
<i>Carduus pycnocephalus</i> *	Italian thistle
<i>Centaurea solstitialis</i> *	Yellow star-thistle
<i>Centromadia fitchii</i>	Fitch's spikeweed
<i>Chondrilla juncea</i> *	Skeleton weed
<i>Cichorium intybus</i> *	Chicory
<i>Cirsium vulgare</i> *	Bull thistle
<i>Dittrichia graveolens</i> *	Stinkwort
<i>Erigeron canadensis</i>	Canada horseweed
<i>Helenium puberulum</i>	Sneezeweed
<i>Helianthus annuus</i>	Common sunflower
<i>Holocarpha virgata</i>	Narrow tarplant
<i>Hypochaeris radicata</i> *	Rough cat's-ear
<i>Lactuca serriola</i> *	Prickly lettuce
<i>Pseudognaphalium luteoalbum</i> *	Jersey cudweed
<i>Silybum marianum</i> *	Milk thistle
<i>Xanthium strumarium</i>	Rough cockle-bur
AZOLLACEAE	MOSQUITO FERN FAMILY
<i>Azolla filiculoides</i>	Mosquito fern
BERBERIDACEAE	BARBERRY FAMILY
<i>Nandina sp.</i> *	Nandina (cultivated)
BETULACEAE	BIRCH FAMILY
<i>Alnus rhombifolia</i>	White alder
BIGNONIACEAE	TRUMPET-CREEPER FAMILY
<i>Campsis radicans</i> *	Trumpet vine (cultivated)
<i>Catalpa bignonioides</i> *	Southern catalpa
BORAGINACEAE	BORAGE FAMILY
<i>Amsinckia sp.</i>	Fiddleneck

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Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
BRASSICACEAE	MUSTARD FAMILY
<i>Brassica nigra</i> *	Black mustard
<i>Hirschfeldia incana</i> *	Shortpod mustard
<i>Raphanus sativus</i> *	Purple wild radish
CACTACEAE	CACTUS FAMILY
<i>Opuntia</i> sp.*	Prickly pear cactus (cultivated)
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY
<i>Lonicera hispidula</i>	Pink honeysuckle
CARYOPHYLLACEAE	PINK FAMILY
<i>Cerastium</i> sp.*	Chickweed
<i>Spergularia rubra</i> *	Purple sandspurry
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Dysphania ambrosioides</i> *	Mexican tea
<i>Kochia scoparia</i> *	Mexican fireweed
CISTACEAE	ROCK-ROSE FAMILY
<i>Cistus</i> sp.*	Rock rose (cultivated)
CONVOLVULACEAE	MORNING-GLORY FAMILY
<i>Convolvulus arvensis</i> *	Field bindweed
CONVOLVULACEAE	MORNING GLORY FAMILY
<i>Ipomoea purpurea</i> *	Common morning-glory (cultivated)
CYPERACEAE	SEDGE FAMILY
<i>Carex barbarae</i>	Santa Barbara sedge
<i>Cyperus eragrostis</i>	Tall flatsedge
<i>Eleocharis macrostachya</i>	Creeping spikerush
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	Hard-stem bulrush
EQUISETACEAE	HORSETAIL FAMILY
<i>Equisetum arvense</i>	Field horsetail
<i>Equisetum hyemale</i>	Rough horsetail
EUPHORBIACEAE	SPURGE FAMILY
<i>Croton setiger</i>	Turkey mullein
<i>Euphorbia crenulata</i> *	Chinese caps

An asterisk (*) indicates a non-native species.

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
EUPHORBIACEAE	SPURGE FAMILY
<i>Euphorbia maculata*</i>	Spotted spurge
FABACEAE	LEGUME FAMILY
<i>Acmispon americanus</i>	Spanish clover
<i>Albizia julibrissin*</i>	Silk tree
<i>Lotus corniculatus*</i>	Birdsfoot trefoil
<i>Melilotus sp.*</i>	Sweetclover
<i>Trifolium hirtum*</i>	Rose clover
<i>Trifolium incarnatum*</i>	Crimson clover
<i>Trifolium repens*</i>	White clover
<i>Trifolium sp.</i>	Clover
<i>Vicia sativa*</i>	Spring vetch
FAGACEAE	OAK FAMILY
<i>Quercus douglasii</i>	Blue oak
<i>Quercus lobata</i>	Valley oak
<i>Quercus wislizeni</i>	Interior live oak
GENTIANACEAE	GENTIAN FAMILY
<i>Zeltnera muehlenbergii</i>	Muehlenberg's centaury
GERANIACEAE	GERANIUM FAMILY
<i>Erodium sp.*</i>	Filaree
<i>Geranium molle*</i>	Dovefoot geranium
HYDROCHARITACEAE	WATERWEED FAMILY
<i>Elodea canadensis</i>	Common water weed
HYPERICACEAE	ST. JOHN'S WORT FAMILY
<i>Hypericum perforatum*</i>	Klamath weed
IRIDACEAE	IRIS FAMILY
<i>Iris sp.*</i>	Iris (cultivated)
JUGLANDACEAE	WALNUT FAMILY
<i>Juglans hindsii</i>	Black walnut
JUNCACEAE	RUSH FAMILY
<i>Juncus balticus ssp. ater</i>	Baltic rush

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Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
JUNCACEAE	RUSH FAMILY
<i>Juncus effusus</i>	Soft rush
<i>Juncus xiphioides</i>	Iris-leaf rush
LAMIACEAE	MINT FAMILY
<i>Lycopus americanus</i>	Bugleweed
<i>Marrubium vulgare</i> *	Common horehound
<i>Mentha pulegium</i> *	Pennyroyal
<i>Salvia rosmarinus</i> *	Rosemary (cultivated)
LYTHRACEAE	LOOSESTRIFE FAMILY
<i>Lagerstroemia indica</i> *	Crape myrtle (cultivated)
<i>Punica granatum</i> *	Pomegranate (cultivated)
MALVACEAE	MALLOW FAMILY
<i>Malva sp.</i> *	Mallow
MARTYNIACEAE	UNICORN-PLANT FAMILY
<i>Proboscidea louisianica</i> *	Devil's claw
MOLLUGINACEAE	CARPET-WEED FAMILY
<i>Mollugo verticillata</i> *	Indian chickweed
MORACEAE	MULBERRY FAMILY
<i>Ficus carica</i> *	Common fig
<i>Morus alba</i> *	White mulberry
MYRSINACEAE	MYRSINE FAMILY
<i>Lysimachia arvensis</i> *	Scarlet pimpernel
MYRTACEAE	MYRTLE FAMILY
<i>Callistemon sp.</i> *	Bottlebrush (cultivated)
<i>Eucalyptus rudis</i> *	Western australian floodedgum
OLEACEAE	OLIVE FAMILY
<i>Fraxinus latifolia</i>	Oregon ash
<i>Ligustrum lucidum</i> *	Glossy privet (cultivated)
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Epilobium brachycarpum</i>	Panicled willow-herb
<i>Epilobium ciliatum</i>	Hairy willow-herb

An asterisk (*) indicates a non-native species.

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Epilobium densiflorum</i>	Dense-flower spike primrose
<i>Ludwigia peploides</i> ssp. <i>peploides</i> *	Water primrose
<i>Oenothera elata</i>	Hooker's evening-primrose
OXALIDACEAE	OXALIS FAMILY
<i>Oxalis corniculata</i> *	Creeping woodsorrel
PAPAVERACEAE	POPPY FAMILY
<i>Eschscholzia californica</i>	California poppy
PHRYMACEAE	LOPSEED FAMILY
<i>Erythranthe cardinalis</i>	Scarlet monkeyflower
PHYTOLACCACEAE	POKEWEED FAMILY
<i>Phytolacca americana</i> *	American pokeweed
PINACEAE	PINE FAMILY
<i>Cedrus deodara</i> *	Deodar cedar (cultivated)
<i>Pinus sabiniana</i>	Gray pine
<i>Pinus</i> sp.*	Pine (cultivated)
PLANTAGINACEAE	PLANTAIN FAMILY
<i>Callitriche heterophylla</i>	Varied leaved water starwort
<i>Kickxia elatine</i> *	Sharp-leaved fluellin
<i>Plantago lanceolata</i> *	English plantain
<i>Veronica americana</i>	American speedwell
PLATANACEAE	PLANE-TREE FAMILY
<i>Platanus racemosa</i>	California sycamore
POACEAE	GRASS FAMILY
<i>Aira caryophyllea</i> *	Silvery hairgrass
<i>Avena</i> sp.*	Wild oat
<i>Briza maxima</i> *	Big quaking grass
<i>Bromus diandrus</i> *	Ripgut brome
<i>Bromus hordeaceus</i> *	Soft brome
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Cynosurus echinatus</i> *	Hedgehog dog-tail grass

An asterisk (*) indicates a non-native species.

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
POACEAE	GRASS FAMILY
<i>Digitaria ciliaris</i> *	Hairy crabgrass
<i>Echinochloa crus-galli</i> *	Barnyard grass
<i>Festuca glauca</i> *	Blue fescue
<i>Festuca perennis</i> *	Italian Ryegrass
<i>Hordeum murinum ssp. glaucum</i> *	Foxtail barley
<i>Leersia oryzoides</i>	Rice cutgrass
<i>Muhlenbergia rigens</i>	Deergrass
<i>Panicum dichotomiflorum</i> *	Fall panicgrass
<i>Paspalum dilatatum</i> *	Dallis grass
<i>Phyllostachys aurea</i> *	Golden bamboo (cultivated)
<i>Poa annua</i> *	Annual bluegrass
<i>Polypogon monspeliensis</i> *	Annual rabbit-foot grass
<i>Setaria pumila</i> *	Yellow bristlegrass
<i>Sorghum halepense</i> *	Johnson grass
<i>Triticum aestivum</i> *	Cultivated wheat
POLEMONIACEAE	PHLOX FAMILY
<i>Navarretia</i> sp.	Navarretia
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Persicaria hydropiper</i> *	Common smartweed
<i>Polygonum aviculare ssp. depressum</i> *	Prostrate knotweed
<i>Rumex crispus</i> *	Curly dock
<i>Rumex pulcher</i> *	Fiddle dock
PONTEDERIACEAE	PICKEREL-WEED FAMILY
<i>Eichhornia crassipes</i> *	Water hyacinth
PORTULACAEAE	PURSLANE FAMILY
<i>Portulaca oleracea</i> *	Common purslane
ROSACEAE	ROSE FAMILY
<i>Malus pumila</i> *	Apple (cultivated)
<i>Photinia</i> sp.*	Photinia (cultivated)
<i>Prunus cerasifera</i> *	Cherry plum (cultivated)

An asterisk (*) indicates a non-native species.

Hemphill Diversion Structure Project
Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
ROSACEAE	ROSE FAMILY
<i>Prunus dulcis</i> *	Almond (cultivated)
<i>Prunus mume</i> *	Plum blossom (cultivated)
<i>Pyrus calleryana</i> *	Callery pear (cultivated)
<i>Pyrus sp.</i> *	Pear (cultivated)
<i>Rosa sp.</i>	Rose (native)
<i>Rosa sp.</i> *	Rose (cultivated)
<i>Rubus armeniacus</i> *	Himalayan blackberry
<i>Rubus ursinus</i>	California blackberry
SALICACEAE	WILLOW FAMILY
<i>Populus fremontii</i>	Fremont's cottonwood
<i>Salix exigua</i>	Sandbar willow
<i>Salix gooddingii</i>	Goodding's black willow
<i>Salix lasiolepis</i>	Arroyo willow
SAPINDACEAE	SOAPBERRY FAMILY
<i>Acer sp.</i> *	Maple (cultivated)
<i>Aesculus californica</i>	California buckeye
SCROPHULARIACEAE	FIGWORT FAMILY
<i>Verbascum blattaria</i> *	Moth mullein
<i>Verbascum thapsus</i> *	Common mullein
SIMAROUBACEAE	QUASSIA FAMILY
<i>Ailanthus altissima</i> *	Tree-of-heaven
SOLANACEAE	NIGHTSHADE FAMILY
<i>Nicotiana attenuata</i>	Coyote tobacco
<i>Solanum americanum</i>	Common nightshade
<i>Solanum elaeagnifolium</i> *	Silverleaf nightshade
<i>Solanum rostratum</i> *	Buffalo bur
<i>Solanum xanti</i>	Purple nightshade
TAXODIACEAE	BALD CYPRESS FAMILY
<i>Sequoia sempervirens</i>	Coast redwood (cultivated)

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Hemphill Diversion Structure Project
 Plant Species Observed (June 28 and June 29, 2020)

SCIENTIFIC NAME	COMMON NAME
THEMIDACEAE	BRODIAEA FAMILY
<i>Brodiaea</i> sp.	Brodiaea
<i>Dichelostemma capitatum</i>	Blue dicks
<i>Dichelostemma volubile</i>	Twining brodiaea
TYPHACEAE	CATTAIL FAMILY
<i>Typha</i> sp.	Cattail
VERBENACEAE	VERVAIN FAMILY
<i>Phyla nodiflora</i>	Common lippia
<i>Verbena bonariensis</i> *	Purpletop vervain
VITACEAE	GRAPE FAMILY
<i>Vitis californica</i>	California wild grape
ZYGOPHYLLACEAE	CALTROP FAMILY
<i>Tribulus terrestris</i> *	Puncture vine

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